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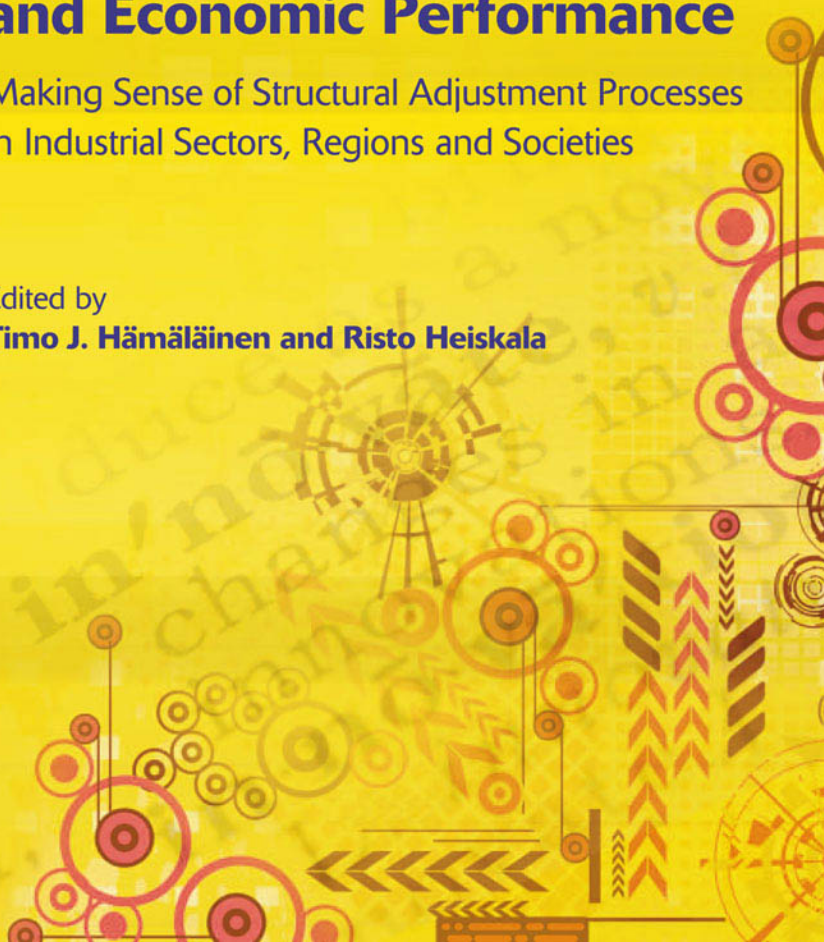


Social Innovations, Institutional Change and Economic Performance

Making Sense of Structural Adjustment Processes
in Industrial Sectors, Regions and Societies

Edited by

Timo J. Hämäläinen and Risto Heiskala



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Societies

Edited by

Timo J. Hämmäläinen

Foresight Director, Sitra, the Finnish Innovation Fund, Finland

Risto Heiskala

*Professor of Social and Public Policy, University of Jyväskylä,
Finland*

IN ASSOCIATION WITH SITRA, THE FINNISH INNOVATION
FUND

Edward Elgar

Cheltenham, UK • Northampton, MA, USA

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Published by
Edward Elgar Publishing Limited
Glensanda House
Montpellier Parade
Cheltenham
Glos GL50 1UA
UK

Edward Elgar Publishing, Inc.
William Pratt House
9 Dewey Court
Northampton
Massachusetts 01060
USA

A catalogue record for this book
is available from the British Library

Library of Congress Cataloguing in Publication Data

Social innovations, institutional change, and economic performance : making sense of structural adjustment processes in industrial sectors, regions, and societies / edited by Timo J. Härmäläinen and Risto Heiskala.

p. cm.

Includes bibliographical references and index.

1. Economic development—Sociological aspects. 2. Economic development—Social aspects. 3. Social institutions—Economic aspects. 4. Structural adjustment (Economic policy)—Developed countries.

I. Härmäläinen, Timo J. II. Heiskala, Risto.

HD75.S625 2007

306.3—dc22

2006037236

Sitra's Publication Series, publication no. 281
ISSN 0785-8338 (Sitra)
Sitra, the Finnish Innovation Fund www.sitra.fi

ISBN 978 1 84720 253 6

Printed and bound in Great Britain by MPG Books Ltd, Bodmin, Cornwall.

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Contributors

Gunnar Eliasson, Royal Institute of Technology, Sweden

Timo J. Hämäläinen, Sitra, the Finnish Innovation Fund, Finland

Risto Heiskala, University of Jyväskylä, Finland

Julia S. O'Connor, University of Ulster, Northern Ireland

Gerd Schienstock, University of Tampere, Finland

W. Richard Scott, Stanford University, USA

J.-C. Spender, Open University Business School, UK

Prefatory chapter: Institutions and social innovation

W. Richard Scott

Institutions again matter! After decades of denial, oversight and misspecification – under labels varying from behaviorism to individualism to neoclassical economics extending for many decades well into the twentieth century – social scientists have rediscovered the pivotal role played by institutions in social life. Institutional arguments are once again being formulated across the social sciences – by anthropologists, economists, social historians, management scholars, political scientists and sociologists. Coase, Commons, Durkheim, Marx, Weber and Veblen are again being read and their insights reclaimed and renewed. And institutional approaches are being crafted to examine social processes and structures across a full spectrum of levels of analysis ranging from games and groups to organizations, organizational populations, organizational fields, sectors, societies and transnational systems.

While the reach of institutions is wide, in the last two decades interest and research attention have been concentrated at more macro levels. Fueled by globalization fever, much attention has been devoted to rapidly increasing levels of international trade and economic interdependence. Seemingly, everyone is talking about globalization. Some accounts imply that we are all trapped on a ‘run-away world’ – that we are unwilling passengers on ‘a very fast train without drivers’ fueled by market forces, weakening state boundaries and technological breakthroughs. Everyone is not wrong. We inhabit an increasingly interdependent planet, but one I, together with the editors and contributors to this volume, believe is amenable to analysis and to intervention.

As Guillén (2001b) reminds us, globalization forces have been at work for a long time, and our own efforts are only the most recent in a long series of attempts to develop useful conceptual frameworks for interpreting and attempting to guide modernization and globalization processes. Influential previous approaches include modernization theory (Rostow, 1960), dependence theory (Evans, 1979), world systems theory (Wallerstein, 1974), late-industrialization arguments (Gerschenkron, 1962) and neoclassical

approaches (Leff, 1978). Compared to these earlier perspectives, current institutional approaches¹ offer a number of important advantages:

- They eschew a ‘totalistic’ or monolithic view of modernization processes and economic development.
- They encourage detailed attention to the specifics of institutional variety at the organization, sector or societal levels.²
- They support attention to the complex interactions among institutional processes at multiple levels.
- They recognize that the globalization processes now under way not only conduce to areas in which structures and activities converge, but also promote diversity and innovation.

INSTITUTIONAL ELEMENTS

Contemporary or neoinstitutional theory got under way in the 1970s, with the work of Berger and Luckmann (1967), DiMaggio and Powell (1983), Hall (1986), March and Olsen (1984), Meyer and Rowan (1977), Meyer and Scott (1983), Moe (1984) and Williamson (1975) leading the way. A flood of theoretical advances informed by a wide range of empirical studies have followed since then and up to the present time, making institutional theory one of the most lively intellectual arenas within the social sciences (see Scott, forthcoming). While there is clear maturation and progress, as of this time there remain many and varied conceptions of institutions – for a sampling, see Bourdieu and Wacquant (1992), Campbell (2004), Hall and Soskice (2001), Nee (2005), North (1990, 2005), Ostrom (1990), Peters (1999) and Pierson (2004). It will not come as a surprise that I prefer my own conception of institution:

Institutions are social structures that have attained a high degree of resilience [and are] composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life. (Scott, 2001: 48)

Fortunately for current purposes, this conception has been generally embraced by the editors of this volume (see Chapters 2 and 3).

My definition differs in a number of respects from competing conceptions:

- It accords more emphasis than most others to cultural-cognitive elements – shared beliefs, assumptions, organizing templates, schema.

The importance of ideas – in contrast to interests or obligations – is an important theme flowing through the chapters of the current volume.

- It emphasizes that institutions are multifaceted structures, highlighting the role of symbolic elements, but insisting that they are only significant to the extent that they are connected to and reflected in social activities, social relations and material resources.
- It stresses the presence and interdependence of three different elements or components – regulative, normative and cultural-cognitive – distinguished because they:
 - provide differing bases of meaning and order
 - are associated with differing social logics
 - rely on differing mechanisms
 - are identified by different indicators
 - conjure up differing aspects of legitimacy (see Table 3.1).
- It recognizes that particular institutional complexes rely more on some elements than others and/or exhibit variation over time in the prominence or salience of the elements (see Hoffman, 1997).
- And, borrowing from Giddens' (1979, 1984) structuration theory, it recognizes that institutions operate simultaneously to channel and constrain some structures and behaviors, but also to support and empower others.

Many of the disputes about institutions among analysts stem from their varying attention to one as opposed to another institutional element. Those stressing *regulative* elements – primarily economists and rational-choice political scientists – give more attention to deliberation and design. Regulative elements are more formalized, more explicit, more easily planned and strategically crafted. Emphasis is placed on clear rules and directives, the manipulation of incentives, and the importance of surveillance (for example, North, 1990; Williamson, 1975, 1985). However, although rules and sanctions are more readily manipulated and their effects more rapid, they can also be superficial and fleeting (Roland, 2004). Actors are more likely to 'game' the system, so that behavior becomes decoupled from rules and formal structure, in a manner depicted by Meyer and Rowan (1977). Unless supported by other elements, a reliance on rules is likely to result in shallow conformity and brittle stability.

Analysts focusing primarily on *normative* elements – typically sociologists and historical or normative institutionalists in political science – give more attention to the social embeddedness of social and economic behavior (Granovetter, 1985; Peters, 1999: chap. 2). Actors are not viewed primarily as rational calculators but as social persons who care deeply about

their relationships to others and to their own commitments – their identities. Behavioral norms are reinforced by the response of others but are also internalized by the actor. Much behavior is responsive not to ‘instrumental’ logics, but to the logic of ‘appropriateness’ (March and Olsen, 1989). Informal relations among actors and specific situational demands often trump narrowly defined self-interest or utilitarian concerns.

Those stressing *cultural-cognitive* elements – primarily cultural anthropologists and sociologists and organization theorists – tap into a deeper layer that includes widely shared beliefs about the nature of the world (cultural frames) and cause–effect relations (social logics). The beliefs are ‘cultural’ because they are socially constructed symbolic representations; they are ‘cognitive’ because they provide vital templates for framing individual perceptions and decisions. They supply ‘the software of the mind’ (Hofstede, 1991) that grounds our ‘rational’ choices. Some of these beliefs and logics are explicit and subject to conscious manipulation – culture as ‘tool-kit’ (Swidler, 1986) – but others are deeply entrenched – culture as ‘taken-for-granted conceptions’ of the world (Berger and Luckmann, 1967). The latter, necessarily, are not quickly changed.³

INSTITUTIONAL CHANGE

Social scientists have long been interested in institutions as fundamental sources of social order and stability, but in recent decades increasing attention has been devoted to the causes of institutional change. Early on, it was presumed that, for institutions to change, they must be destabilized by external shocks – by forces of nature, wars, economic jolts or break-through new technologies. Such forces are, of course, at work. But, further reflection has persuaded most scholars that it is overly simplistic to focus entirely or even primarily on external factors: that much institutional change is generated by endogenous forces. Several theoretical developments have guided this recognition.

First, Giddens’ (1979, 1984) seminal work on structuration theory has reminded us that all social structures – including institutional structures – are constructed by social actors.⁴ Social structure is both the context for and the product of action. All social action takes place within and is supported and constrained by existing structures; and all action either reproduces these structures or introduces change into them. The ability to introduce new elements into existing structures is termed ‘agency’ (DiMaggio, 1988; Emirbayer and Mische, 1998). The actors involved may be individual or collective. Oliver (1991) was among the first to point out that organizations may choose to respond to institutional forces in a variety of ways, not only

by compliance but by the strategic use of compromise, manipulation and defiance. Institutional forces sometimes proceed in a ‘top-down’ manner, as superordinate systems attempt to impose conformity on lower-level units, but as often involve a ‘bottom-up’ process, in which individuals or organizations resist or challenge such efforts, introducing new schemas and logics into the mix of available elements (Scott, 2001: chap. 8). Institutional forces are not one-way and determinate but interactive and reciprocal processes.

Second, institutions are not monolithic, unified systems. Working at a macro level, Friedland and Alford (1991: 232) point out that the institutions that comprise societies ‘are potentially contradictory and hence make multiple logics available to individuals and organizations. Individuals and organizations transform the institutional relations of society by exploiting these contradictions.’ Thus, for example, the varying beliefs and norms associated with kinship systems often conflict with those governing economic activities; and economic logics often privilege different interests or values than do political logics (for example, efficiency vs equity). But even within a single institutional complex – at a sector or organizational field level – tensions and contradictions are likely to exist due to:

- the existence of *entropy*: the erosion over time of order, structure, commitments (Zucker, 1988)
- the divide between general principles and local conditions, a ‘gap or “mismatch” between the micro and macro levels’ (Sjöstrand, 1995: 20)
- the misalignment of institutional elements – rules, norms, beliefs – such that significant individuals or organizations are guided by attention to one rather than another element (Scott, 2001: chap. 8).

Third, the new institutionalism, more than alternative perspectives, recognizes the important independent role played by ideas in social life. John Maynard Keynes, the eminent economist, recognized this truth. In the final paragraph of his book on *The General Theory* he wrote:

The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist. (Keynes, 1973 [1936]: 383)

Those who attempt to explain or guide institutional change – scholars and policy advocates – typically privilege interests. Ideas are distinct from interests, although they serve to ground and frame them. Campbell (2004: chap. 4) elaborates on the different ways in which ideas enter into decision

making about social change. Among the most important ideas are those providing taken-for-granted assumptions that rest in the deep background of decision processes: broadly shared norms and *public sentiments* such as national cultures and *cognitive paradigms* that guide and constrain choice. Operating more in the foreground are the cultural *frames* that are employed to justify and legitimate decisions, as well as the *programs* that provide specific guidelines for addressing problems. Types of actors who carry on this work range from theorists and professionals to framing specialists, such as politicians, campaign managers and spin doctors; carriers, such as media representatives and consultants; and brokers – intermediaries who connect the varying social worlds of discourse.

It is increasingly recognized that, as ideas are transmitted from one context to another, they are not simply ‘diffused’ but ‘edited’ and ‘translated’ (Czarniawska and Joerges, 1996; Sahlin-Andersson, 1996; Westney, 1987). As Strang and Meyer (1993: 104, 106) observe, if practices and structures are to diffuse, they must be theorized. ‘By theorization, we mean both the development and specification of abstract categories, and the formulation of patterned relationships such as chains of cause and effect . . . Under these conditions, we suppose that what flows is rarely an exact copy of some practice existing elsewhere.’

Moreover, there is a wide range of mechanisms or ‘carriers’ by which ideas are transmitted. I have suggested that carriers may, variously, be comprised of *symbolic systems*, such as those transmitted by the mass media, *relational systems*, including interactions among individual and collective actors, by contacts among as well as by the movements of people, *routines*, such as protocols and standard operating procedures, and *artifacts*, including tools and technologies (Scott, 2001: chap. 4, 2003). We must recognize that carriers are not neutral conveyers. As Abernethy (2000) has demonstrated, it makes a palpable difference in the international arena whether new ideas favored by foreign countries arrive backed by the bayonets of invading armies, the inducements of merchant traders or the blessings of missionaries.

SOCIAL INNOVATION

The editors and authors of this volume direct primary attention to the difficult and fundamental question of what role institutions play in the production of new ideas and new kinds of social structures – *social innovation*. Institutional scholars generally are roughly organized into two camps on this question and, not unexpectedly, these disagreements are reflected in the following chapters. One view, termed ‘a positive theory of institutions’

(DiMaggio and Powell, 1991: 5–6) or ‘actor-centered functionalism’ (Pierson, 2004: 104), is based primarily on the work of rational-choice economists and political scientists (for example, Moe, 1984; Williamson, 1981). These scholars begin with a conception of boundedly rational, utility-maximizing actors but recognize that choice and behavior take place within the context of institutions. Emphasis is placed on the regulative aspects of institutions: institutions are rule systems that constrain action through the use of incentives – rewards and sanctions. In this approach it is argued that actors construct a particular institution with the expectation that it will serve the interests of those enacting it. Thus, intentionality is closely linked to questions of power.

Rational-choice institutionalists have provided explanations for a wide variety of institutions, ranging from the fabrication of incentive and control systems within organizations and parliaments to the crafting of regulatory policies for sectors to the construction of national and international regimes (see, for example, Shepsle, 1989; Williamson, 1985; Young, 1986). This work provides a strong foundation for rigorous theorizing and has surely served to call the attention of economists and political scientists to the important role played by institutional frameworks in economic and political change. However, it is also rendered vulnerable by its questionable assumptions, many of which are highlighted in Paul Pierson’s thoughtful critique of the limits of institutional design (2004: chap. 4). In brief summary, Pierson points out that:

Actors may be instrumental and farsighted but have such multiple and diverse goals that institutional functioning cannot easily be derived from the preferences of designers. Alternatively, actors may not be instrumental in the sense implied by this framework. Or they may be instrumental, but not farsighted. Perhaps, most important, they may in fact have a single, instrumental goal and be farsighted, but major institutional effects may be unintended. Finally, actors may make rational design choices, but change in broader social environments and/or in the character of these actors themselves [for example, their preferences] may markedly worsen the fit between actors and institutional arrangement after they are chosen. (2004: 108)

The second view of institutional construction – one that accords with my own – is primarily associated with sociological and organizational scholars. It emphasizes limitations on the rationality of actors and, hence, of institutional ‘design’. This view is less easily summarized because it is less taut, more complex and somewhat messy. It shifts emphasis from the regulative to the normative and cultural-cognitive facets of institutions. Institutions do constrain but they also *constitute* – both actors and actions. That is, institutional norms and beliefs serve as the basis for constructing models of certain kinds of individual actors – capitalists, entrepreneurs, politicians – or collective

actors – guilds, churches, corporations – each associated with specific types of actions.

Institutionalized rules, located in the legal, social scientific, customary, linguistic, epistemological, and other ‘cultural’ foundations of society, render the relation between actors and action more socially tautological than causal. Actors enact as much as they act: What they do is inherent in the social definition of the actor itself. (Meyer *et al.*, 1987: 22)

What is retrospectively viewed as ‘rational choice’ is often neither rational nor choice but the enactment of an existing script – or perhaps a selection from alternative scripts – called out by who the actor is (her role or identity) and the demands of the situation.

Thus, in attempting to understand the sources of innovation and social creativity, rather than searching for distinctive individual characteristics, many contemporary students of entrepreneurship instead stress the importance of context. The term ‘entrepreneurship’ conveys too much intentionality and individuality to sit well with dyed-in-the-wool sociological institutionalists, but if understood not as a trait but as a set of activities or efforts that promotes change it can be accommodated into our discourse. Necessarily, actors have a greater capacity for choice and for ‘creativity’ the more complex and contradictory the institutional matrices in which they are involved. The more contradictions, the more materials – alternative structural templates, routines, scripts – which will be available for actors to deploy. This is one of the ways in which institutions act not just to constrain but to empower actors.

Suchman and colleagues (2001) identify three distinct cultural processes – diffusion, recombination and sense-making – associated with entrepreneurship.

Diffusion introduces preexisting models into new fields . . . In this process, entrepreneurship may simply involve imitating the organizational forms of one field when launching new endeavors in another. Recombination goes one step further, constructing novel organizations, but from preexisting standardized components . . . Finally, sensemaking, the most radical form of instructional entrepreneurship, involves the construction of genuinely novel cultural accounts to address unexpected and anomalous events. (2001: 355)

Note that the first two processes involve the enactment of existing models – not the generation of new ones – albeit applied to new circumstances or in new combinations. As Meyer and Rowan (1977: 45) point out: In contemporary societies, ‘the building blocks for organizations [are] littered around the societal landscape; it takes only a little entrepreneurial energy to assemble them into a structure’.

More generally, the empirical research of many scholars supports the conclusion that 'entrepreneurship is a collective activity' (Schoonhoven and Romanelli, 2001: 387). Rather than the efforts of lone individuals, it is more often teams of individuals who work collectively to create new organizations; 'founding teams tend to be formed from among existing networks of colleagues' (p. 386). And such teams are 'even more critical to the founding of new industries or [new] organizational populations' (p. 386). Only collective efforts can combine to create the necessary regulatory, normative and cultural-cognitive supports to sustain a new industry or field (Aldrich and Fiol, 1994).

As is well known, once established, institutional frameworks are likely to persist. As particular patterns – political, economic, industrial – are laid down, later developments are likely to follow along in the same contours in what is termed a 'path dependent' process (David, 2000). Because different societies have developed under varying conditions and at varying rates, each shows a somewhat distinctive complex of institutional arrangements. This 'matrix of institutions' constitutes and defines the 'innovative capabilities of a nation' (Murmman and Tushman, 2001: 181; see also Nelson, 1993).

A debate currently rages among globalization scholars regarding the long-term effects of the processes at work.⁵ Some argue that it produces increasing convergence among nations and organizational forms, such as corporations. Neo-liberal economists and political scientists assert that the competitive forces unleashed by finance capitalism press these structures to adopt the most productive and efficient (hence, similar) arrangements (see McKenzie and Lee, 1991; Ohmae, 1990). And some institutional scholars, such as John Meyer and associates, have described and documented the homogenizing effects of culturally defined frameworks of 'rationalization' that conduce states and companies to embrace at least superficially similar structures (Drori *et al.*, 2006; Meyer and Hannan, 1979).

However, a substantial number of other scholars, including many institutionalists, insist that divergence – the persistence and reinforcement of difference – is both the expected and the observed outcome of globalization. They point to continuing fundamental differences in the socio-economic structure of states and societies (Hall and Soskice, 2001), to continuing differences in the policy culture of states (Dobbin, 1994), to differences in assumptions regarding economic organization and differing 'recipes' for constructing business systems (Orrù, Biggart and Hamilton, 1997; Whitley, 1992) and to differing strategic reactions by various countries and their industries to the 'same' global competitive pressure (Guillén, 2001b). The debate regarding the effects of globalization processes on states and organizations is far from settled – indeed, the processes themselves are

still under way, but it seems fair to conclude that most of the contributors to this volume see more evidence of divergence than convergence among industries and countries.

A final observation. Although the focus of the current volume is on institutional change taking place within countries, it is important that we do not overlook the institution-building activities taking place at the transnational level. During the current era, an ever-increasing number and variety of institutional agents are at work constructing new rules, new norms and new schemas. The types of agents include multi-national consulting organizations; professional associations engaged in efforts to reform and standardize practices within every area of social life – from child care to environmental protections, to quality assurance within companies, to international advocacy groups, such as Advocacy International and Earthfirst; and framers and arbiters of international trade agreements (see Boli and Thomas, 1999; Brunsson and Jacobsson, 2000; Smith, 2005; Young, 1986). These and related actors and processes may be expected to strongly affect economic development processes now under way within individual societies. We embrace the conclusion reached by Djelic and Quack:

From the perspective we adopt that any kind of economic activity is embedded in a wider institutional frame, this is also true of transnational markets in the larger sense of the word. Hence we argue that globalization of economic activity reveals . . . processes of institutionalization in the transnational space. Globalization, we claim, is not only about adaptation and change of national institutions. It is also about institution building in the transnational arena – a space traditionally and typically pictured and described as anomic and adversarial. (2003: 3)

In our time, there is much to look at and much to see by employing an institutional lens, as readers of this volume will discover as they peruse the chapters of this book.

NOTES

1. There exist, of course, quite important precursor studies, such as those of Weber (1968 trans. [1924]), Geertz (1963) and Dore (1973).
2. As Swiss historian and economist Simonde de Sismondi (1837: iv) observed nearly two centuries ago: 'I am convinced that one falls into serious error in wishing always to generalize everything connected with the social sciences. It is on the contrary essential to study human conditions in detail. One must get hold now of a period, now of a country, now of a profession, in order to see clearly what a man is and how institutions act upon him.'
3. For a more extensive discussion of institutional elements, see Scott (2001), Chapters 3 and 4.

4. Giddens (1984: 24) defines institutions as ‘the more enduring features of social life . . . giving “solidity” [to social systems] across time and space’.
5. For thoughtful summary discussions, see Guillén (2001a) and Campbell (2004: chap. 5).

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1. Introduction: Historical transformation challenges established structures

Risto Heiskala and Timo J. Hämäläinen

The world economy is going through a historical transformation (Freeman and Perez, 1988; Freeman and Louca, 2001; Perez, 2002). This transformation has been labeled in various ways such as the ‘rise of information society’, ‘globalization’, the ‘end of organized capitalism’ and the ‘rise of network society’ (Bell, 1980; Lash and Urry, 1987; Held *et al.*, 1999; Castells, 2000). However, even such broad definitions tend to describe only one dimension of the current *systemic transformation* which involves *inter alia*: (1) the rapid development and diffusion of information and communications technologies, (2) the globalization of economic activities through international trade, foreign direct investments and cross-border alliances, (3) the increasing specialization, complexity and knowledge-intensity of production processes, (4) the growing differentiation of demand patterns in consumer and producer markets, and (5) the spread of cooperative network arrangements in economic organization (Hämäläinen, 2003; Hämäläinen and Heiskala, 2004).

The historical paradigm shift has created a major structural adjustment challenge for the industrialized societies. The old socio-economic structures inherited from the postwar decades do not anymore perform very well in the radically changed technological and economic environment. Structural unemployment remains high in many industrialized countries, income and regional differences are rising and economic growth is slowed down by rigid economic and social institutions.

Many countries have responded to the paradigm shift in the world economy by increasing their investments in research and development, education and new infrastructures. However, as important as these policy measures are, they will not be sufficient for securing good economic performance in the coming decades. During historical transformation, socio-economic systems need more comprehensive and systemic innovations and structural renewal. Otherwise the contradictions between the rapidly

changing techno-economic subsystem and the slowly adjusting socio-institutional subsystem of the society will grow too large. A growing mismatch between these two key parts of the society would increasingly hurt economic performance and social welfare (Freeman and Perez, 1988; Hämäläinen, 2003).

Unfortunately, the established innovation research has left policy makers pretty much on their own in responding to the major structural adjustment challenges of the current paradigm shift. Unlike the well-developed literature on technological innovations, research on *social innovation* processes is both scarce and scattered among various academic disciplines (Hämäläinen and Heiskala, 2004; Young Foundation, 2006). This book will provide fresh theoretical, empirical and policy-related insights into the social innovation and structural adjustment processes of modern societies, regions and industrial sectors. Only a deep understanding of such processes will help policy makers to develop effective policies to facilitate systemic adjustment.

Social innovations are often called for when rapid techno-economic change creates new social problems that cannot be fixed with old policy instruments (such as structural unemployment or increasing social and regional disparities). Such calls tend to be motivated by *equity* considerations. This book will argue that social innovations are also needed for good *economic performance* during major structural transformations. Societies, regions, industrial sectors and even firms are *interdependent systems* where narrowly focused or partial innovation only produces growing contradictions, poor productivity, decreasing returns and stagnating incomes. Social innovations in organizations, policies, rules and regulations, as well as in collective norms, values and cognitive frames, are needed to complement the more traditional technological and economic innovations in order to reach systemic synergies, rapid productivity growth, increasing returns and steadily growing incomes.

We believe that it is possible to develop a *general theory of social innovation* which could be applied at various analytical levels because, at their core, all social innovations involve collective learning processes of human communities. Such communities may consist of the citizens of a particular nation or region, employees and managers of an industrial sector, or members of an organization. As a result, we have included various case studies in this book that examine social innovation and structural change processes at different analytical levels: industrial sector, region and the society. Despite their different theoretical approaches and institutional contexts, the empirical similarities between our case studies suggest that the possibility of a general theory should be taken seriously in social sciences. Such a theory would be a real breakthrough in social sciences as well as private and public policy making.

The book has two parts that complement each other. The first part sets the current techno-economic transformation into a longer-term historical perspective and argues that social innovations and (systemic) structural adjustment capacity are crucial for good economic performance during a major paradigm shift in the world economy. Chapters 2 and 3 provide two complementary theoretical frames with which one can analyze social innovation and structural change processes. The explanatory power of these theoretical lenses is demonstrated with a case study on Finnish society, which went through a major structural transformation in the 1980s and 1990s. The first part of the book ends with a chapter that discusses the different ways in which policy makers could facilitate social innovation and structural adjustment processes in their societies.

The second part of the book includes four other case studies from different analytical levels (sector, region, society) and geographical contexts (United States, Baden-Württemberg, Sweden and Ireland). These chapters provide additional theoretical, empirical and policy perspectives to the structural adjustment processes in the current paradigm shift. Taken together, the theoretical analyses and five case studies contained in this book provide new understanding of the dynamic and complex change processes in modern economies and the policy areas and tools with which decision makers may attempt to shape them.

Part I opens with two theoretical chapters. In Chapter 2, Timo Hämmäläinen criticizes the established economic and social theories for being too narrow and static to fully grasp the nature of the current paradigm shift in the world economy. He then sets the current transformation into a historical perspective by presenting his theory of long socio-economic waves. Such waves have characterized the world economy since the first industrial revolution. According to Hämmäläinen, we have now left behind the postwar catching-up phase in the world economy and entered into a new development phase where the most rapidly and comprehensively adjusting societies are likely to leave others behind in economic performance. He then lays out a theory of social innovation processes that emphasizes the importance of collective learning and various types of rigidities in structural adjustment processes.

Social innovations are not smooth and conflict-free processes that benefit all stakeholders equally. In Chapter 3, Risto Heiskala analyzes social innovations from structural and power perspectives. He begins by defining social innovations as those changes in regulations, social norms and shared mental frames that lead to new social practices and improved economic or social performance. Technological, economic and social innovations relate to different levels of the multi-layered typology of social structures that he introduces in the chapter. Heiskala points out that social innovations not

only improve the collective resources of communities but may also lead to their redistribution among different stakeholders. In the latter case, social innovations produce a change in the hegemonic power balance.

In Chapter 4, the collective learning and hegemonic power perspectives of Hämäläinen (Chapter 2) and Heiskala (Chapter 3), respectively, are applied to the case of Finland's structural transformation in the 1980s and 1990s. Finland went through a major structural crisis and renewal process in the 1990s that fundamentally changed the Finnish economy and society. The structural transformation catapulted Finland to the top of the international competitiveness rankings and supported strong economic growth in the late 1990s and early 2000s. At the same time, however, some social groups and regions have been unable to adjust to the rapid change and have become marginalized.

Heiskala and Hämäläinen argue that Finland's rapid and successful structural change was facilitated by an alternative 'mental paradigm' that emerged in the margins of Finnish society in the 1980s to question the established postwar worldview, values, norms and strategies of Finnish society. The new mental paradigm was quickly adopted as the basis for decision making in the early 1990s once the old hegemonic paradigm was discredited by the deep crisis of the economy. The authors argue that collective learning (and unlearning) processes played a central role in the Finnish transformation. However, their case is also a good example of a hegemonic power shift from a hierarchically planned and culturally closed society towards a more open, market-oriented and technology-intensive one.

In Chapter 5, Hämäläinen draws the policy conclusions from his analysis of social innovation processes. He identifies several traditional policy areas (research, media and communications, education, culture, social security) where 'progressive' (unorthodox, future-oriented) policies can facilitate systemic change and structural adjustment processes. However, he also notes that policies in these areas often tend to be rather conservative and support the status quo. Hämäläinen also suggests new policy areas where active intervention can support structural change and renewal. These include: strategic policy intelligence activities (foresight, assessment, benchmarking), experimental pilot projects, facilitation of new inter-personal and inter-organizational networks, shared visioning and strategy processes among interdependent stakeholders and the development of reflective organizational cultures.

In Chapter 6, J.-C. Spender studies the evolution of the American auto industry and its relations with the government. Although he sides with the power-oriented explanations of institutional change presented by Heiskala (Chapter 3), Spender's case study also supports the ideas of Hämäläinen (Chapter 2) on the importance of the established mental

paradigm ('industry recipe') in structural change processes. In particular, he traces the inability of the US auto industry to meet the challenges of increased competition by Japanese firms and tightening environmental regulations to the incapability of US car manufacturers to radically change their established 'industry recipe' – the industry leaders' shared mental paradigm. The historical power of the Big Three in the domestic markets and politics made them ill equipped for the new global competition of the auto industry. Spender claims that the changed economic environment calls for a profound analysis and transformation of the US auto industry's business recipe but he is not very optimistic that it will take place.

The following two chapters analyze structural change processes at the regional level in Baden-Württemberg, Germany, and in the Lake Mälars region, Sweden. However, these regions are also good examples of the national 'business systems' in these two countries. In Chapter 7, Gerd Schienstock introduces a theory of socio-economic development that distinguishes between evolutionary phases of 'path-dependence' and revolutionary phases of 'path creation'. His theory has many similarities with the theory of social innovation presented in Chapter 2. Schienstock applies his theory to explain Baden-Württemberg's economic success during the postwar decades ('path-dependence') and its subsequent economic decline in the 1980s and 1990s once it could not sufficiently renew its socio-economic structures (lack of 'path creation') in the face of growing international competition. The systemic benefits and historical success of the old business system became a structural burden once the more rapidly changing environment demanded more radical and comprehensive changes. Whether the recent attempts by local policy makers to 'create paths' in new industries yield long-term success remains to be seen. The inability of the regional government to provide a guiding vision for the region's transformation makes Schienstock pessimistic.

In Chapter 8 Gunnar Eliasson studies the Lake Mälars region, the industrial heartland of Sweden, that includes the cities of Stockholm, Södertälje, Uppsala and Västerås and has strong presence in three important industrial clusters (ITC, biotech and engineering), or 'competence blocs' as Eliasson prefers to call them. This is another example of an industrially successful and affluent region whose business system has met increasing problems in the present transformation of the world economy. According to Eliasson, the institutions and policies of the Swedish business system have been tailored to the needs of large manufacturing firms, while a successful transformation of the Lake Mälars regional economy would require the establishment of new knowledge-intensive firms which could absorb and utilize the sophisticated technologies and human capital that are being released from the troubled large firms. His 'competence bloc' analysis

suggests that the region lacks the necessary receiver competencies, particularly sophisticated venture capital, that could prevent the released assets from flowing out of the country. Moreover, if such competencies could be built the increased locational attractiveness of the Låke Målar region for sophisticated human capital and investments would increase the regional disparities within Sweden. As a result, he concludes that Sweden needs to attract more foreign investments and human capital in order to strengthen the local competence blocs.

Eliasson's competence bloc analysis is consistent with the argument for the importance of the systemic adjustment capacity in the current transformation (Chapter 2). It emphasizes the fact that advantages in one or two dimensions (for example, research and technology) are not enough to guarantee economic success in times of major structural transformation. He also underlines the mental rigidities of the Swedish public policy makers as the key problem in the development of a new institutional and policy framework that would be more supportive of industrial renewal. Long success creates mental rigidities that may require a deep crisis if they are to be overcome.

In the final chapter of the book, Julia O'Connor analyzes the remarkable success story of Ireland. This story is quite similar to that of Heiskala and Hämäläinen about Finland (Chapter 4). An economic and social crisis in the 1970s and 1980s led to a collective reframing process which produced a new, widely shared consensus that Ireland needed to change towards a more open and competitive society. An important feature of the Irish model is the broad-based policy dialogues through which the successful and widely shared policy visions are developed. They have involved all important social partners: the government, employers, labor unions, farmers and, more recently, the community and voluntary sector. The benefits of such a broad-based policy dialogue and widely shared vision in structural change processes were also underlined in Chapter 5.

O'Connor notes that the Irish government played an active role in building the competitiveness of the Irish economy but maintained a liberal welfare state with relatively low social expenditures despite the economy's openness. Such a growth- and competitiveness-oriented government role seems to promote growth also in other industrialized countries in the new economic environment (see Table 2.5). The old 'Big Tradeoff' between the equity- and efficiency-oriented goals of government policies has become more real in the global economy (Okun, 1975).

Finally, we would like to thank Edita Publishing Oy for allowing us to use some material in this book that they have earlier published in Finnish.

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PART I

Theoretical, empirical and policy perspectives
to structural change

2. Social innovation, structural adjustment and economic performance

Timo J. Hämmäläinen

The world economy is currently undergoing a major techno-economic transformation that is comparable to the first and second industrial revolutions (Freeman and Louca, 2002; Perez, 2002). The rapid advance and diffusion of information and communication technologies (ICTs), global integration of product and financial markets, increasing specialization of firms' value-adding activities, new cooperative and skill-intensive forms of organization as well as the growing differentiation of demand patterns have challenged the old economic and social institutions of industrialized societies (Hämäläinen, 2003a). The rapid techno-economic change requires structural adjustment in socio-economic systems at all levels: in private, public and third sector organizations, industrial sectors and clusters, regional and national economies, and even in supranational institutions.¹ In the turbulent environment, the economic performance of such systems is increasingly determined by their structural adjustment capacity.

SYSTEMIC APPROACH TO STRUCTURAL ADJUSTMENT

Major structural changes are not easy (North, 1990). There are numerous examples of once mighty firms (Hämäläinen and Laitamäki, 1993; Christensen, 1997), industries (Womack *et al.*, 1991; Aoki, 2001), regions (Schienstock, Chapter 7 this volume; Eliasson, Chapter 8 this volume) and economies (Harrison and Huntington, 2001) that failed to change their strategies and structures to match the rapidly evolving environment. The most important barriers to change are *mental*: rigid cognitive frames, beliefs and assumptions, values and behavioral norms (Harrison and Huntington, 2001; Hämäläinen, 2003a). Well-established mental structures may prevent decision makers from recognizing the structural problems

altogether. This leads to ‘normal’ responses and policies that have worked well in the past but may not anymore work in the changed environment.

Recently policy makers in many countries have responded to growing structural problems and declining growth rates in their economies with traditional macroeconomic policies: running large fiscal deficits, lowering interest rates, taking various measures to weaken their currency in the foreign exchange markets and, in some countries, supporting comprehensive incomes policy agreements. These macro-policies have not been very effective in stimulating faster growth because they do not influence the underlying structural problems of mature industrial economies. For example, in Japan, massive increases in public spending and zero interest rates in the 1990s failed to lift the economy from a decade-long slump. Instead, the Japanese economy suffered from a prolonged deflation and highly indebted public sector. Similarly in Europe, the low interest rates and large public sector deficits of recent years have not prevented the stagnation of economic growth in the large European economies.

The poor results of Keynesian stimulus policies have led economic analysts to search for new explanations and policy tools for the slow growth of industrialized economies. As a result, the debate about ‘structural rigidities’, which was active in the late 1970s and 1980s (remember ‘Eurosclerosis’?), has experienced a renaissance. If boosting demand within the established structures is not effective, the problem must lie in the structures themselves.

The economic approach to structural adjustment challenges stems from a neoclassical, ‘efficient-markets’ perspective. Neoclassical economists view structural problems primarily as rigidities and inefficiencies in *labor, product and financial markets*. The rapidly changing environment demands efficient reallocation of productive resources from declining firms, sectors, regions and nations to the rising and more productive ones. Rigid labor, product and financial markets cannot perform such reallocation processes efficiently.

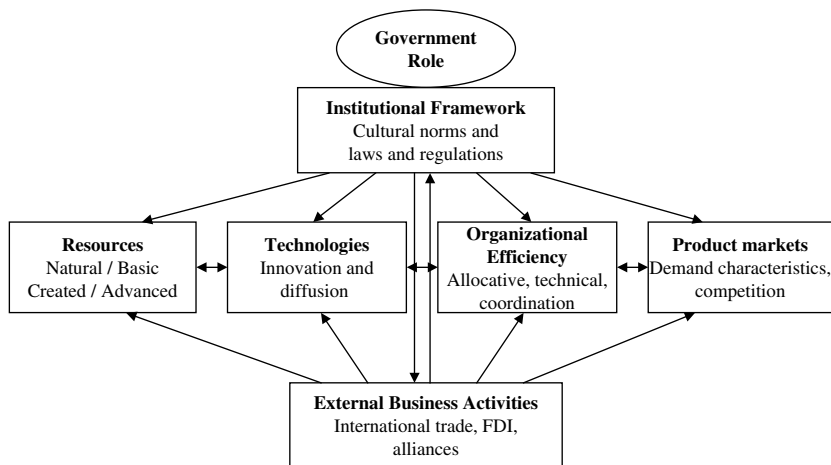
This is an important but rather narrow perspective to the structural adjustment challenges of advanced economies. First, efficient markets are an important part of dynamic economies but they are not the only organizational arrangement that influences the structural renewal of industrialized societies. Governments, third sector organizations, cooperative networks, associations and large private sector organizations also make important resource (re)allocation decisions. Moreover, in recent decades, their role has become more important due to the pervasiveness of market failures in modern economies (Stiglitz, 1989; Hämäläinen, 2003a).

Second, by focusing on *allocation* efficiency the analysis of structural adjustment problems may overlook two other types of efficiency – *technical* and *coordination* efficiencies – which are increasingly important in wealthy,

highly specialized and complex modern economies. In perfect markets, organizations are assumed to be technically efficient – that is to operate at maximum organizational efficiency – and the price mechanism is presumed to coordinate economic activities efficiently. If one rejects the assumption of perfect markets, improvements in technical and coordination efficiencies become a major goal for economic decision makers in structural adjustment processes. Management scholars have shown that improvements in technical and coordination efficiencies are an important determinant of the overall productivity growth (see for example Dertouzos *et al.*, 1990; Womack *et al.*, 1991).

Third, in a more systemic perspective, the analysis of structural adjustment challenges must be extended beyond organizational efficiency questions. In my earlier study, I have identified seven interdependent determinants of competitiveness and growth in economic systems that are currently undergoing a major transformation (Hämäläinen, 2003a). These are the system's: (1) productive resources, (2) technologies, (3) organizational arrangements, (4) product market characteristics, (5) external business activities and (6) institutional framework and (7) the role of government (see Figure 2.1). Each of these competitiveness and growth drivers involves structural adjustment challenges and rigidities.

Instead of natural resources, cheap labor and physical investments, the competitiveness and growth of socio-economic systems depends increasingly on sophisticated, created assets such as knowledge, skills and advanced



Source: Hämäläinen (2003a: 26).

Figure 2.1 Drivers of systemic competitiveness and growth

infrastructure. Information and communication technologies form the new technological paradigm of the world economy. The capacity to develop and, particularly, to use these technologies throughout the system is an important determinant of economic performance in the long term. Organizational efficiency is increasingly achieved through cooperative network relationships between producers, their customers, suppliers and the key public sector organizations in the environment. Network arrangements are quite different from the large hierarchical bureaucracies of the 20th century. Product markets have also experienced a major transformation in recent years from rather stable, domestically oriented mass markets to highly differentiated, internationalized, competitive and dynamic product markets. In a similar way, foreign direct investments and cross-border strategic alliances have become increasingly important forms of international business activity relative to trade, particularly that based on traditional comparative advantages.

The learning and adjustment challenge of the current 'techno-economic paradigm shift' goes well beyond the reallocation of labor, products and financial capital. New productive resources must be created and old ones discarded, new technologies must be developed and adopted to replace the outdated ones, new organizational routines and arrangements need to be learnt and established while the old routines and structures are unlearned and dismantled, new and more sophisticated demand patterns must be created to foster innovation, and so forth. Moreover, the structural adjustment challenge goes beyond the techno-economic paradigm. The institutions and policies of the system also need to change to match the rapidly changing environment (Freeman and Perez, 1988; Hämäläinen, 2003a). The current transformation of the world economy requires structural changes in all parts of the interdependent socio-economic system.

CHALLENGE TO ESTABLISHED SOCIAL THEORIES

Besides old socio-economic structures, the rapidly changing environment challenges the established social theories that support them (Schön, 1973). It has pushed many fields of social sciences into a paradigm crisis (see for example Heilbroner and Milberg, 1997; Beck, 1998; Fogel, 1999).

Neoclassical economists have paid little attention to the *change and adjustment processes* through which competitive and well-functioning structures are, or are not, achieved. The same applies to institutional economists and 'new institutionalists' in management science who have focused their research on how established institutions affect economic and organizational behavior, but not on how such institutions themselves change (Scott, 2001; North, 2003). Even sociologists have neglected the complex

and multi-level change processes in modern societies. Instead, they have built static transformation models and typologies that compare the 'new era' to the 'old one' (for example, post-modern vs modern; information society vs industrial society) (Kerkelä, 2004).

The current transformation of the world economy has not left the economic growth theories intact, either. Their narrow, static and institution-free approach faces many theoretical and empirical problems in the current environment of systemic, interdependent and complex change (Hämäläinen, 2003b). The 'catching up' argument of the neoclassical growth theory does not work anymore in the changed environment (OECD, 2003). This argument suggests that, over time, poor countries would catch up with the wealthier ones because (a) they can learn from the leading countries' more advanced production methods and technologies and (b) their initial scarcity of capital leads to higher returns on investment than those available in advanced nations.

The catching up theory worked rather well among the industrialized economies after the Second World War when they were catching up with the United States (Maddison, 1995). However, even then, the empirical evidence supported the theory only among the relatively wealthy countries; poor developing countries were falling further behind (Barro and Sala-I-Martin, 1995). Moreover, in the first part of the 20th century, the United States outperformed the other industrialized countries in economic growth. Table 2.1 presents the relative GDP per capita growth rates of various industrialized countries during the early and late parts of the last century. In a similar way, the United Kingdom left the other industrialized countries behind in economic growth after the First Industrial Revolution in the early 19th century, only to be caught up by Germany, the United States and other industrialized countries during the last quarter of the same century (Freeman, 1995).

Today, the world economy is entering into a new 'forging ahead' phase in which the leading countries of the world economy are likely to leave the slow-adjusting societies behind in terms of economic growth. The beginning of the new era is already reflected in economic statistics. Table 2.2 reveals that the United States has already for several years been leaving the other developed countries behind in terms of GDP per capita growth. The bold figures in the table show the years in which particular countries reached their highest GDP per capita level relative to that of the US. Many old industrialized countries had begun to lose ground to the US by the early 1980s. For example, France and Sweden were closest to the level of the US living standards in 1982. Another big watershed was the turn of the 1990s when countries such as Italy, Japan and Germany began to fall in terms of relative GDP per capita. Only a very few industrialized countries could match the economic performance of the US in the late 1990s. Ireland was

Table 2.1 Rates per capita GDP growth relative to that of the US

Country	1913–50	1950–89
Austria	-1.4	1.9
Belgium	-0.9	0.9
Denmark	-0.1	0.6
Finland	0.3	1.7
France	-0.4	1.2
Germany	-0.8	1.7
Italy	-0.7	2.0
Netherlands	-0.5	0.6
Norway	0.6	1.2
Sweden	0.6	0.5
United Kingdom	-0.7	0.3
Australia	-0.8	0.2
Canada	-0.1	0.7
Czechoslovakia	-0.2	0.4
Greece	-1.0	2.3
Hungary	-0.8	0.6
Ireland	-0.8	1.0
Portugal	-0.8	2.0
Spain	-1.3	1.8
Soviet Union	0.7	0.6
Average	-0.39	1.11

Source: Maddison (1995: 98).

a notable exception in that its growth figures have been truly outstanding since the late 1980s. These historical examples suggest that catching up is not a general phenomenon but one related to a particular phase in long socio-economic cycles. Hence, there is clearly a need for a more sophisticated theory of catching up and forging ahead during long socio-economic waves. We will introduce such a theory in the next section.

Social scientists have left policy makers on their own to analyze structural change processes and to develop policy measures that would facilitate such processes in the face of strong special interest groups and widespread social inertia. In order to meet that challenge, the policy makers would need to have clear answers to the following questions:

- How do economic and social structures change?
- How do structural changes influence economic performance?
- How could structural change processes be facilitated by proactive policies?

This book will examine these questions from theoretical, historical and empirical perspectives. We will next introduce the relevant parts of the ‘Double-Kondratiev framework’ that puts our analysis of structural change processes into a longer-term historical perspective (see Hämäläinen, 2003a). At the same time, it reveals the crucial importance of structural and institutional adjustment capacity to economic performance during major techno-economic transformations.

CATCHING UP AND FORGING AHEAD IN THE LONG WAVES²

The Double-Kondratiev theory builds on the seminal works of Kondratiev (1925) and Schumpeter (1939) as well as the more recent studies by Freeman and Perez (1988) and other neo-Smithian, neo-Marxian and neo-Schumpeterian scholars. These theories suggest that socio-economic systems alternate between long periods of *evolutionary* and *revolutionary* change. The evolutionary periods are characterized by relatively stable and synergistic relationships among the key components of the socio-economic system, whereas the revolutionary periods are characterized by rapid technological and economic change and increasing tensions and contradictions within the system, and between the system and its environment.

The long wave research that follows in the footsteps of Kondratiev and Schumpeter assumes that major technological breakthroughs produce wholesale changes in the society’s organizational and institutional structures every 50–60 years. However, at a closer look, the empirical evidence does not support this argument. Organizational and institutional paradigms, such as the bureaucratic, hierarchical organization or the institutions of the welfare state, seem to develop and last much longer than one Kondratiev wave. In fact, their duration seems to be about two full Kondratiev waves. We have termed these two consecutive waves as ‘Double-Kondratievs’ (Table 2.3; Hämäläinen, 2003a: 70–73). The first leg of the Double-Kondratiev has historically been associated with new production technologies (for example steam engine, spinning jenny, electric machinery, industrial chemicals, information and communication technologies), while the core technologies of the second Kondratiev have been more market- or distribution-oriented (railroads, steamships, telegraph, jet engine, container ships). We have termed these two legs of the Double-Kondratiev as ‘extensive’ and ‘intensive’ Kondratievs, respectively. The new production-related technologies have responded to the accumulated problems of the old production paradigm, whereas the market-expanding innovations have solved the oversupply problems created by the new production technologies

Table 2.2 GDP per capita relative to the United States (= 100)

Country	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Australia	81.10	81.12	80.56	81.17	77.97	76.80	75.34	77.39	78.49	78.84
Austria	74.70	72.07	76.94	76.57	71.49	71.00	71.33	70.78	72.64	73.22
Belgium	75.68	72.42	75.17	72.82	69.77	69.67	70.79	71.21	73.00	74.16
Canada	90.66	91.97	89.82	88.70	87.14	88.01	86.60	88.07	89.40	88.32
Denmark	83.84	79.72	85.69	84.72	82.01	83.16	86.16	83.74	83.57	81.50
Finland	71.80	71.26	76.39	75.11	72.73	72.57	72.93	74.46	76.34	78.40
France	75.71	74.10	78.22	77.26	73.00	71.82	72.27	73.44	74.63	74.32
Germany	73.75	71.79	74.64	74.01	70.94	70.90	72.76	72.51	72.56	72.46
Greece	53.88	52.35	52.69	50.01	46.92	46.49	46.06	43.95	44.57	44.56
Ireland	45.71	45.67	49.72	48.57	47.09	47.38	46.99	48.13	49.42	51.90
Italy	69.12	67.78	71.61	70.40	67.18	67.50	69.24	69.77	71.62	71.60
Japan	73.16	73.98	78.72	77.27	74.47	75.60	76.64	77.78	80.20	81.69
Netherlands	76.78	74.96	77.35	75.53	72.77	72.79	72.60	71.69	71.41	72.55
New Zealand	64.61	65.27	70.68	69.28	66.33	64.94	66.22	65.60	64.10	62.71
Norway	89.39	89.40	92.46	91.79	91.03	91.69	85.46	83.35	79.43	78.75
Portugal	39.45	38.21	40.58	39.35	36.16	36.98	38.73	39.92	41.32	43.35
Spain	52.97	50.80	53.32	52.02	49.27	48.63	49.73	50.99	51.98	52.81
Sweden	81.51	79.05	82.39	81.25	80.19	79.76	80.98	80.93	80.47	80.57
Switzerland	97.44	96.24	100.01	97.30	93.16	92.75	94.91	93.25	91.64	92.75
Turkey	20.32	20.99	21.76	21.65	20.97	20.91	21.47	22.50	21.76	20.48
United Kingdom	67.41	65.19	69.34	69.49	66.02	66.80	66.95	68.18	69.69	69.30
USA	100	100	100	100	100	100	100	100	100	100

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Watershed 1

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Watershed 2

Source: Penn World Tables 6.1.

and organizations. The expansion of markets has also been supported by socio-institutional innovations such as customs unions, free-trade agreements and the welfare state.

Historically, there has been a synergistic combination or 'match' between the technological and organizational paradigms on the one hand and the institutional paradigm on the other only during intensive Kondratievs (late 19th century, postwar decades in the 20th century). These synergistic periods have been characterized by rapid and stable socio-economic development. On the other hand, the extensive Kondratievs have been

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Decline from top
76.14	76.67	76.25	76.75	76.91	78.05	78.22	77.96	77.57	78.11	76.35	-1.70
75.24	78.69	77.32	75.31	74.35	74.33	73.30	71.40	71.41	70.71	69.73	-8.97
75.60	77.57	77.36	75.04	74.11	74.21	72.28	71.78	71.23	70.45	70.21	-7.36
85.43	83.04	80.16	79.25	79.56	80.48	79.09	79.27	77.39	78.52	80.66	-11.31
81.75	83.83	82.93	80.85	82.23	82.88	82.51	82.06	81.27	80.02	80.12	-6.03
77.04	72.02	66.93	64.07	64.45	66.38	66.76	67.70	68.93	67.99	68.55	-9.85
75.65	76.90	75.12	72.42	71.23	70.95	69.29	67.82	67.92	67.38	66.30	-11.92
73.67	78.13	77.72	75.22	74.27	74.12	72.34	70.26	69.61	68.62	67.15	-10.98
44.15	46.43	45.35	43.83	43.41	43.80	43.68	43.74	43.73	43.75	43.68	-10.20
55.14	56.32	55.98	57.04	57.35	60.87	63.35	67.08	69.61	73.10	76.36	0.00
73.10	76.32	74.92	71.76	70.51	70.92	70.13	68.73	68.00	66.78	64.23	-12.10
84.47	89.29	87.19	85.57	83.11	82.33	82.37	80.32	76.52	74.07	72.78	-16.51
74.69	77.41	75.81	74.21	73.19	73.87	73.41	73.33	73.37	72.60	72.32	-5.09
60.69	58.57	57.46	59.99	60.75	61.21	60.65	58.27	56.11	56.36	56.17	-14.51
79.86	83.35	80.93	81.31	81.04	82.51	85.42	86.42	81.65	81.90	90.00	-2.46
45.24	48.59	48.93	47.17	46.34	46.27	46.32	46.33	47.05	48.34	47.98	-0.95
54.44	57.04	55.98	53.69	52.94	57.33	53.21	53.29	53.77	54.00	53.45	-3.88
80.08	79.18	75.34	71.61	71.76	73.27	71.47	69.88	69.73	69.61	69.14	-13.25
95.73	96.00	91.55	89.41	87.45	86.43	83.79	81.65	81.57	80.52	79.20	-20.81
22.05	22.26	22.62	24.00	21.46	21.81	22.01	22.76	22.37	20.68	20.81	-3.19
69.25	69.58	68.37	68.58	68.84	68.79	68.73	69.10	69.27	68.57	68.09	-1.60
100	100	100	100	100	100	100	100	100	100	100	

>=====<
Watershed 2

characterized by an increasing ‘mismatch’ between the new technological and organizational paradigms and the old socio-institutional framework. These turbulent periods have been characterized by rapid structural change, increasing social inequalities, political conflicts and even revolutions and wars.

The catching up phenomenon has historically been related to the mature (intensive) stages of Double-Kondratievs. At this stage, both the advance of the techno-economic frontier begins to slow down and the imitation of best practice becomes easier. The economic growth of the leading countries is slowed down by the fact that radical innovations become increasingly difficult to make along the established technological trajectories and that these countries are the first to experience the accumulating problems of

Table 2.3 *Main characteristics of three Double-Kondratiev waves*

	First Double-Kondratiev			Second Double-Kondratiev			Third Double-Kondratiev
	Extensive 1787–1842	Intensive 1843–97	Extensive 1898–1950	Intensive 1951–89	Extensive 1990–		
1. Carrier branches	Textiles	Railroad equipment, steamships	Electrical engineering, chemicals	Consumer durables, automobiles, aircraft, petrochemicals	Computers, telecoms, Internet, traveling, media, entertainment		Digital communication networks
2. Infrastructure	Trunk canals, turnpike roads	Railroads, shipping	Electrical supply and distribution	Highways, airports	Digital		
3. Key resources	Cotton, unskilled labor	Coal (transport costs)	Steel	Energy	Knowledge and information		
4. Energy source	Water	Coal	Electricity, oil	Oil	Nuclear and solar energy		
5. Major technological or market-expanding innovations	Steam engine, spinning jenny	Railroads, steamships, telegraph, German customs union, colonialism	Electric machinery, industrial chemicals, internal combustion engine	Jet engine	Information and communications technologies		
6. Organizational arrangements	Factory, small firms, market exchanges	Same as before	Large vertically integrated corporate hierarchies	Same as before	Networks of large and small firms, close horizontal cooperation		

among related firms and organizational units	Self-actualization needs drive socio-economic development in developed countries/ countries/ transaction and coordination costs and needs dominate business demand	Material needs continue to dominate in developed countries, self-actualization needs strengthen in the late 1960s (individualism, socio-political activism, entertainment etc.) increasing coordination problems and transaction-intensity of large hierarchies creates demand for the new ICTs	Material needs and 'conspicuous consumption' spread to the middle class/ industrial demand continues to rise	Material (social esteem) needs grow among the new upper class/industrial demand for materials and investment goods rise	Basic consumption (physiological) needs/emerging industrial demand	7. Dominant market needs (consumption/ industrial)
	USA . . . ??	USA	USA	Great Britain Germany, USA	Great Britain France, Belgium	8. Leading countries 9. First contenders
	Japan, Germany . ??	Germany, Great Britain				

Table 2.3 (continued)

	First Double-Kondratiev	Second Double-Kondratiev	Third Double-Kondratiev
	Extensive 1787–1842	Extensive 1898–1950	Extensive 1990–
10. Government role	Property rights regime, internal and external security, small public works	Same as before plus basic infra-structure (public utilities) and improved social security	Reduced government role in production of goods and services, reduced income transfers, active competition policy, reduction of endemic market failures (externalities, uncertainty etc.)
	Same as before plus early social legislation and pollution control	Same as before plus state regulation of markets, increasingly powerful labor unions, limited supranational institutions: then, increasing problems with	Comprehensive 'regulatory reform' which results in growing private and third sector regulation, and supranational regulation
11. Institutional framework	Dissolution of feudal guilds, monopolies and other trade restrictions, <i>laissez-faire</i> emerges	Growing state intervention in markets, de-stabilization of international financial and trade systems	First, growing state regulation of markets, increasingly powerful labor unions, limited supranational institutions: then, increasing problems with
	High noon of <i>laissez-faire</i> , emergence of competition policy		

<p>outdated business regulation, insufficient supranational regulation and intellectual property rights</p>				<p>12. Major social upheavals</p>	<p>French revolution, Napoleonic wars, Spanish, Portuguese and Italian revolutions, South American independence</p>	<p>First World War, Russian revolution, rise of communism and fascism, Great Depression, Second World War</p>	<p>??</p>
				<p>13. Established paradigm in economics</p>	<p>Emergence of classical economics</p>	<p>Keynesian revolution, emergence of macroeconomics as a separate field</p>	<p>High noon of Keynesian macroeconomics, rise of monetarism, inflation, increasing contradictions, emergence of competing schools</p>

Source: Hämmäläinen (2003a: 72–3), adapted from Freeman and Perez (1988).

a mature techno-economic paradigm (shortages of key resources, increasing organizational problems, changing patterns of demand, institutional rigidities and so on).³ At the same time the core production technologies and methods of the old paradigm become increasingly mature and standardized and, hence, easier to transfer across borders and to imitate. The increasing contradictions within the socio-economic system make this a period of decreasing returns in socio-economic development.

Once the techno-economic paradigm shift begins, the catching-up process is further facilitated by the fact that the leading economies have heavy investments in the structures of the old paradigm (established infrastructure, production equipment, personal skills, core technologies, organizational arrangements and market structures). These 'sunk costs' slow down the diffusion of the new paradigm because individuals and organizations are unwilling to 'cannibalize' their old assets by shifting to the new production paradigm (Christensen, 1997). The resistance to change can also be increased by the leading societies' long success with the old socio-economic paradigm that creates mental inertia and provides financial buffers against the accumulating problems of the old paradigm. As a result, these societies can easily become 'locked into' the old paradigm (see also Freeman, 1995; Schienstock, 1999). Only strong incentives for change, such as highly competitive markets or an economic crisis, can break such mental rigidities for structural change. We will analyze the adjustment rigidities more carefully in the next section.

As a result, a techno-economic paradigm shift gives the more flexible catching-up economies a 'window of opportunity' to pass by and forge ahead of the old leading economies (Abramovitz, 1986; Perez and Soete, 1988). The most advanced catching-up economies naturally have the best chance of becoming the leaders of the new paradigm. Societies further behind the techno-economic frontier will have greater difficulties in catching up to the new paradigm.

During and after a major paradigm shift in the world economy, the competitiveness and growth of national economies depend upon their particular socio-economic *starting point* – their existing resources, technologies, organizational arrangements, product market structures, external business activities, institutions and government role – and their *adjustment capacity* relative to the demands of the changing techno-economic and socio-institutional environment (Abramovitz, 1995; Lipsey, 1997).

A good starting point and adjustment capacity give a society a clear advantage in socio-economic development due to the synergies and 'increasing returns' that result from a quick and balanced adjustment to the changing demands of the environment.⁴ *The increasing returns to adjustment stem from the systemic interdependencies, complementarities, synergies,*

positive externalities and feedback loops within the new socio-economic paradigm (Arthur, 1994; Freeman, 1995; Lipsey, 1997; Hämmäläinen, 2003a). Following the systemic competitiveness framework (Figure 2.1), the increasing returns stem from the rapid and complementary:

- a. Upgrading of productive resources and infrastructure
 - investment in specialized knowledge and skills in selected fields
 - development of advanced infrastructure in those sectors
- b. Development and diffusion of new technologies
 - research and development activities in specific fields
 - diffusion of new generic technologies across sectors, regions and organizations
- c. Creation of organizational arrangements that allow:
 - reallocation of productive resources (allocative efficiency)
 - increasing specialization, learning and scale economies (technical efficiency)
 - efficient coordination of increasingly complex production processes and the growing externalities related to them (coordination efficiency, for example clustering of complementary activities and industries)
- d. Development of sophisticated demand and competitive rivalry in product markets
 - intensive interaction between lead users and product developers
 - rapid learning of consumers about new products and consumption opportunities
 - network externalities among consumers of the same or complementary products
 - active new entrepreneurship in rising sectors and entry of new competitors in existing ones
- e. Development of new external business contacts and activities that take advantage of the economy's changing techno-economic environment
 - opening and development of new geographical markets or sources of supply
 - establishment of foreign production facilities and cooperative ventures
- f. Creation of new institutional norms, regulations and public policies that match the changing techno-economic environment and hence:
 - support the upgrading of the key competitiveness and growth factors (a–e)
 - reduce the amount of inefficiently allocated or unemployed resources, or support their income, and thus decrease income differences and social inequalities

- decrease the uncertainty of economic agents related to unsolved structural problems and hence
- improve the incentives for consumption, investment and entrepreneurship, and
- facilitate the coordination of economic activities.

The institutional and policy-related innovations not only facilitate the improvement of the supply side determinants of economic performance, they also strengthen the aggregate demand in the economy. Owing to adjustment rigidities and changing resource demands techno-economic paradigm shifts tend to be associated with lots of idle and poorly allocated resources and growing income differences. These problems are important challenges for policy entrepreneurs. As a result, new institutions and policies are often developed that improve the allocation of resources and reduce income differences. The decreasing income differences support aggregate demand by increasing the pay of low-income individuals who have the highest propensity to consume. At the same time, income transfers support structural change processes by compensating the inevitable losers of such processes (Chang and Rowthorn, 1995).

Once the institutional and structural reforms are carried out in practice, the general uncertainty about their timing and nature dissolves. The reduced uncertainty will make consumers and investors more confident and willing to spend. Regulatory reform efforts may also support aggregate demand by creating new demand in established product markets (for example through deregulation of telecommunications markets) and by developing a regulatory framework for totally new markets (for example electronic commerce).

The societies that are unable to adjust in the early stages of the extensive Kondratiev, or only adjust in a partial or unbalanced way, will not gain the increasing returns of the new paradigm and begin to fall behind the leading countries. At the same time, the increasing returns associated with the rapidly advancing techno-economic frontier make catching-up difficult to late-adjusting societies. The new resources, technologies and organizational innovations initially emerge in non-standardized forms and are difficult to transfer, especially across borders. As a consequence, the new leaders of the world economy tend to forge ahead of the other advanced economies after major technological revolutions.⁵

Finally, the same factors that produce increasing returns during and after major paradigm shifts – investments in specialized skills, knowledge, technology and infrastructure, cumulative learning of producers and consumers, production and consumption externalities, cooperative networks, good match between the production system and the institutional and policy framework – also make *mature* socio-economic systems increasingly rigid.

Thus well-established giants of industry or leading countries of a techno-economic paradigm which have enjoyed the increasing returns regime for a prolonged period of time tend to have serious adjustment problems once their environment goes through a major transformation (Christensen, 1997; Hämäläinen, 2003a). They become prisoners of their own success.

STRUCTURAL COMPETITIVENESS AND ECONOMIC GROWTH

We can study the impact of structural adjustment capacity on economic growth empirically by using the OECD countries' structural competitiveness indicators as explanatory variables. In order to measure adjustment capacity, the competitiveness indicators are chosen to represent the new techno-economic paradigm of the world economy, not the old mass production–mass consumption paradigm of the post-Second World War decades (Freeman and Perez, 1988; Hämäläinen, 2003a). For example, the competitiveness of productive resources is not measured by physical investments but rather by intangible assets. The availability of highly skilled manpower is more important to competitiveness in advanced economies than unit labor costs, and so forth. This means that *the socio-economic structures of a highly competitive society are closer to the requirements of the new techno-economic environment than those of a less competitive society*. In the following analysis, we will derive the competitiveness indicators from our seven-factor competitiveness framework introduced in Figure 2.1.

We have used the framework before to study the relationship between structural competitiveness and economic growth (Hämäläinen, 2003a). In that study, we could explain the economic growth of the OECD countries very well from the early 1980s to the mid-1990s. Each of the seven competitiveness factors was broken into several sub-indices that measured different dimensions of that factor. The empirical results suggested that a major transformation took place in the world economy between the 1980s and 1990s. Another interesting result was the fact that the *role of government* in the economy had a strong impact on economic growth both in the 1980s and in the 1990s. Economies grew faster in societies that allocated relatively more public resources to activities that directly supported economic competitiveness and growth than to activities that were motivated by social equity oriented goals. This result suggests that the 'Big Tradeoff' between economic efficiency and equity, first suggested by Arthur Okun in the mid-1970s (Okun, 1975), has become a major policy challenge to industrialized societies due to the increased rivalry in the world economy. The recent growth studies of the OECD support this argument. According to

the OECD, governments that emphasize income transfers over public investments in their budgets may end up with lower standards of living (OECD, 2003).

Table 2.4 extends the competitiveness data set of the previous study to the early 2000s. The structural competitiveness indicators of the table have been calculated as the arithmetic average of the values of seven competitiveness factors for each country and period. The values of the competitiveness factors have been normalized to allow their comparison and combination. This means that the absolute value of the structural competitiveness indicator for each country has no specific meaning over time, only its relative level compared to other countries during a given period. The higher the structural competitiveness indicator is relative to the other countries, the more competitive the country is. A closer look at Table 2.4 reveals the long decline of Germany's and Japan's structural competitiveness. Another big industrialized country, Italy, was not able to improve its poor structural competitiveness during the 1980s and 1990s. On the other hand, Ireland has consistently been able to improve its structural competitiveness in the changing techno-economic environment during the past 15 years. Finland was another 'competitiveness miracle' of the 1990s. Its structural competitiveness had steadily deteriorated in the 1980s. However, as a result of the deep economic crisis in the early 1990s, the structural competitiveness of Finland jumped to the top of the OECD countries where it has remained ever since.

The structural adjustment capacity of societies will, over time, influence their relative structural competitiveness and economic growth rates. In our recent study, changes in relative structural competitiveness were strongly related ($r = 0.58$) to changes in relative GDP per capita levels during the 1990s (Hämäläinen and Heiskala, 2004). The relationship between deteriorating structural competitiveness and declining relative per capita income has been particularly strong for France, Germany and Japan (compare Tables 2.4 and 2.2). On the other hand, rapid structural adjustment and improving competitiveness seem to have slowed down the growth of the GDP per capita gap with the United States in many countries. Again here, Ireland stands out from the rest of the OECD countries.

Finally, we use statistical regression analysis to examine the impact of structural competitiveness on economic growth (GDP growth).⁶ Our independent variables include the seven competitiveness factors discussed above (productive resources, technology, organizational efficiency, sophistication of product markets, external business activities, institutional framework and government role), a catching-up variable (starting GDP/capita) and two macroeconomic control variables (inflation and long-term interest rates) (see Hämäläinen, 2003a). The data includes

22 OECD countries in six different time periods: in the early and late 1980s, in the early, mid- and late 1990s, and in the early 2000s ($n = 22 \times 6 = 132$). The data on growth, inflation and interest rates and the catching-up variable was obtained mainly from the OECD databases. These were augmented with some EU statistics.

The first regression run with the whole data set (early 1980s through early 2000s) did not yield very strong results. This could be expected on the basis of our earlier empirical study which revealed a major structural change in the world economy between the 1980s and 1990s (Hämäläinen, 2003a). Estimating separate regression models for each period would yield much better results.

The next regression run with the 1980s data gave stronger results. These are reported in Table 2.5 (Model 1). This model explains half of the economic growth in the OECD countries in the 1980s ($n = 40$, $R^2 = 0.51$). Four growth factors were statistically significant in the 1980s: *sophistication of product markets*, *catching-up variable*, *inflation* and *long-term interest rates*. These results suggest that the world economy was in a mature state of the postwar production paradigm in the 1980s: macroeconomic factors and catching-up benefits were still more important to growth than most structural competitiveness factors. Some of the competitiveness factors also had an unexpected negative sign. The reason for this could be the relatively strong correlations among the key competitiveness variables (resources, technologies, organizational efficiency and sophistication of product markets) (Neter *et al.*, 1990: 408). Moreover, the unexpected positive sign of long-term interest rates could reflect an inverse correlation from growth to interest rates.

The paradigm shift in the world economy had a strong impact on the structures of national economies in the early 1990s. This rapid structural change reduced the explanatory power of a model that was estimated with the data from the early 1990s to the early 2000s ($n = 87$, $R^2 = 0.23$). The statistical significance of the model improves if the data from the early 1990s is left out from the regression and we focus on the period from the mid-1990s to the early 2000s (Table 2.5, Model 2). Since the mid-1990s, there are four statistically significant determinants of economic growth: *productive resources*, *external business activities*, *institutional framework* and *the role of government*. These results reflect the key challenges of the new techno-economic paradigm, particularly the need to internationalize business activities⁷ and renew established socio-institutional structures. As we saw above, these factors were not significant to economic growth in the 1980s. The interpretation of the results concerning productive resources, technologies, organizational efficiency and product markets is, again, difficult due to autocorrelation problems.

Table 2.4 Structural competitiveness of the OECD countries between the early 1980s and the early 2000s

Competitiveness ranking:	Early 1980s	Late 1980s	Early 1990s	Mid-1990s	Late 1990s	Early 2000s
1.	Canada	0.62 USA	1.27 Japan	0.82 Sweden	0.85 USA	1.04 USA
2.	Switzerland	0.46 Switzerland	1.19 USA	0.69 Finland	0.71 Finland	0.87 Finland
3.	Australia	0.43 Japan	0.7 Sweden	0.47 USA	0.62 Switzerland	0.73 Canada
4.	USA	0.42 Germany	0.65 Netherlands	0.45 Canada	0.59 Netherlands	0.55 Ireland
5.	Sweden	0.41 United Kingdom	0.62 Canada	0.42 Switzerland	0.56 Canada	0.53 Sweden
6.	Japan	0.23 Sweden	0.6 Switzerland	0.38 United Kingdom	0.5 Denmark	0.43 Switzerland
7.	Germany	0.2 Canada	0.52 Denmark	0.34 Japan	0.44 Australia	0.41 Netherlands
8.	Netherlands	0.18 Netherlands	0.52 Germany	0.29 Norway	0.41 Sweden	0.37 Australia
9.	Finland	0.15 Belgium	0.14 United Kingdom	0.27 Denmark	0.34 Ireland	0.30 Denmark
10.	United Kingdom	0.11 Australia	0.08 New Zealand	0.2 Netherlands	0.32 Norway	0.25 Austria
11.	New Zealand	0.1 France	0.01 Belgium	0.16 Australia	0.22 Japan	0.24 Belgium
12.	France	0.01 Finland	-0.02 Australia	-0.04 New Zealand	0.21 United Kingdom	0.23 United Kingdom
13.	Norway	0.01 Denmark	-0.06 Norway	-0.05 Germany	0.1 Belgium	0.11 Japan
14.	Austria	-0.01 Austria	-0.12 Finland	-0.08 France	0.01 Germany	0.06 New Zealand
15.	Denmark	-0.02 New Zealand	-0.17 Austria	-0.12 Belgium	-0.02 New Zealand	-0.11 Germany
16.	Belgium	-0.06 Norway	-0.24 France	-0.13 Ireland	-0.04 Austria	-0.27 Norway

17.	Greece	-0.27	Ireland	-0.3	Ireland	-0.18	Austria	-0.09	France	-0.37	France	-0.41
18.	Ireland	-0.27	Portugal	-0.79	Portugal	-0.63	Portugal	-0.75	Portugal	-0.45	Spain	-0.70
19.	Spain	-0.38	Italy	-0.8	Turkey	-0.63	Spain	-0.83	Spain	-0.62	Portugal	-0.86
20.	Portugal	-0.62	Spain	-1.0	Greece	-0.66	Italy	-1.06	Italy	-1.32	Italy	-0.90
21.	Italy	-0.63	Greece	-1.18	Spain	-0.9	Greece	-1.47	Turkey	-1.35	Turkey	-1.42
22.	Turkey	-1.05	Turkey	-1.6	Italy	-1.1	Turkey	-1.62	Greece	-1.64	Greece	-1.51

Table 2.5 Changing determinants of economic growth in the OECD countries

Period	Model 1 1980s	Model 2 1994–2002	Model 3 1997–2002
Cases (n):	40	65	43
Constant:	56.239*** (-0.155)	18.321 (1.167)	42.521* (2.024)
Productive resources	-0.048 (-0.155)	0.383* (-1.981)	0.519* (2.002)
Technology	-0.044 (-0.168)	-0.215 (-1.075)	-0.505** (2.050)
Organizational efficiency	0.122 (0.623)	-0.262 (-1.344)	-0.548** (-2.231)
Product market development	0.724*** (-2.928)	-0.098 (-0.270)	0.539 (1.074)
International business	0.185 (-1.156)	0.348*** (-3.151)	0.428*** (3.517)
Institutions	-0.135 (-0.812)	0.323** (-2.382)	0.229 (1.249)
Public sector	0.226 (-1.153)	0.259** (-2.017)	0.336** (2.057)
LOG (starting GDP/capita)	-1.329*** (-3.610)	-0.301 (-0.987)	-0.738* (-1.900)
Inflation	-1.665** (-2.698)	-0.401 (-0.345)	-1.498 (-1.175)
Long-term interest rates	1.226* (-1.848)	0.289 (0.243)	1.191 (0.943)
R ²	0.512	0.409	0.558
F(sig.)	3.145***	3.801***	4.161***

Note: *** = $P < 0.01$, ** = $0.01 < P < 0.05$, * = $0.05 < P < 0.10$.

When the data of the most recent period (late 1990s and early 2000s) was used for regression the explanatory power of the model became stronger (Model 3, $R^2 = 0.56$). External business activities and the government role maintain their earlier significance. The productive resources, technologies and organizational arrangements are all significant, but the latter two with unexpected negative signs. Again, we must refer to the earlier correlation explanation. What is rather surprising is the return of the catching-up variable among the statistically significant ones. This may not be explained by the rapid growth of relatively less wealthy OECD countries but the really

weak growth of some of the wealthiest OECD countries (for example Switzerland, Japan and Germany).

Our statistical analysis supports the conclusion of the earlier sections that a paradigm shift took place in the world economy during the 1990s which significantly changed the nature, relationships and significance of different growth factors. Macroeconomic variables and a catching-up position became less important than they had been in previous decades. On the other hand, structural competitiveness factors, particularly the internationalization of the economy and the competitiveness of institutions and government, became key factors in economic growth. This is entirely consistent with the theoretical and historical analysis of the previous sections. It also underlines the importance of *social innovations* as a key to economic development. The renewal of institutions and the government demand increased attention from policy makers.

THEORY OF SOCIAL INNOVATION PROCESS

We have argued above that systemic change capacity is the most important driver of economic performance in today's rapidly changing environment. Unfortunately, social sciences have tended to take social structures and institutions as given and focused on their impact on human and organizational behavior (Scott, 2001; North, 2003). Hence there is an urgent need for more research on structural change processes. The relevant research is currently scattered throughout various disciplines: institutional economics, 'new institutionalism' in management science, cognitive science, psychology, culture studies, sociology of knowledge, history, and so forth. These various strands of research suggest that structural change processes are surprisingly similar at different levels of analysis: individual, group, organization, sector, region, nation and even civilization (Argyris and Schön, 1978; Gardner, 2004; Gersick, 1991; Huff and Huff, 2000; Scott, 2001; Seo and Creed, 2002; Van de Ven and Hargrave, 2003; Schön, 1973; Fairbanks and Lindsay, 1997; Harrison and Huntington, 2001).

The similarity of social change processes in different types of socio-economic systems can be explained with the similarity of collective learning processes in all human communities (work and leisure groups, professions, organizations, networks of practitioners, inhabitants of a region, citizens of a country and members of a civilization). The overlapping rules, policies and organizations of such communities form a multi-level 'nested hierarchy' where human beings perform their daily activities in different roles, learn about their results and collectively maintain or change the relevant

structures (Scott, 2001; Seo and Creed, 2002; Van de Ven and Hargrave, 2003).

In the rest of this chapter, we will develop a theoretical framework that synthesizes the general features of structural change processes in socio-economic systems. Responding to the call of Van de Ven and Hargrave (2003), the theory combines *evolutionary* and *revolutionary* theories of change. However, before introducing our framework, we must define what we mean by 'institutions' and 'structures' because these terms are used in various and overlapping ways in different disciplines. For institutions, we adopt Richard Scott's definition of 'three institutional pillars' (see Table 3.1). These include the *cultural-cognitive*, *normative* and *regulative* dimensions of institutions (see Scott, 2001). On the other hand, economic structures are generally equated with *public policies*, *regulations* and established *organizational arrangements*. Thus, 'institutions' and 'structures' overlap somewhat and are often used interchangeably.

During evolutionary phases of development, socio-economic institutions and structures constrain, shape and enable individual and organizational behavior. In more turbulent times, they also become a contested terrain of 'institutional entrepreneurs' who attempt to change them in their own, or in their reference groups', interest (Scott, 2001). Hence, the balance between active institutional entrepreneurship and innovation ('agency'), on the one hand, and organizational isomorphism within established institutions ('structure', 'embeddedness'), on the other hand, tends to alternate over time depending on the pace of environmental change and the level of accumulated problems and contradictions in the system.

Our theory of institutional and structural change includes evolutionary (first order) phases, where prevailing institutions and structures are gradually strengthened and altered, and revolutionary (second order) phases where they are fundamentally reformed. Figure 2.2 lays out the theoretical framework. The three institutional pillars of Scott correspond to the regulatory framework, shared values and norms, and collective frames and theoretical and ideological paradigms in our theory. The flow chart with solid-line boxes and arrows depicts the evolutionary first order change process, while the other dashed lines and arrows represent the revolutionary second order change process.

Individual and organizational behavior takes place in an evolving *natural, technological, human, institutional* and *economic environment*. We have discussed in the beginning of this chapter some of the long-term technological and economic changes in the previous chapter. Natural environments change over time due to natural evolution and the impact of human activities. The needs and preferences of individuals evolve with their changing wealth, knowledge and other circumstances (Hämäläinen, 2003a:

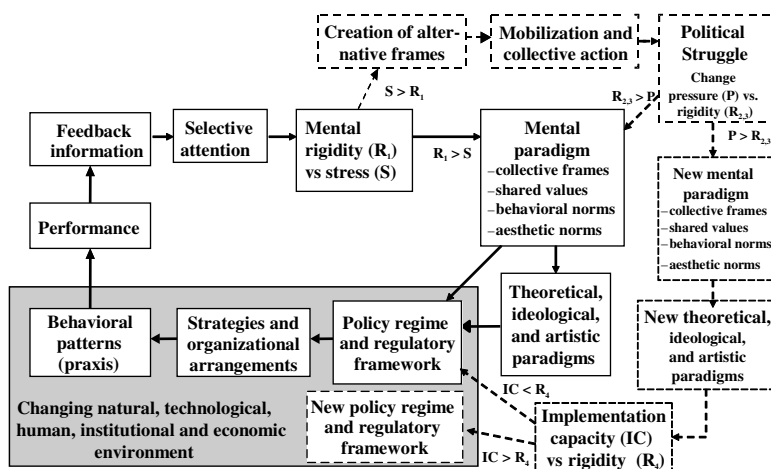


Figure 2.2 Evolutionary and revolutionary structural change

50–51). In the ‘nested hierarchy’ of institutions, institutional change at one level is influenced by the evolution of institutions at other levels of the system (Van de Ven and Hargrave, 2003). For example, new institutional rules at the level of the European Union shape the regulation and policies at the national and regional levels. The changes in environment influence the effectiveness of established behavioral patterns and routines. Declining performance creates a need to change the established social structures that shape individual and organizational behavior.

EVOLUTIONARY CHANGE IN STABLE ENVIRONMENTS

The technological, economic, organizational, political and institutional structures of socio-economic systems tend to form a rather stable and coherent system in stable or slowly evolving environments. The various elements of the system develop gradually, without creating major tensions or adjustment problems elsewhere in the system. The behavior of individuals and organizations is highly routinized along historical patterns.

Established activities can be highly successful in a stable context. The good performance of the system provides positive feedback information that strengthens the shared cognitive frames (world views), values (moral, ethical, aesthetic, and so on) and behavioral norms (Fairbanks and Lindsay, 1997: 246). These, in turn, support the generally accepted

theoretical and ideological paradigms. This collective 'mental paradigm' supports the formal political, regulatory and organizational structures of the system.

The policy regime includes the arrangements for producing the community's public goods and services. The regulatory framework contains the arrangements for maintaining and enforcing the community's codified behavioral rules (for example laws and regulations, collective agreements, standards). Besides policy makers, policies and regulations are shaped by the demands of special interest groups that gain increasing power during stable periods that are favorable to their mobilization and organizational efforts (Olson, 1982). More specialized public goods and institutional rules are also produced by third sector associations and networks for their own members (Hämäläinen, 2003a).

Organizational strategies are formulated in an ever-changing natural, technological, human, economic and institutional environment. When environmental change is slow, organizational strategies and arrangements tend to fit well within the established mental, political and regulatory frameworks. The day-to-day activities of individuals and organizations are embedded in the established mental, political, regulatory and organizational structures.⁸ The satisfactory experiences from daily activities leave little room for institutional entrepreneurs. Once established, diffused and shared, the behavioral patterns form distinct styles and routines in various spheres of life (life styles, artistic styles, organizational routines, and so on).

The shared cognitive frames tend to restrict individuals' attention to those experiences and information that are consistent with these frames (Bohm, 2004). Inconsistent or contradictory information is neglected or given ad hoc explanations in order to reduce the unpleasant uncertainty and stress – or 'cognitive dissonance' – that it creates in individuals (Festinger, 1957). Stress from anomalies that cannot be ignored or given ad hoc explanations is reduced by small homeostatic, or state-maintaining, alterations in the system (Huff and Huff, 2000: 64).

The new experiences and information may also conflict with an individual's moral values, beliefs and norms. We can call the stress that results from this moral conflict 'moral dissonance'. In practice, the same experience and information can create both cognitive and moral dissonance, and their influence on individual behavior will intermesh.

Socio-economic systems accumulate *mental, economic, social* and *systemic* rigidities in stable environments. These structural rigidities hold socio-economic systems together and make their organization efficient in stable times, but they also create adjustment problems in rapidly changing environments (Lindblom, 1990).

Mental Rigidities

The continuous good performance of a system and the positive experiences of individuals from their daily activities gradually strengthen the shared cognitive frames, values and norms and lead to a growing unwillingness and inability to question them (Huff and Huff, 2000: 81; Senge, 2004). The intellectuals, whose self- and social esteem is built on the established ideas, theories or scientific paradigm, find it especially hard to change their minds. As Gardner notes (2004: 183):

It may not be easy for non-intellectuals to appreciate how much stock members of this group place in being right, in being able to defend their positions accurately, and in remaining consistent; ideas are the central axis for any intellectual. Intellectuals are particularly susceptible to the tensions of cognitive dissonance. When an occurrence runs counter to their theory, they are highly motivated to reinterpret events so as to eliminate the inconsistency.

Mental rigidities (R_1 in Figure 2.2) shape the issues that can enter into public discussion and collective learning processes. Members of a community do not usually recognize their shared basic assumptions (mental paradigm) though these may spark an emotional response when challenged (Bohm, 2004). The established mental paradigm tends to serve the economic and political interests of the most powerful interest groups. This limits the society's collective learning and structural adjustment capacity:

[O]nce consensus has been reached on the basic assumptions of a world-view, a self-view, a view of others, strategic doctrine, and the like, it is expensive politically, economically and psychologically for the elites to transform these assumptions (Janis, 1972). Therefore they tend to become tabooed assumptions, and knowledge production tends to become limited to specifics within the limits of the assumptions. At the same time, the ability to transform the basic perspectives is sharply reduced and with it the capacity for societal self-transformation. (Etzioni, 1991: 30–31)

Economic Rigidities

The specialized skills and assets of individuals, groups and organizations tend to lose value in major systemic changes (Williamson, 1985), which makes their owners oppose such changes. Thus established special interest groups often become powerful lobbies against change (Benson, 1977; Olson, 1982). Economic rigidities (R_2) influence structural change processes when a social problem has been recognized and a political struggle has begun over the need and direction of structural adjustment.

Social Rigidities

Over time, continuous and successful inter-personal interactions within a social system create social bonds, networks and shared frames that make the system increasingly inflexible (Seo and Creed, 2002). This type of strong ‘bonding’ social capital can slow down structural adjustment when environmental change becomes more rapid (Woolcock, 2000; Schienstock and Hämäläinen, 2001). Innovative individuals and organizations may hold back new ideas and social innovations that could ‘rock the boat’ by having a negative short-term impact on their partners’ activities (Bohm, 2004: 66). Such negative spillovers could be both mental and economic. A radical structural change by one node in a tightly coupled network can disturb the established collective frames, values and norms and cause economic losses to some partners in the network. Social rigidities (R_3) can thus reduce the motivation of well-connected individuals and organizations to initiate structural change processes.

Systemic Rigidities

The growing specialization, interdependence and complexity of stable socio-economic systems make structural changes increasingly difficult to implement (R_4). Owing to spillovers, changing one part of a tightly coupled system is difficult without changing the whole system (North, 1990; Huff and Huff, 2000; Bruijn *et al.*, 2004). However, the costs of mobilizing and coordinating the collective action required for a system-wide change often exceed the benefits to any single actor in the system (Hämäläinen and Schienstock, 2001). The implementation of a systemic change involves a *public good problem*. Systemic changes can be difficult to implement even though they were generally considered as necessary and had the full support of a new mental paradigm behind them.

REVOLUTIONARY CHANGE DURING PARADIGM SHIFTS

Owing to various adjustment rigidities, established behavioral patterns, cognitive frames, values, norms, theories, ideologies and socio-economic structures tend to change incrementally (North, 1990; Van de Ven and Hargrave, 2003). However, sometimes the evolution of socio-economic systems is punctuated by revolutionary periods that lead to major mental, structural and behavioral changes. Such revolutionary changes tend to be preceded by growing systemic *contradictions*, *uncertainty* and *stress* which

attract people's attention to new problems (or opportunities), reduce the legitimacy of established institutions and structures and ultimately overwhelm the system's rigidities and start a radical second order change process (Schön, 1973; Benson, 1977; Porter, 1997; Fairbanks and Lindsay, 1997; Almond, 1999; Huff and Huff, 2000; Seo and Creed, 2002; Van de Ven and Hargrave, 2003; Bruijn *et al.*, 2004; Bohm, 2004).

The contradictions that lead to revolutionary change usually stem from two main sources: (a) the path-dependent specialization of individual and organizational activities in stable environments and (b) the growing pace of change in the system's environment. Over time, the path-dependent specialization of individual and organizational activities produces internal contradictions among them and between the activities and the established socio-economic structures (alienation) (Benson, 1977; North, 1981; Seo and Creed, 2002; Hämäläinen, 2003a). Other contradictions are related to changes in the system's natural (climate, resources), human (needs and preferences), technological, economic and (higher-level) political and institutional environment that cannot easily be accommodated with the old behavioral patterns and structures (Oliver, 1992; Barley and Tolbert, 1997; Scott, 2001: 187). The accumulation of internal and external contradictions creates a situation where the established structures no longer serve the interests of those who inhabit them (Scott, 2001; Seo and Creed, 2002). This provides motivation for institutional entrepreneurs who attempt to change them.

The new problems tend to be emphasized by those whose ideas and interests are not adequately served by the existing social arrangements. The size of such groups and the extent to which their needs are not met have a direct impact on the likelihood of change (Seo and Creed, 2002).

The emerging systemic contradictions are often first recognized by the new or young members of the system who have not, yet, been fully socialized into the established mental paradigm (Huff and Huff, 2000; Seo and Creed, 2002; Van de Ven and Hargrave, 2003; Weick, 2003). The old members of the system tend to have well-established cognitive frames, values and norms that guide their behavior and attention to activities that further strengthen them. The longer their positive experience from the old behavioral patterns, structures and institutions, the harder it is for them to change their mental structures and behavior (Gardner, 2004). This creates a growing mental gulf between the old and new members of the socio-economic system during periods of rapid environmental change.

Another group sensitive to systemic contradictions is artists who reflect the 'spirit of their times' in their works. It is easier for artists, who emphasize the specificity and difference of phenomena and work with subjective interpretations of reality, to break down the barriers of conventional

thinking and raise new issues to public discussion than it is for scientists and policy makers who are tied by the normal criteria of objectivity and evidence. Artists often give the first meaning to and interpretation of new social phenomena that may be later taken up by scientists, policy makers and other social analysts (Hauser, 1982; Venkula, 2003; Gardner, 2004). Moreover, besides collective frames, they can challenge the prevailing values and norms of the society.

Works of art can be particularly important when people try to understand complex new issues for which there are no ready-made cognitive frames or theories available. They tend to frame such issues with *narratives*, *metaphors* and *stories* (Hakkarainen *et al.*, 2004) that characterize artistic expression. Artists often have the capability to frame the most relevant parts of the reality and provide a holistic view on the new phenomena. However, not all artists are so progressive. A large part of art attempts to please the general public by trying to meet their traditional needs for amusement, drama and so on without disturbing their peace of mind (cognitive and moral consonance) with contradictory perspectives or interpretations of the reality (Venkula, 2003). The increasing commercial pressures on artists have reinforced this trend toward non-controversial and non-radical art (Mäki, 2004).

Systemic contradictions result in declining performance and negative feedback from the established activities. The poor performance can take several forms: economic (declining profits, slow growth), social (growing inequity, insecurity or unemployment), environmental (unsustainable development), and so forth.⁹ Owing to mental and other rigidities, poor performance does not automatically lead to corrective actions and system improvements.

Individual Responses

Small declines in performance may go unnoticed for a long time if people are used to good performance and do not expect negative feedback. Moreover, as noted above, most people want to avoid the unpleasant feeling of uncertainty and stress (cognitive and moral dissonance) associated with contradictions and structural changes (Festinger, 1957).¹⁰ They prefer a 'stable state' in all fields of life (Schön, 1973). As a result, the initial signs of declining performance are often wiped under the rug with ad hoc explanations and other behavioral strategies.

Individuals may attempt to avoid information, experiences, social situations and environments that could increase their awareness of contradictions (that is cognitive and moral dissonance) and seek others that would be consonant with their established frames, values and norms (Festinger,

1957; Schön, 1973; Bohm, 2004). Since natural, technological, institutional and economic environments are rather difficult to change, the dissonance-reduction strategies of individuals tend to focus on their own mental structures and the social environment. For example, they may change a problematic element of their own cognitive frame, decrease another element's importance or add a new consonant element to their established frame. Individuals may also deal with great uncertainty in some parts of their life by creating compensatory stability in other parts. Schön (1973: 15) has observed that '[t]he private lives of inventors, innovators, artists and discoverers tend to be regular to the point of dull routine'. Some people may also be able to change their cognition about the socio-economic environment by actively seeking the support of social groups who share their views. At the extreme, strong social support may even allow the 'denial of reality', that is the ignorance of clear evidence (see Festinger, 1957).

Individuals may also reduce their insecurity by clinging to traditional ideologies and values (for example nationalism, family, religion) and by supporting strong leaders with simple stories who promise to restore stability ('law and order') in the society (Hitler, Mussolini, and so on).¹¹ They may also devote themselves to specialized cults and fundamentalist movements with strong values and behavioral rules (motorbike gangs, extreme political parties, terrorist groups, and so on) (Hämäläinen, 2003a; Gardner, 2004). At the same time, decision makers may react to systemic problems with traditional short-term fixes that have no sustainable results. They only make a more drastic change probable in the future (Bohm and Peat, 1987: 209; Seo and Creed, 2002).

Besides trying to restore stability in their lives, people may join political or civic movements that engage in activities that attempt to change the prevailing social conditions in ways that would better match their personal worldview, values and norms. The strong support of anti-globalization movements in recent years may be explained by the participants' attempt to reduce their cognitive and moral dissonance related to rapid globalization.¹²

Owing to mental inertia, a community's established mental paradigm may lag behind the changing real-world events, sometimes in dramatic ways: 'Ideas are often slow to come into good currency; and, once in good currency and institutionalized, they are slow to fade away, by the time ideas have come into good currency, they often no longer accurately reflect the state of affairs' (Schön, 1973: 127). According to Schön, the key challenge of effective learning systems is to reduce this lag between dominant ideas and systemic realities – which may extend to months, years or even decades – so that ideas in good currency reflect present problems, not historical ones (Schön, 1973: 123, 130).¹³

Threshold for Change

Owing to mental and other rigidities, the systemic contradictions need to reach a certain *threshold level* before a wide adoption of a new mental paradigm and major structural changes become possible. At such a threshold, or 'tipping point', the cumulative stress from contradictions exceeds the cumulative rigidities in the system (Huff and Huff, 2000; Gardner, 2004).¹⁴ Often this 'window of opportunity' for structural change can only be opened by a major systemic crisis (Schön, 1973: 128; Fairbanks and Lindsay, 1997: 259; Seo and Creed, 2002). However, a systemic 'crisis' may not always be caused by a problem. The emergence of new opportunities may also create a situation in which the established ideas and mental structures do not anymore correspond to reality (Schön, 1973: 129, 251).

A recent study of the OECD countries identified a threshold level of recession beyond which nations began to improve their structural competitiveness (see Schienstock and Hämäläinen, 2001: 37). In the early 1990s, during a mild recession in the world economy, the upgrading of structural competitiveness among 22 OECD countries was strongly (negatively) related to the economic growth rate only among the ten worst performing countries. Their average growth rates during a three-year period (1991–1993) ranged between –3.6 and 0.7 percent. On the other hand, the correlation between the economic growth rate and structural upgrading was close to zero for countries whose growth rate exceeded 1 percent. In other words, small recessions in national economies did not spark structural upgrading; only major economic crises did.

Institutional Entrepreneurship

The growing contradictions and poor performance of the system increase the demand for new ideas that could explain, diagnose and remedy the problems (Schön, 1973: 128; Almond, 1999). At the same time, they make a serious consideration of alternative behavioral strategies and structural solutions increasingly legitimate (Scott, 2001). This means a shift in collective consciousness from a passive and unreflective mode to an active and reflective one (Seo and Creed, 2002).

The declining systemic performance motivates some individuals and groups to search for, consider and develop new ideas, frames and ideologies that could resolve the systemic contradictions and problems (Schön, 1973; Suchman, 1995; Scott, 2001). Schön notes that new ideas are often developed at the margins of the society where they do not initially encounter massive defenses. They may also be adopted from other, more successful

systems. Owing to shared context and challenges, the new ideas often emerge in mutually reinforcing clusters (Schön, 1973: 130, 140).

Initially, the new ideas tend to have little practical impact on institutions and structures since they do not have wide public support. Like individuals, social systems and communities have various ways of protecting themselves from disruptive new ideas. Initially they may be relegated to private spheres or to the margins of society. They may also be repressed, held back from conscious attention or referred to the 'intellectual never-never land' of academic discourse. However, if the new ideas gain explicit attention, at least on the part of a few, those people may be suppressed and forcibly prevented from entering the arenas of public inquiry and debate (Schön, 1973: 129). If the inventors of the new ideas still manage to get them public their arguments may be attacked on the basis of technical details in order to weaken the legitimacy of the overall argument.

Owing to various types of inertia, new ideas require a vanguard that can move them into public consciousness. Depending on the context, he/she may be a *muckraker* who forces people to look at disruptive instances, an *artist* who provides new ways of looking at the reality, a *utopian* who presents an appealing vision that reveals the inadequacy of the present situation, a *prophet* who presents the distant consequences of the system's present tendencies and confronts its members with their neglected or repressed sins, or a mixture of these roles (Schön, 1973: 131–2; Bruijn *et al.*, 2004). The role of vanguard is often taken by philosophers, scientists, artists and other intellectuals who draw public attention to new problems, challenge established truths, theories and ideologies, and provide new perspectives, visions and knowledge for decision makers and the general public (Schön, 1973: 134; Laszlo, 1987: 146; Etzioni, 1991: 31). The attention of policy makers, in particular, is best captured by simple and clear messages that emphasize the systemic contradictions (Bruijn *et al.*, 2004). As a result, vanguards increase the probability of structural change by raising the level of cognitive dissonance and stress in the system.

Once systemic contradictions accumulate, new entrants, dissatisfied individuals and intellectuals become potential change agents, or 'institutional entrepreneurs', who may attempt to change the established socio-economic structures. In this attempt, they must be able to undermine the legitimacy of the old mental paradigm and to create a new mental paradigm, or 'ideology', that synthesizes the various new ideas and promises a better future for the system. They must also push the new paradigm to public awareness and mobilize political support behind it (Almond, 1999; Gardner, 2004).

A successful new paradigm must include some elements of the old paradigm in order to be understood,¹⁵ but still be sufficiently different from it to be considered a true alternative (Huff and Huff, 2000; Scott, 2001: 192;

Seo and Creed, 2001; Van de Ven and Hargrave, 2003; Gardner, 2004). Such a paradigm typically consists of two parts: a *diagnostic* part which defines the key problems and who is to blame for them, and a *prognostic* part which defines solutions and appropriate strategies for attaining them (Almond, 1999; Seo and Creed, 2002; Van de Ven and Hargrave, 2003). It must appeal to individuals' urgent personal needs (such as security, economic well-being, and so on) as well as 'capture' them at a 'deeper, more visceral level' (Gardner, 2004: 83).

The complexity of the new mental paradigm should vary according to the heterogeneity of the relevant community. Simple frames and stories are more readily understood and adopted by diverse populations than more specific theories. More complex theories tend to require specific background knowledge that can only be found in more homogeneous populations or groups (Gardner, 2004: 66).

Political Struggle

The emergence of a new mental paradigm leads to a political struggle if the institutional entrepreneurs succeed in mobilizing enough political support behind it to challenge the established mental paradigm and interest groups (Huff and Huff, 2000; Van de Ven and Hargrave, 2003). The outcome of such a struggle is determined by the power of the opposing parties. According to Galbraith (1984), there are three principal sources of power: the *personality* of the political entrepreneur, the *resources* available to the political movement and the effectiveness of its *organization*. The most powerful political movements tend to combine all three sources of power.

Power can be used through three different instruments: *social conditioning*, *compensation* and *punishment*. Galbraith notes that social conditioning has become the most important instrument of power in modern societies and organizations, whereas compensation was emphasized in industrializing societies and punishment in agricultural societies. Moreover, the political power of a social movement or an interest group tends to be negatively related to the number of its goals. More focused movements generally have more political power (Olson, 1982; Galbraith, 1984).

The personality of the institutional entrepreneur is important because it determines his ability to use the different instruments of power and his 'resonance' among the key constituencies (Gardner, 2004). In modern societies, he needs specific cognitive and emotional intelligence, communication skills, courage and charisma in developing, choosing, tailoring and communicating the most effective ideas, frames and visions, persuading uncertain individuals to support changes, convincing wealthy donors to provide resources, and overcoming the resistance of established interests.¹⁶

The institutional entrepreneur can improve his chances of winning the political struggle with skillful communication policies, even propaganda, that emphasize the problems of the old paradigm and the benefits of adopting the new (Bruijn *et al.*, 2004). At the same time, he will naturally downplay the advantages of the old paradigm and disadvantages of the new one. He can also aim his communication to those relatively focused groups that would benefit from change. Structural change is more likely in situations where it benefits a focused group and the disadvantages disperse widely (Olson, 1982; Bruijn *et al.*, 2004).¹⁷ Finally, an effective institutional entrepreneur tends to use multiple 'representational redescription' (formats, symbolic systems) in communicating his message (Gardner, 2004). Different formats of the same story complement and reinforce each other and make sure that people with different types of intelligences (linguistic, logical-mathematical, musical, spatial, bodily-kinesthetic, and so on) and communicational inclinations will understand the message.

The institutional entrepreneur must be deeply committed to his mission in order to convince the uncertain individuals who cannot decide whether or not they should embrace change (Almond, 1999: 17; Gardner, 2004). As Galbraith put it: 'A supreme certainty in the individual's own belief and assertion is of prime importance for winning belief and submission in others' (Galbraith, 1984: 41). Equally important, the institutional entrepreneur must embody his mission and public arguments in his daily life and activities in order to gain credibility, respect and trustworthiness among the public (Gardner, 2004). The legitimacy and diffusion of new ideas is also supported if powerful people adopt and endorse them (Schön, 1973: 128).

Natural, financial and human resources have always been important sources of power. Over time, economic power has moved from the holders of natural assets, to those of financial capital, and more recently to those endowed with scarce human capital. On the political front, the use of various resources for social conditioning has become increasingly important (Galbraith, 1984). Effective advertising, communications, public relations, grass roots campaigning, and so forth require massive resources in today's information intensive world. Witness for example the importance of fund raising activities for the US presidential candidates. Those who control the public agenda and mind tend to have the political power. However, mental and economic rigidities can still be lessened by using financial and other resources as positive incentives or for the compensation of losses (Chang and Rowthorn, 1995; Gardner, 2004; Bruijn *et al.*, 2004).

Galbraith also emphasizes the importance of effective organization for gaining power. Poorly organized armies rarely win wars; neither do ineffectively organized corporations become industry leaders. The same applies to political movements. Social conditioning plays an important role

in building effective organizations (Galbraith, 1984: 62). Social conditioning is particularly important in mobilizing supporters for change who have to overcome the various rigidities and face the opposition of the established interests: 'Major societal transformations, such as revolutions and the gaining of national independence, usually involve relatively high mobilization. The secret of the power of social movements lies in part in the relatively high mobilization which their asceticism and the intense commitment of their members allow for' (Etzioni, 1991: 36). If institutional entrepreneurs win the political struggle, a new period of institutional and structural transformation may begin. If systemic coordination problems can be solved, the new mental paradigm begins to shape the political decision making processes that determine the system's collective goods and services and its behavioral rules. Together the new mental, political and regulatory structures form the social constraints and behavioral incentives for individuals and organizations. However, if the institutional entrepreneurs lose the struggle with established interests, the system returns to the old, and now strengthened, mental paradigm. The failure to win a particular political battle does not condemn a new idea or paradigm to permanent rejection. Ideas and paradigms lend themselves to repeated battles as changed political situations offer new opportunities (Schön, 1973: 138).

Major structural transformations are typically followed by a 'honeymoon' period (Huff and Huff, 2000). The members of the system become tired of change and want to give the new leaders a 'fair chance'. If the new structures prove to be successful and lead to improved performance they become established and the system returns to a stable and evolutionary state.

NOTES

1. In public discussion, economic 'structures' are generally equated with *laws and regulations*, *public policies* and *established organizational arrangements*. Moreover, the word 'institutions' is often used interchangeably with 'structures'. In this book, we will define the word 'institutions' according to Douglass North (1990) as the formal and informal 'rules of the game' (laws, regulation and culturally embedded behavioral norms), which are a subcategory of socio-economic structures.
2. This section has been adapted from Hämäläinen (2003a).
3. Mancur Olson (1982) has argued that special interest groups tend to become stronger in stable environments and their growing 'rent-seeking' activities create rigidities that have a detrimental effect on economic performance.
4. The pressures for change facing economic agents are, to a large extent, determined by a common natural, technological, economic, human and institutional environment. However, each system has its own path-dependent history and local circumstances that require individual adaptation. As a result, there are likely to be many similar but somewhat different 'ideal states' (multiple optima) for the systems in the same 'macro' environment. The different versions of the 'welfare state' in industrialized countries provide a good example.

5. For example, the United States increased its economic lead over the other industrialized countries in the early part of the 20th century, just as Great Britain had done in the early 19th century (Freeman, 1995).
6. The statistical results were very similar when GDP per capita was used as the dependent variable in regressions.
7. Our operationalization of external business activities as a competitiveness factor emphasizes the importance of internationalization of business activities. The more international a nation's international business activities (trade, FDI and strategic alliances) are, the more competitive its economy is considered to be (see Hämäläinen, 2003a).
8. Individual and organizational behavior is considered to be *legitimate* if it is consonant with the established institutional and political frameworks. Legitimate behavior is generally considered to be desirable, proper and appropriate. It is supported by the established institutions and structures of the system (Suchman, 1995; Scott, 2001: 59).
9. The definition of 'poor performance' may sometimes differ among individuals. Everyone would not agree on the undesirability of slow growth or inequity, for example.
10. The individual and collective uncertainty related to institutional and structural change may stem from *insufficient information* or *inadequate cognitive frames, values and norms*. The latter type of uncertainty is particularly stressful since it challenges the fundamental basis of human security (Schön, 1973: 13). Recent changes in the world economy have tended to increase both types of uncertainty in modern economies (Hämäläinen, 2003a: 186–8).
11. In recent years, 'good stories' have also become important for the sales of branded goods and services (Aaltonen and Heikkilä, 2003). Such stories set the goods and services into an easily understandable and positive context, which supports their sales.
12. Etzioni points out that, in some cases, moral dissonance provides a better explanation for individual action than the other needs related to personal well-being (Etzioni, 1991).
13. Schön also recognizes the opposite pathology of social systems, i.e. the 'precipitate abandonment' of important issues. Sometimes public fatigue or the limits of the public attention span push unresolved issues and problems from the public agenda (Schön, 1973: 249).
14. Leibenstein (1978: 34) notes that 'pressures' must exceed the 'inertial costs' of individuals before they change their behavior and raise effort levels. If individual inertial costs are high, and the pressures do not pass the 'reaction point', the individual's effort may stay unchanged for a long time. People are likely to be more sensitive to large, sudden and unexpected changes in pressure than a gradual decline in performance (Schön, 1973: 11; Porter, 1990: 84; Hämäläinen, 2003a: 118–19).
15. Almond notes that the best ideologies are sufficiently simple and tailored to local conditions in order to be widely understood (Almond, 1999: 17).
16. Political framing and mobilization processes have been analyzed by scholars of social movements, who focus on institutional changes that occur through protests, political action and grass roots mobilization campaigns (Van de Ven and Hargrave, 2003), and scholars of revolutions, who focus on major political upheavals in history (Eisenstadt, 1978; Almond, 1999).
17. Indeed, many change efforts fail because of an opposite situation: the negative consequences of change would fall on a small but powerful group, while the benefits would disperse widely.

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3. Social innovations: Structural and power perspectives

Risto Heiskala

INTRODUCTION

The world economy is currently going through a third industrial revolution characterized by rapid development and diffusion of ICT; globalization of economic activities through foreign direct investments, international trade and cross-border alliances; increasing specialization, complexity and knowledge-intensity of production processes; growing differentiation of demand patterns in consumer and producer markets; and the spread of cooperative network organizations (Hämäläinen, 2003; Hämäläinen and Heiskala, 2004). This transformation increases the importance of innovations as the key determinant of economic competitiveness and growth. So far academic research and public discourse on innovations have focused mainly on *technological innovations*. We argue that, in addition to the challenge of techno-economic adjustment, the third industrial revolution calls for *social innovations* that would transform the regulative, normative and cultural aspects of social systems, and their interplay with each other and the techno-economic structure. This chapter contributes to the study of social innovations and collective learning processes by developing the concept of social innovation and some related concepts such as social structure, institution and social change. The aim of our conceptual analysis is to provide tools for empirical research and thus support the development of policies that facilitate the creation of reflexive social organization with the capacity of constant collective learning and adjustment.

Theoretically we begin with the assumption that societies can be understood as structured totalities of action. This means that societies would not exist without the activities of various actors and even the activities of collective actors must, in the last instance, be understood as actions of individual human beings (Weber, 1968 [1922]; Coleman, 1990). Actors, however, are not free to do whatever they wish. Instead, their actions are linked to several types of structures that both facilitate and direct them (the enabling and constraining dimensions of structures). Actors normally

reproduce structures through their own action but they can also sometimes transform them consciously (Giddens, 1984; Bourdieu, 1990). This general approach is usually called the *structuration* perspective to societies and other social systems. In the following, we will present one variant of the structuration perspective.

After this introductory section, the chapter proceeds with a section that provides a general definition of innovation and then applies it at specific levels of social structures to define the concept of *social innovation*. We develop a multi-level typology of social structures for that purpose. The next section discusses the different versions of institutionalism and the techno-economic and culture-oriented theories of institutional change. The fourth section deals with different forms of social change and attempts to specify the nature of change processes which involve social innovations. It also deals with the demarcation line between social innovation and a change of hegemonic pattern and attempts to discuss social innovations without confusing the concepts of collective learning and social conflict. The fifth section discusses the new need for social innovations created by the structural adjustment challenges of the third industrial revolution.

INNOVATIONS AND SOCIAL STRUCTURES

What is an innovation? The classical definition of Joseph Schumpeter distinguishes between five types of innovation:

- (1) The introduction of a new good . . . or of a new quality of a good. (2) The introduction of a new method of production . . . (3) The opening of a new market . . . (4) The conquest of a new source of supply of raw materials or half-manufactured goods . . . (5) The carrying out of the new organization of any industry, like the creation of a monopoly position . . . or the breaking up of a monopoly position. (Schumpeter, 1934: 66, quoted in Swedberg, 1991: 34)

After Schumpeter's days, the research on technological innovation has grown very fast, particularly during the past few decades (Rogers, 1995; Castells, 2000; Schienstock and Hämäläinen, 2001; Tuomi, 2002). Some attention has also been paid to the social factors that facilitate or prevent the effective diffusion and use of technological innovations. But even if the concept of 'organizational innovation' (Schumpeter's class 5 above) is sometimes used in the study of techno-economic innovations, social innovations are rarely examined in their own right. This section presents a typology of society's structures that contains seven different categories and then uses the typology to define the term 'social innovation'.

We will start with a general definition of innovation. According to our definition an innovation is:

1. an idea or a pattern that is defined as new, and
2. has the impact of changing social practices
3. with the consequence of improved social and/or economic performance.

Point 1 is a standard element (and sometimes the only element) in any definition of innovation. One of the best-known formulations is presented by Everett M. Rogers in his *Diffusion of Innovations* (1995: 11; first edition in 1962):

An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behaviour is concerned, whether or not an idea is objectively new as measured by the lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation. (Rogers, 1995: 11)

In addition to the newness of the idea this point emphasizes the context specific nature of an innovation. It does not make much difference whether the idea or pattern is absolutely new as long as it is perceived as new in the context of application. This is also what Schumpeter had in mind when he made the distinction between an invention and an innovation and underlined that his creative entrepreneur does not make inventions but creates innovations, that is, new ways to use already known inventions in specific contexts (Swedberg, 1991: 34).

If point 1 is a standard element of any definition of innovation point 2 is more distinctive. It implies that all innovations are social innovations in the sense that even technological innovations are innovations only if they affect social practices. In the study of technological innovation this aspect has been emphasized by what have been called user- and practice-centered models of innovation. According to one formulation:

If new technology is not used by anyone, it may be a promising idea but, strictly speaking, it is not new technology. Similarly, if new knowledge has no impact on anyone's way of doing things – in other words, if it doesn't make a difference – it is not knowledge. Only when the way things are done changes, an innovation emerges. Therefore we can say that invention occurs only when social practice changes. (Tuomi, 2002: 10)

What then does a change of practice mean? In the techno-economically oriented study of innovation the change of practice often means market power in the sense of increasing returns (Schienstock and Hämäläinen,

2001). This can be understood as a special case of a more extensive approach that understands the change of practice as a 'creation of a new path in the world' (Bonoli and Palier, 1998) in the sense of the emergence of a new type of actor network (Latour, 1987; Callon, 1998; Law and Hassard, 1999). The scope of such changes naturally varies from small incremental changes of practices to comprehensive transformations caused by the core innovations of industrial and social revolutions.

An innovation then is an idea, object or pattern that is perceived as new and changes social practices. However, there is still something missing from the definition. Otherwise all changes of practices would be defined as innovations. Yet we associate a positive meaning with the term 'innovation' and do not understand harmful changes of practices such as increased pollution as innovations even if they would be brought up by some new idea. Therefore, point 3 says that the consequence of the change of practices must be an improved social and/or economic performance.

So far as technological innovations are concerned performance is a relatively unambiguous quality to measure: we are dealing with improved performance if it is possible to do the same thing with less resources or if the same amount of resources provides more and/or better results. In a similar vein, in the techno-economically oriented study of innovations, with money as a measure of performance, it is possible to understand this requirement as increased market power and profits (Schienstock and Hämäläinen, 2001). However, technological and economic measures do not cover all dimensions of social performance. This leaves us with two alternatives. The first is to limit the use of the concept of innovation to the techno-economic sphere of the social reality due to the significant problems associated with measuring social performance. Another alternative, and the one adopted here, is to search for a more general concept of performance in which the technological and techno-economic performance would be special cases. To find such a general concept one must first ask whether there is something common in technological and techno-economic performance, and then ask whether that could be generalized to a more abstract level.

The answer to the first question is that the key to technological performance is technological might or technological power. Correspondingly, the key to techno-economic performance is economic might or market power. The common denominator then is the concept of power understood as might or an ability to create improved results. This insight helps us to answer the second question. The concept of power has been developed in social theoretical literature and it has also been applied to numerous aspects of the social reality (Parsons, 1960; Mann, 1986; Giddens, 1995; Heiskala, 2001). Michael Mann, who himself applies such a generalized

concept of power to ideological, economic, military and political power, makes a basic distinction between the *distributive aspect of power*, that is zero sum games where the gains of A are always losses for B, and *collective power*, when A and B can, through cooperation, 'enhance their joint power over third parties and over nature' (Mann, 1986: 6). Collective power can also be allocated but, more importantly, it can increase as a result of technological progress or transformations in social practices.

This discussion of power resources gives us a generalized measure for enhanced social performance. At the same time, it leads us back to questions such as: increased power, in what sense?, from whose point of view? and compared to what? The questions reveal an intimate connection between the concepts of social innovation and hegemonic pattern. What emerges is a continuum extending from unambiguous innovations with the rise of collective power resources to hegemonic patterns that allocate benefits to some actors at the expense of others. This is an important theme and it will therefore be recalled in the section on change (pages 64–71). Before that, however, we will discuss the definition of social innovation from the perspective of the structuration theory in the rest of this section.

Our definition of innovation is very general. It covers technological, economic and social innovations of all types. It is practice-oriented and emphasizes the social dimension in all technological innovations. But what could social innovation mean separately from technological innovation? To answer this question we need to discuss the concept of social structure as innovations can be sorted out into different classes according to what kind of structures in society they affect.

There are at least seven types of structures that enable and constrain people's action. Organized as a continuum they are:

1. the structure of the natural environment
2. demographic structure
3. technological structure
4. economic structure
5. regulative structure
6. normative structure
7. cultural structure

The *structure of the natural environment* is not a result of human action. The existence of nature precedes the evolution of the human species and even if the human species has, after its appearance on the earth, transformed the natural environment with technologies the effect has been modest during most of history (yet increasing in scope from the first industrial revolution onwards). The natural environment has thus shaped human

activities and the human species has adapted to the natural environment (Diamond, 1998). For example, the relative economic advantages of nations and regions are often dependent on their specific climate and natural resources. The natural environment then can be understood as a conditioning structure for social life.

The case of *demographic structure* is somewhat similar to that of the natural environment even if changes of prevailing structures are often much faster with demographics than with the natural environment. In the case of demographic structure there is also much more room for purposeful human intervention than in the case of the natural environment as both families and political actors such as nation states and international organizations can (with the help of modern prevention technologies and medicine) at least partly successfully intervene with birth control programmes, programmes for reducing infant mortality, family policy programmes and so on. Yet the impact of such programmes, if successful at all, takes decades to materialize. Therefore, the prevailing demographic structure of an area or a state and the trends involved can also largely be understood as a conditioning structure of social life.

When we reach the level of *technological structure* we are entering the social world proper as technology is – in addition to habits of biological origin – the means for the human species to survive and improve its condition on the globe. It is by means of technology that humankind has acquired the limited, yet in the course of technological development increasing, capacity to transform the natural environment and demographic structure referred to above. It is also by means of technology that humankind enters into a productive interchange with nature. Significant development has taken place at this level whether it is called the development of productive forces (Marx) or the emergence of more and more complex actor networks with human beings, material objects and schemes to combine these as the constituents of such networks (Latour, 1987 and other action network theorists).

The emergence of private property, money as a means of exchange, different forms of absorbing surplus labour (such as slavery or wage labour) and different forms of financing (such as the banking system or the joint-stock company) are part of the *economic structure*. This is the realm called the relations of production by Marx. Marx believed that the evolution of the forms of production such as feudalism and capitalism is conditioned by the development of the technological structure or productive forces. He thus famously said: ‘The windmill gives you society with the feudal lord; the steam-mill gives you society with the industrial capitalist’ (Marx, 1977 [1847]: 103). This is without doubt part of the truth, as significant technological revolutions always create a challenge for structural adjustment

(Freeman and Louca, 2001; Perez, 2002). However, many scholars have emphasized an opposite causal link and stated that different societies tend to create a base for different technological innovations (Castells, 2000). This question will be recalled later but what can be learned from these claims is that the relationship between the technological and the economic structure of society is so intimate that it is often justified to combine these two structures into one structural complex called the techno-economic structure of society.

Regulative structure of society consists of explicit and sanctioned 'rules of the game' as the new institutional economists such as Douglass North (1990: 3) put it. In the modern world the most important authority to maintain such sanctioned rules is the nation state with its legislative authority. However, the growing number of international treaties and organizations tends to make part of the institutional structure international or in some cases regional (as sometimes happens in the EU where part of the development of legal regulation already escapes the reach of any single member state). At the same time, there are national and international non-governmental organizations (NGOs) with a limited ability to create codes of conduct and back them with sanctions such as publicity campaigns, boycotts and effective lobbying.

Regulations are norms backed by sanctions. Some of the sanctions may be part of the *normative structure* of society but the concepts of regulative and normative structure do not overlap completely. To be part of the normative structure of society the norm must be legitimate, that is, backed by value commitments and therefore held as inviolable in the moral sense (Durkheim, 1995 [1912]; Parsons, 1968 [1937]). In other words, it must be a *social* norm. Such norms and value commitments behind them are usually internalized in the course of the socialization process. Therefore, social norms have directive force on actors even on those occasions when there is no surveillance and the threat of sanctions is minimal. Even in cases of 'unsuccessful socialization' the deviant individual who is overstepping the boundaries defined by social norms with no sense of moral regret will feel the sacredness of the social norm in question in the form of the moral disapproval of his fellow men. This is not necessarily so in the case of regulations as such rules may be sanctioned by social norms but they may as well be solely sanctioned by either positive or negative economic sanctions or forced cooperation. Another difference between regulations and social norms is that, while regulations are explicit by definition, social norms may be more vaguely expressed and receive tentative verbal expressions only in cases of violation (Allardt, 1983: 58–9). It is one of the presuppositions of the structural-functionalist tradition in sociology that societies are usually integrated wholes with an affinity and close match between value commitments, social norms and regulations (Parsons and Platt, 1973). Other

traditions, however, emphasize the historically contingent nature of these links and thus understand the existence or absence of such links as an object of empirical study (Weber, 1968 [1922]; Berger and Luckmann, 1966).

Social norms and value commitments can be understood as one part of the *cultural structure* of society. Yet the normative structure alone would be a very limited interpretation of culture. Phenomenological sociologists (Berger and Luckmann, 1966 and Garfinkel, 1967), anthropologists, cognitive scientists and authors in cultural studies as well as many researchers in current organizational studies (Powell and DiMaggio, 1991) expand the cultural aspect of the social structure to include mental paradigms, cognitive frames and habits of interpretation. In such cases we are dealing with the cultural structure of society. Some of these scholars also hold that the regulative and the normative structure of society can best be conceptualized as subworlds or specific levels within the cultural structure (Schutz, 1980 [1932]; Winch, 1958; Berger and Luckmann, 1966; Heiskala, 2003; see also Latour, 1987 and Callon, 1998 where even the techno-economic structure is interpreted from this point of view).

With the above seven structural categories of society we can start to develop our typology of different types of innovations. The first two structures, the structure of the natural environment and the demographic structure, are mostly conditioning structures for social life in the sense that they constrain the action of social subjects. They can also be shaped by innovations. However, such innovations emerge from one or more of the other levels of social structures and they often use technology to carry out either economic or normatively grounded transformation projects at the level of the natural environment or demographic structure. It is therefore more appropriate to term such projects according to their level of origin.

This leaves us with five structures that may all produce distinct types of innovativeness. This means that we may sort out *technological*, *economic*, *regulative*, *normative* and *cultural* innovations. Technological innovations are new and more efficient ways to transform the material reality, and economic innovations put the technological innovations to the service of the production of surplus value.¹ Taken together these two classes form the sphere of *techno-economic innovations* which has been intensely studied during past decades (see Schienstock and Hämäläinen, 2001 and the literature listed there). Regulative innovations transform explicit regulations and/or the ways they are sanctioned. Normative innovations challenge established value commitments and/or the way the values are specified into legitimate social norms. Finally, cultural innovations challenge the established ways to interpret reality by transforming mental paradigms, cognitive frames and habits of interpretation. Taken together these three classes form the sphere of *social innovations*.

It is important to note that the above definitions are ideal types. They facilitate the study of reality by providing a set of ideal types (Käsler, 1988: 180–84). In its multiplicity and constant flux, the social reality is more complex. Therefore, it is normal to find social innovations in practice that combine several of the five types. One example is the application of technological innovations such as the Internet in the field of education or the care of elderly people. Such innovations may add to the capacities and welfare of students and elderly people but they may also simultaneously reduce the expenses of education and care. This is a typical and easily understandable sequence of events in the everyday world. If we look at them through the ideal types presented above, it becomes clear that all the five types are present. The Internet is a technological innovation. In this case its application reduces costs. The project cannot start without decisions made on the regulative level. Such decisions may be justified by solely economic arguments but more often there are normative standards involved. Finally, education is by definition about transforming the students' habits of interpreting reality, and it would be astonishing if the introduction of the Internet to the everyday life of elderly people were to leave their cultural frames untouched. For purposes of empirical research then context specific typologies of innovations are needed.²

INSTITUTIONALIST APPROACH TO SOCIAL INNOVATIONS AND ENHANCED PERFORMANCE

Neoclassical economists study the economy with a highly abstract frame of reference. The framework makes possible exact mathematical studies but, at the same time, presents several unrealistic assumptions about the workings of actual economies. These include the assumption of actors with stable and transitive preferences as well as the assumption of the availability of perfect and costless information. The inability of neoclassical economics to provide a realistic description of the actual workings of the economy has given rise to a plethora of criticisms. The various criticisms include voices from new institutional economics (North, 1990; Williamson, 1994) and organization studies (Powell and DiMaggio, 1991), as well as economic sociology and anthropology (Smelser and Swedberg, 1994; Beckert, 2002; Swedberg, 2003). What is common to all these criticisms is the claim that institutions matter. In other words, they emphasize that economic action is embedded in its social context and this embeddedness affects economic performance (Polanyi, 1944; Granovetter, 1985).

All the above criticisms of the neoclassical paradigm term the social context of economic action as 'institutions' and therefore represent an

institutionalist approach to the economy. However, a definition of institutions and thus the type of institutionalism varies. Neoinstitutional economists understand institutions as sanctioned rules. Many economic sociologists put emphasis on normative regulation. Contemporary study of organizations, cultural studies, cognitive scientists, anthropologists and some economic sociologists extend the term ‘institution’ even to the sphere of cultural interpretations of reality. These currents have often been understood as intellectual alternatives but we are more interested in trying to come to a synthetic approach. The possibility of such a synthetic approach is already present in the typology of social structures presented in the previous section as the different interpretations of what institutions correspond to the regulative, normative and cultural structures of the society.³ Such a tripartition as well as the synthetic interest is in accordance with Richard Scott’s (2001) suggestion to treat the different approaches to institutions as three ‘pillars’ of institutions rather than exclusive alternatives. Scott presents the pillars as a table (see Table 3.1) and claims that descriptions of the embedded nature of economic action are incomplete if they do not include material from all of the pillars.⁴

Taken together the three pillars describe what can be called institutionalism in the broad sense of the word. We will utilize this broad definition in the following pages. In addition, we will occasionally use the

Table 3.1 Three institutional pillars

	PILLAR		
	Regulative	Normative	Cultural-cognitive
Basis of compliance	Expedience	Social obligation	Taken-for-grantedness, shared understanding
Basis of order	Regulative rules	Binding expectations	Constitutive schema
Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, laws, sanctions	Certification, accreditation	Common beliefs, shared logics of action
Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible, recognizable, culturally supported

Source: Scott (2001: 52).

techno-economic structure → institutional structure ← cultural-normative structure
in the narrow sense

Figure 3.1 *Embeddedness of the institutional structure*

term ‘institutional’ in a more restrictive way. This narrow definition of institutions covers only the regulative pillar, that is explicit and explicitly sanctioned rules, in Table 3.1. More specifically, we will include in the institutional social structure in the narrow sense (a) *public policies (public goods and services)*, (b) *the regulatory framework (laws, regulations, collective agreements)* and (c) *organizational principles and arrangements*. This definition is based on the goal of this book to study the challenge that the third industrial revolution poses to economic actors (see Chapter 1). The change of the techno-economic environment creates a new situation with both new threats and new opportunities. The opportunities (‘windows of opportunity’) can only be realized through changes in public policies, regulatory framework and organizational principles. It is therefore the changes in the institutional structure of society (in the narrow sense) that we attempt to understand in this study. Consequently, we are especially interested in understanding social innovation processes that change the institutional structure and lead to improvements in the society’s economic and social performance. However, as we have seen in the previous chapter, institutions in the broad sense of the word, that is, the normative and the cultural structure of society, play a key role in the social innovation processes that shape long-term economic and social performance. Such embeddedness of the institutional arrangements can be presented as a simplified figure (Figure 3.1).

The arrows in Figure 3.1 can be interpreted either as interfaces or as causal lines. The latter interpretation allows two classical, but opposite, approaches to the change of the institutional structure in the narrow sense. The first of them can be called *material determinism*, the other *cultural determinism*. Karl Marx is well known for his argument of ‘material’ or ‘technological determinism’ that emphasizes the left arrow in Figure 3.1:

In the social production which men carry on they enter into definite relations that are indispensable and independent of their will; these relations of production correspond to a definite stage of development of their material powers of production. The totality of these relations of production constitute the economic structure of society – the real foundation, on which legal and political superstructures arise and to which definite forms of social consciousness correspond. The mode of production of material life determines the general character of the social, political, and spiritual processes of life. It is not the consciousness of men that determines their being, but, on the contrary, their social being determines their consciousness. At a certain stage of their development, the material forces

of production in society come in conflict with the existing relations of production . . . From forms of development of the forces of production these relations turn into their fetters. Then occurs a period of social revolution. With the change of the economic foundation the entire immense superstructure is more or less rapidly transformed. (Marx, 1979 [1859]: 4)

The opposite stand that puts almost all emphasis to the right arrow in Figure 3.1 is exemplified by Talcott Parsons's 'cultural determinism' with the idea of cultural specification at its core (Parsons, 1964; Parsons and Platt, 1973). According to this idea cultural worldviews define the world for us. In actual social contexts these abstract ideas are specified into values, which again are specified into social norms, some of which are general in nature and thus apply to everybody, and differentiated social norms, which apply to holders of certain role positions (doctors, judges, managers, politicians and so on). Reciprocal expectations of adequate behaviour or social norms form the realm of social institutions, which is one possible actualization of the worldview in question. At a more concrete level the existence of institutions makes the definition of goal-oriented action projects possible and thus defines the scope of normal and generally accepted means to reach those goals which the set of shared values presents as desirable.

In the context of actual everyday life people spend most of their life at an even more specified level by living their life in a routinized way. Business as usual goes on as long as there is no need for change. Every now and then, however, the need for change is actualized in the form of either environmental change or internal crisis. What now happens is a process that Parsons called 'generalization'. It is the reverse of 'specialization' and follows the same chain of steps (worldviews → values → norms → means → behavior) to the opposite direction. It depends on the seriousness of the crisis how far the process of generalization reaches. Some problems at the level of routinized behavior can be solved with conscious reflection, negotiation and collective bargaining at the level of means. The collection of socially legitimate means and action projects to reach valued goals is thus redefined and life can then go on in a routinized way. This all takes place without any changes at the level of institutions/social norms, values or worldviews. The more serious the crisis is, however, the higher on the scale processes of redefinition extend. The Watergate crisis in American politics caused a process of generalization which affected, in addition to the level of means, the level of norms of political action and finally affirmed American values in a ritual sacrifice of President Nixon (Alexander, 1988, 1989). The rise of environmental consciousness in the past 40 or so years again goes even further and causes changes also at the level of values and even at the level of worldview (Heiskala, 1996: 48–70).

What is important for the theory of social change is that, whatever the scope of the change, Parsonian interpretations approach it from the point of view of the specification–generalization scale. The more abstract cultural levels of the scale thus form the basis for the re-creation of new social practices but this is not all: cultural values and worldviews also form the boundaries of the imaginable reality. Societies, therefore, are actualizations of cultural worldviews and even if they can go through processes of significant re-creation these processes never lead to anything that could not be seen as a ‘specification’ of the more abstract worldview and the set of core values which together define the basic entities of reality and the meaning of life to the members of that society. This is why even Parsons himself described his approach to society as cultural determinism.

Between the above extreme ends of the continuum of change theories there is a variety of mediating and more complex approaches. Max Weber expressed this mediating stand⁵ as follows:

the same technology does not [always] lead to the same economy or the other way around . . . I would like to protest the statement . . . that some one factor, be it technology or economy, can be the ‘ultimate’ or ‘true’ cause of another. If we look at the causal lines, we see them run, at one time, from technological to economic and political matters, at another from political to religious and economic ones, etc. (Weber, 1988 [1910]: 451, 454; quoted in Schroeder and Swedberg, 2002: 389)

As a description of the social reality we believe that the Weberian mediating stand is the most realistic approach of the three. It allows the ‘materialist’ as well as ‘cultural determinist’ explanation of cases but it also makes the direction of causation an empirical question in each case. In the next section, we will examine the problem of structural reproduction and change at a more general theoretical level focusing particularly on the role and significance of social innovations and collective learning in the process of social change.

STRUCTURAL REPRODUCTION, CHANGE AND SOCIAL INNOVATION

How are social structures maintained over time? A review of social theoretical literature (especially Durkheim, 1995 [1912]; Weber, 1968 [1922]; Giddens, 1984; Mann, 1986; Bourdieu, 1990 and Joas, 1996) suggests five alternative sources for societal reproduction:

1. traditional action (habit)
2. forced cooperation (violence)

3. charismatic leadership (the sacred)
4. economic action (market calculation)
5. political regulation (formation of coalitions).

Habits are the basic level and foundation of all our action (Mead, 1934; Joas, 1996). Some habits are of biological origin and thus common to all human beings (the need for nourishment and shelter, sexual instinct, the way our senses work) but in the course of cultural evolution these habits are supplemented and modified by habits of interpretation, that is, signification whether conscious, preconscious or unconscious (Heiskala, 2003; Peirce, 1931–58). Weber divided socially mediated habits or what he called traditional action into three subclasses, that is, habit proper, fashion (*mode*) and convention. In all these cases an individual follows a pattern of action simply by the force of routinized repetition even if the degree of awareness on the pattern, its duration in time and diffusion in space varies in each case (Weber, 1968 [1922]: 29–31).

Forced cooperation is always based on violence or the threat of it. The threat of violence may be immediate and unorganized as is the case when one individual makes another obey his orders in a face-to-face encounter. More often and in social theoretically more significant cases, however, violence is organized and mediated as happens in the case of the modern nation state with its complex organization (that is, bureaucratically organized staff, rule of law and democratic legitimation) and claim for the monopoly of the use of force within its area (Weber, 1968 [1922]; Mann, 1986, 1993).

Charisma may be a quality of an individual actor (such as a prophet, a warlord, a politician, a manager or a rock star) who for some reason is capable of creating a group of faithful followers. Yet charisma may also be depersonalized so as to characterize some positions in a hierarchy (such as the PM or the CEO) or symbols of the unity and devotion of the group of followers (such as flags and corporate logos) (Schluchter, 1989). In both cases the power of charisma to direct the follower's action emanates from his or her emotional affection for the charismatic object that is felt to be sacred in some sense. To last in time, such emotional affection must be affirmed with rituals that are repeated with relative regularity (Durkheim, 1995 [1912]; Parsons, 1951; Alexander, 1988, 1989).

The market as a mechanism of social regulation and coordination is characterized by voluntary exchange as opposed to habitual, forced or charismatically motivated alienation of property. In an ideal-typical case voluntary exchange is driven solely by the rational calculation of the actor's self-interest. Historically, however, markets have never emerged without the support of traditional action, forced partnership and/or charismatic

regulation, and it is one of the main messages of this book that the economic sphere of the modern world is still deeply embedded into these other spheres (Weber, 1968 [1922]; Polanyi, 1944; Granovetter, 1985).

Politics is about maintaining and creating the framework of action (following a path or creating a new path) and it often involves interest struggle. The aim of a political actor (most often a collective actor) is to organize reality by ruling out alternative realities or opening a path to an alternative reality depending on whether we are dealing with politics for the status quo or alternative politics (Palonen, 1985; Lyotard, 1985). Formation of coalitions (parties in the Weberian sense) between different interest groups is the principal tool of a political actor whether the interests involved are material interests (that is, based on market calculation) or ideal interests (that is, based on charisma and the emotionally felt sacredness of the ideas involved) (Collins, 1986). The principal arena of modern politics from the late 18th century to the end of the 20th century has been the nation state (Mann, 1993) but with the process of globalization the significance of sub-national regions on the one hand and international organizations on the other has been growing more important (Castells, 2000; Jessop, 2002).

It is the force of habit that reproduces societies in the first place as people do not change their pattern of action until they run into a crisis of one sort or another (Joas, 1996). The habitual reproduction of the social order can be supplemented and supported with forced cooperation, normative regulation, self-interest and political regulation whenever there is a need and interested parties to take action for the prevailing order. In the case of forced cooperation this calls for violent sanctions against deviation. Such sanctions may be effective as long as surveillance is effective but their force tends to dissolve in the absence of an actual and immediate threat of violence. Therefore, normative regulation is often more effective as the subjects internalize the traditional patterns of action and thus act accordingly even in situations where external sanctions are missing. Sometimes it is simply the most profitable line of action to follow the traditional pattern (economic action). Or it may be the safest way from the point of view of the formation of coalitions and hegemonic patterns (political regulation).

All of the five means of social regulation can thus contribute to the reproduction of the prevailing order but they can also be put to an alternative use of facilitating change. Habits of interpretation may change due to one or another type of crisis and the new way to conceptualize reality may open up new possibilities. Warlords, motorbike gangs or other violent actors may force people to act differently. Prophets, consultants and institutional entrepreneurs may arise with the traditional charismatic formulas 'It is written . . .' and 'For I tell you . . .' (Matthew 4:4, 5:20 and *passim*). During major

environmental transformations it may also be economically beneficial to act differently (economic action) or it may be more favourable for one's ideal or material interests to enter into a new coalition (political regulation).⁶

In actual history no society is ever reproduced completely and no society ever changes completely. All actual courses of history are therefore mixtures of reproduction and change. But the pace and scope of change matter. We can distinguish four different types of institutional change:

1. reproduction
2. incremental change/evolution
3. radical change/revolution
4. chance/change without control.

Reproduction refers to a situation with no or minimal change. Incremental change can come to virtually the same thing but it can sometimes also create significant changes in the long run as successive small changes can result in a qualitative transformation. Radical changes are revolutions in basic institutional arrangements. Finally chance is change without control. It is a result of either unintended consequences of human action or unexpected environmental changes.

As far as social innovations are concerned, the relevant types of change are 2 and 3 above, that is, cumulative incremental change with qualitative consequences or radical change. For the purpose of specifying the nature of such social innovations it is useful to refer to a typology developed by Robert Merton for analyzing different approaches that individuals or groups can take to the prevailing social order (Merton, 1938). The typology is organized according to the actor's adaptation to a rapidly changing environment, specifically according to the actor's relationship to culturally shared ends (values) and institutional means (norms) of achieving such ends (Table 3.2).

Table 3.2 Reactions to social order according to Merton

Type of reaction	Cultural ends (values)	Institutional means (norms)
Retreation	–	–
Uniformity	+	+
Ritualism	–	+
Innovation	+	–
Rebellion	–/+	–/+

Source: Adapted from Allardt (2003).

Retreation is a case of full-blown loss of orientation, that is, an anomic condition of the sort that Émile Durkheim, who brought the term into the vocabulary of social scientists, was worried about. It is usually a result of such fast environmental change with bad consequences for the actors that the actors completely lose their compass for orientating themselves in the reality. Such people do not know what to do and why. Sometimes the lack of orientation extends to the level of the cultural structure as well (Hilbert, 1992). In such a case the actors have not only lost their compass but also the map of reality (that is, they are not only insecure about the meaning of life but also incapable of interpreting what is going on around them). Anomic conditions are the more difficult the deeper the loss of orientation extends and the greater the number of people it affects. If the experience of anomie is shared by a great number of people it can be called 'cultural trauma' as Piotr Sztompka does in his interpretation of the reversal of Poland and other East European countries from socialism to capitalism (Sztompka, 2000; see also Alanen, 2001, 2004).

Reproduction of the institutional structure is what can be expected in cases of uniformity and ritualism. In the former case uniformity with institutional means is backed by uniformity with values, that is, the institutional structure in the narrow sense works in accordance with the normative structure. However, in the case of ritualism this is not so. In the lack of charismatic/normative justification the reason to adhere to institutional means must be elsewhere. Based on the classification presented in the beginning of this section it must be based simply on the force of tradition, violently forced partnership, economical benefits or political strategy. Whatever the reason, the consequence is that no change of the institutional structure takes place.

The case called innovation by Merton is such that the actor agrees with cultural values but disagrees with institutionally defined means of reaching the goals. Such an actor therefore turns into what has been called an institutional entrepreneur and acts for institutional change. Another case of institutional entrepreneurship is that of rebellion. In that case the actor aims for very radical changes either at the level of cultural values or at the level of institutional means or both. Our definition of social innovation allows for the actions of both Merton's innovator and rebellion to be counted in the class of social innovation.

Processes of social innovation react to felt crises in the reproduction of the structures of social action and, what is the reverse side of the coin, recognized windows of opportunity. Such crises can be brought up by internal tensions (hegemonic conflict based on material or ideal interests) or environmental changes (the third industrial revolution). It is a quality of social innovation to turn a felt crisis of the prevailing pattern of the

reproduction of social structure into a window of opportunity. Obviously, there is no guarantee that an existing crisis always launches innovation and social change. This is so because people may be incapable of recognizing the existence of the crisis or unable to solve it (that is, live in the middle of change without control of the process). But in all cases where the situation is recognized as a crisis and attempts are made to solve the crisis these processes must go through phases of intellectual and social processing which either are the same or very much resemble those described in Parsons's generalization–specification scheme. However, Parsons himself understood culture as a shared context for actors and did not have the means to deal with cultural variation (Heritage, 1984). One of the outcomes was that he downplayed the possibility of interest conflicts in his approach. Luckily enough there is a more recent reconstruction of his views in Jeffrey C. Alexander's studies on the Watergate crisis with a possibility of including interest conflicts in the scheme.

Alexander (1988, 1989) points out that instead of one process of generalization (behavior → means → norms → values → worldview) there are three alternative ideal typical routes. One is the route of *cultural specification*, which Parsons understood as the only possible case. In this case problems are solved with a rise to the more abstract levels until a consensus of shared commitments (typically in a case of a serious crisis of values) emerges and related successive specification of these views on the more concrete levels of the social process (worldview → values → norms → means → behavior) takes place. But societies are not always such harmonious wholes as Parsons expected them to be. Another possible route of generalization leads to *cultural columnization*, which means that consensus does not emerge even on the most abstract levels of generalization. This is a situation of a serious conflict of interests in the Weberian sense and can in its extreme forms lead to civil war or in the global context to what has in an influential recent pamphlet been called the 'clash of civilizations' (Huntington, 1996). Between these extreme cases of a completely integrated society (cultural specification) and a full-blown conflict of material and ideal interests (cultural columnization) there is a mediating type, which Alexander calls *cultural refraction*. In that case the process starts as a columnized generalization but as generalization of consciousness goes on competing groups finally find consensus on a more abstract level and the process of specification can start. This is what happened in the American Watergate crisis as Democrats and Republicans finally agreed on shared values that should guide American politics. In cases of cultural refraction the emergence of consensus is typically mediated by rituals in the Durkheimian sense, which in this case involved the media coverage of hearings in the Senate and the ritual sacrifice of President Nixon.⁷

Alexander introduces his typology of the three routes to generalization in the context of the study of social conflict and ritual renewal of civic consciousness but it can also be used as an organizing device in the study of processes of social innovation. Such processes start with a felt crisis in an established pattern of behavior or practice. For innovations to emerge there must be a generalization of consciousness to the level of regulative patterns. As these patterns normally rest on the normative and cultural structure of society to a significant degree the emergence of institutional innovations is filtered by established patterns at these levels in the case of small changes and actually extends to these more abstract levels in the case of bigger changes. Depending on the case in question, the process of generalization can follow any of the above three paths, that is, cultural specification, cultural columnization or cultural refraction. It is the task of empirical study to detect which paths come into existence in each actual case.

One factor that determines whether the outcome of the generalization process is specification, columnization or refraction is the division of power resources. In the section on 'Innovations and social structures' we proposed that the generalized concept of power as a resource can be used as a yardstick for whether a change of social practice is or is not a social innovation. We there coined the twofold distinction between distributive power (a zero-sum game with the gains of A always being losses of B) and collective power (a resource that can be increased through technological development or transformation of social practices). We also promised to come back to the specific nature of increased power resources. That is what we are going to do next.

Application of the two concepts of power to the study of innovations allows innovations to be understood as changes in social practices, which increase actors' power resources. Increases in collective power are most obvious cases of social innovation but, depending on whose point of view we take, the increase can take place either in distributive or in collective power and be counted as a social innovation. By cross-tabulating these possibilities with a threefold scale increase (+), no change (0) and decrease (–) we get Table 3.3 with nine cells as possible outcomes to individuals or groups A and B. Cases IV, V and VI are the most easy to analyse as IV (win, win) is in everybody's interest, VI (loss, loss) is in nobody's interest, and V means no change at all. All the other cases are in somebody's interest because either A wins (I, II, III) or B wins (VII, VIII and in some scenarios IX) and may sometimes be a shared interest of both A and B because in the case of powerful innovations relative losses of distributive power may be compensated by the benefits of a significant rise of collective power (I in some scenarios).

The aim of this book is to analyze social innovations in structural adjustment to the environmental changes emerging in the course of the third

Table 3.3 Breakdown of distributive and collective power in a two-player game

A's distributive power (over B)	Collective power (A+ B over C)		
	+	0	-
+	I: + A, ?B	II: + A, - B	III: + A, - B
0	IV: + A, + B	V: no change	VI: - A, - B
-	VII: - A, + B	VIII: - A, + B	IX: - A, ?B

industrial revolution. Some of the transformations brought up by social innovations will increase collective power and benefit all actors (such as improved communications with the development of ICT). Some changes, however, will not benefit everybody, as some nations, areas, sectors, firms, groups or people will be better positioned and more competent than others to take advantage of them. Here we enter into the grey area of distributive power shifts either in the condition of increasing collective power (a condition that still at least in principle allows everybody to win in comparison to the previous state of social practice) or in the condition of the zero-sum game (with the result that any change in the allocation of power resources is a loss to somebody). Successful transformations of social practices are social innovations in all such cases but in cases of reallocating power resources between different groups of actors they are also hegemonic changes which sometimes lead to situations where some groups lose power resources not just relatively but absolutely. The concept of social innovation is therefore an ethically and politically neutral concept. Many social innovations bring benefits to all or many people but it is equally possible to have social innovations that mean increased power resources to some while they at the same time bring increasing inequality and suffering elsewhere. It is the task of empirical study to detect which paths come into existence in each actual case.

THE THIRD INDUSTRIAL REVOLUTION AND SOCIAL INNOVATIONS

Improved communications and the third industrial revolution have lowered the borders of economic action considerably (Held *et al.*, 1999; Giddens, 1999). They have made economic competition global and given relative advantage to economic actors who are continuously able to create techno-economic innovations. The ability for such innovativeness (product

innovations, process innovations and so on) is a matter of technological competence and business organization but it also requires ‘competence blocks’ (see Chapter 8) that provide a favourable environment for techno-economic networking and innovation. This is why the third industrial revolution calls for a new approach that has been called ‘macro-organizational’ (Hämäläinen, 2003). Such a new approach extends the need for innovativeness from the techno-economic sphere to the sphere of institutional innovations.

At the level of the nation state, the increasing need for social innovations has been reflected in calls for a new ‘developmental state’ (Castells, 2000), ‘macro-organizational’ government role (Hämäläinen, 2003), and a turn from the Keynesian welfare state to the ‘Schumpeterian competition state’ (Jessop, 2002). Whatever the term used all the interpretations mentioned emphasize the changing role of the state and see the change as a combination of a loss of some functions and the emergence of new ones. What is lost is the autarchic nature of the state with an ability to rule the national business system as a whole relatively independently from the rest of the world. In addition to other consequences this makes the tools of Keynesian economic policy less efficient as the problems of unemployment and the regulation of aggregate demand must be managed in a world with lower borders. The new functions again include the creation of favourable conditions for the emergence of such competence blocks that can host innovative firms that are capable of becoming and staying global market leaders. This transforms the functions of the state toward the direction of effective coaching and mentoring of firms, sectors and regions that are either actually or potentially capable of forming such a competence block that it can host global players. Such policies are necessarily selective as no state can coach and mentor effectively many sectors and areas in global competition that requires specialization as a precondition of the creation and maintenance of competitive advantage. The creation of a ‘national innovation system’ (Miettinen, 2002; OECD, 1997) and comparable policy tools of the coaching state involve, at the same time, both the potential for increased collective resources and their redistribution, and the associated hegemonic struggles between competing interest groups. The situation of regions (such as the EU and NAFTA), areas and business sectors is a similar one: in the course of the third industrial revolution there is a need for social innovations that create competence blocks with the capacity to create and maintain competitive advantage in a global environment.

The theoretical possibilities for reacting to the challenge of the third industrial revolution can be differentiated into a list of four alternatives:

1. structural reproduction
2. change with significant decline in collective power and losses for all

3. change with significant rise in collective power and benefits for all
4. change of the hegemonic pattern
 - a. in the condition of increasing collective power
 - b. in the condition of stable or decreasing collective power.

The case of structural reproduction involves no change or minimal incremental changes. There is no a priori reason to conclude that such a condition is always dysfunctional. However, in the condition of the third industrial revolution it can be predicted that societies and regions that stay in this class will face serious problems (Hämäläinen and Heiskala, 2004; Chapter 8). The second class consists of societies and regions that face either unintended consequences of their actions or unexpected environmental changes. Serious problems, decrease of collective power resources and the possible emergence of a collective trauma can be expected as a result of chaotic change (Sztompka, 2000; see also Sztompka, 1993).

The remaining two classes involve the possibility of collective learning and structural adjustment to the changing environment. The third class is the least problematic goal for social change as it includes both a rise in collective power resources and a breakdown of benefits that makes it rational for most actors to join the process. The generalization–specification process can therefore be predicted to follow the pattern of either generalization or refraction. The fourth class is more problematic in these terms and it includes two subclasses. One is a change of the hegemonic pattern in the condition of increasing collective power (4a) (that is, successful structural adjustment) and the other a change of hegemonic pattern in the condition of stable or decreasing collective power (4b). Both scenarios tend to produce problems because there is a possibility of cultural columnization, on the one hand, and the path to anomie, retreatation and cultural trauma for a segment of population, on the other. The former scenario with rising collective power (4a), however, provides more room for maintaining social integration as increased resources make it possible to try to buy militant losers from the path of cultural columnization to that of cultural refraction and run various policy programmes which aim to improve the condition of the marginalized and potentially anomic segment of the population. Whether such policy tools are used or not is a contingent historical question but in any case the resources for adopting the path of social integration are available for the winners of the struggle for hegemony.⁸ This is not the case in the scenario of the change of the hegemonic pattern in the condition of stable or decreasing collective power resources (4b) and the threat of facing serious problems with cultural columnization or marginalization of a significant segment of the population is therefore considerable.⁹

CONCLUSION

Social innovations are changes in the cultural, normative or regulative structures of the society which enhance its collective power resources and improve its economic and social performance. The third industrial revolution emphasizes the importance of social innovations that create reflexive social structures which have the capacity for collective learning. Reflexive social structures have the capacity of continuously renewing themselves through social innovations. Such a renewal can take place either as a process of cumulative incremental innovations (qualitative evolutionary change through ‘creative routines’) or as a process of radical innovation (revolutionary change with discontinuity). In both cases social innovations have an intimate relation to a change of hegemonic pattern. However, the most successful social innovations result in significant increases in the collective power resources of the society. Social innovations can therefore benefit all actors.

The ultimate aim of this book is to generate policy recommendations for the creation of reflexive and learning social structures in the context of the third industrial revolution. Societies with such structures could possibly avoid, or at least alleviate, the deep crises that often come with major structural transformations. Empirical studies of structural adjustment processes can increase our understanding of the factors that promote or prevent the emergence of reflexive and adaptive social structures. It is important to study both successful and unsuccessful cases in order to find out where policy interventions can facilitate change processes. We have included both types of case studies in this book. Our cases examine structural adjustment processes at the level of business sectors, regions and nation states.

NOTES

1. This is so in the context of current capitalist societies. Should we want to analyze other types of societies we would need to rework the definition with the help of a more extensive concept of the economy (see Heiskala and Virtanen, 2007).
2. One example of such context specific typology is provided in the list of the five ‘new creations’ provided by Schumpeter (quoted in the opening of this section). For more on developing such context specific typologies see Schienstock (2003a, 2003b).
3. One variant of such a synthetic approach was already present in the work of Talcott Parsons whose AGIL scheme (adaptation to the environment, goal-attainment, integration and latent pattern maintenance) presented ‘the social system’ as a combination of four subsystems with the economy providing resources (A), polity by the state and other institutions taking care of goal-attainment (G), integration secured by social norms maintained by community (I), latent pattern maintenance provided by value commitments transferred from one generation to another by socialization institutions (L) and all this taking place within a context of a more extensive ‘cultural system’ (Parsons, 1951; Parsons

and Smelser, 1956; Parsons, 1964; Parsons and Platt, 1973; Alexander, 1983). We thus find a holistic framework with a counterpart for the regulative structure (i.e., G), the normative structure (i.e., I and L) and the cultural structure (i.e., the cultural system). What is different, however, is that while Parsons's systems theory understood systems with an analogy to biological organisms and thus included the assumption that all systems aim for survival in time by definition we believe that even if there certainly are social systems with such an internal programming it is always a matter of empirical study to detect which systems, how and why, aspire for integration and survival. The basic conceptual framework for this study therefore does not come from the systems theory but structuration theory even if we believe that under the thematic horizon of structuration systemic complexes can be found.

4. There is a slight difference in the interpretation of the third pillar. Scott calls it 'cultural-cognitive' and we prefer the term 'cultural structure'. We use the term 'cultural structure' because the term 'cultural-cognitive' easily leads to the interpretation of all meanings as different forms of knowledge. Even when extended with the idea of 'tacit knowledge' (Polanyi, 1966; Nonaka and Takeuchi, 1995) such a theory of meaning leaves out the pragmatist understanding of meaning as a 'habit of interpretation' (which may or may not be conscious) and (what comes to the same thing expressed in different terms) those meanings which neostructuralists call 'loosely articulated' (see Kilpinen, 1998, 2000; Heiskala, 2000, 2003). This difference is most important in the context of some research tasks (such as gender or ethnicity as institutions) but in the context of current study both conceptualizations work most of the time equally well, which is the reason why this issue is here present only in a footnote.
5. Weber is sometimes falsely presented as a cultural determinist due to a naive interpretation of his *Protestant Ethic and the Spirit of Capitalism*. For a more adequate interpretation see Collins (1986), Schluchter (1989) and Hietaniemi (1998).
6. One timely example of the relative strengths and weaknesses of the alternative sources of reproduction and change of social structures is provided by the war in Iraq. From the point of view of forced cooperation it can be understood as an episode with a superior warlord (George Bush and his administration) attacking another (Saddam Hussein and his administration) with the predictable loss of the inferior warlord. However, after the conquest of the country the US has run into significant problems in its attempt to facilitate permanent changes or even some form of stability in Iraq. This is due to the underestimation of the Bush administration of the force of tradition (local habits and kinship ties vs American culture), charismatic leadership (Islam and warlords vs Christianity and human rights), economic action (the threat of losing benefits) and political regulation (the US disinterest in forming a working coalition at the international level and the, at least partly, related inability to form such a coalition in Iraq). Consideration of these aspects halted the US plans for a full-blown conquest of Iraq during the first Gulf War in the early 1990s and the course of events during and after the second Gulf War verifies that the doubts of the early 1990s were well grounded. For more on this see Mann (2003).
7. For similar but even deeper changes in the global environmental consciousness see Heiskala (1996).
8. The motivation of the winners of the struggle for hegemony to adopt the strategy for social integration emerges in the case of a potential conflict from the fact that internal conflict always takes resources and such resources could be used more productively. In the case of improving the position of marginalized people it is a question of avoiding the waste of human resources (both acutely and possibly more importantly over generations). Combining the two motivations for a policy for social integration suggests such policies as collective agreements, minimum income and free or virtually free access to education for all social classes.
9. Best and particularly striking examples of such courses of events include undemocratic coups in developing countries such as Charles Taylor's Liberia or Idi Amin's Uganda but they can also take place in more developed and more democratic conditions.

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4. Social innovation or hegemonic change? Rapid paradigm change in Finland in the 1980s and 1990s

Risto Heiskala and Timo J. Hämäläinen

INTRODUCTION

We have two objectives in this chapter. First, we will analyze the rapid paradigm change and extensive structural transformation in Finland during the 1980s and particularly in the 1990s. The second objective relates to the social scientific and even political debate on the different ways of conceptualizing social change. It is sometimes argued that when changes in social structures are described as ‘social innovations’ the term hides from sight the hegemonic power struggles and conflicts between different interest groups associated with all social change processes. In this chapter, we will make an attempt to show that there is no reason to consider the two approaches as exclusive alternatives even though the controversy between them is understandable at the political level.

The next two sections examine the structural and cultural transformation of Finland after the Second World War and particularly in the two last decades of the 20th century. The following two sections elaborate the analysis by using both social innovation and hegemonic struggle perspectives. The next section will combine these two, allegedly exclusive, perspectives and the final section will provide a brief conclusion.¹

A SHORT HISTORY OF POSTWAR FINLAND: STRUCTURAL ADJUSTMENT AND INCREASING COMPETITIVENESS

The postwar growth experience of Finland resembles the contemporary growth miracles of Japan and West Germany. After the lost war and heavy war reparations the Finnish economy industrialized very rapidly on the back of heavy investments in export-oriented basic industries such as paper

and pulp, basic metals and chemicals. There was a national consensus on the investment-driven growth strategy that rapidly brought Finland closer to the world technological frontier and created new technological capabilities among Finnish firms (Pohjola, 1996). The acquisition of foreign machinery and equipment played a key role in the technological catching up process. Equally important was the determination with which the national education system was developed. The growth strategy was also supported by: tightly regulated capital markets (low interest rates), generous tax exemptions for investments, flexible exchange rate policies and the highly profitable barter trade with the Soviet Union. The Finnish welfare state was modeled according to the successful Swedish example.

At the end of the 1980s, Finland had reached the league of the wealthiest countries in the world as measured by GDP per capita. Its catching up process was perhaps even more impressive than those of West Germany and Japan because Finland was *not* an industrialized economy before the war like these two other countries. However, at the same time, the structural inefficiencies and distortions created by the investment-driven growth strategy also began to emerge. The structural competitiveness of Finland deteriorated from ninth place to fourteenth place among the OECD countries between the early 1980s and early 1990s (see Table 2.4).

The deregulation of financial markets (increasing real interest rates) and the collapse of the Soviet Union revealed the structural inefficiency of the Finnish economy in the rapidly changing techno-economic environment. This inefficiency was reflected in the fact that Finland was the most expensive OECD country in 1989 and 1990 in purchasing power parity comparisons.

In fall 1990, the Finnish economy collapsed, leading to the most severe depression in independent Finland's history. Numerous firms filed for bankruptcy, thousands of over-borrowed households defaulted on their debts and the banking system went into deep crisis. The unemployment rate topped at 20 percent and the state ran a massive budget deficit. Very soon, the state finances were at the mercy of international lenders. The crisis was too deep to be swept under the carpet; ad hoc explanations would not anymore restore people's trust in the old institutions and ways of doing things. It became clear that the Finnish economy and society required major structural changes.

In the early 1990s, Finnish firms laid off their workers en masse, reorganized their business processes, and considerably improved their productivity and competitiveness. And all this took place with scarcely any new investments. The government made drastic cuts in public expenditures that had not been possible in better economic times. At the same time, the export competitiveness of Finnish firms was re-emphasized as a key policy

goal. Also, individual citizens changed their behavioral patterns: people began to pay back their debts and work harder and many sought new training opportunities to upgrade their skills.

As we can see, the Finnish economic crisis came with a silver lining: it reduced the society's mental rigidities to adjustment. Moreover, being a late-industrializing country, Finland had not become so deeply embedded in the old techno-economic paradigm as many older industrialized countries. Thus, the Finnish society has been quite flexible in its adjustment to the new techno-economic environment. Some observers even think that Finland is a leading information society in the world (Castells and Himanen, 2001).

The internationalization of Finnish firms during the 1990s had an important impact on the competitiveness and growth of the Finnish economy. There were major changes in international trade patterns, portfolio investments and foreign direct investment (FDI) flows.

In the 1990s, Finnish exports were characterized by increasing knowledge-intensity. The share of high technology products in total exports increased from 6 percent in 1991 to 21 percent in 1999. Most of this increase can be attributed to the rapid growth of the telecommunications cluster. At the same time, the share of exports in GDP nearly doubled from 22 percent in 1991 to 43 percent in 2000. The rapid growth of high technology production and exports has created a 'third leg' for the Finnish economy besides the traditional forest and basic metal industries. Global markets have facilitated the specialization of Finnish firms into their core activities and narrow product niches which resulted in increasing scale and learning economies.

Finnish capital markets also became more international in the 1990s. The liberalization of the Finnish capital markets began in the mid-1980s and the last restrictions on cross-border capital flows and foreign ownership were removed in 1993 (Pajarinen *et al.*, 1998). Since then, the foreign ownership of Helsinki Stock Exchange (HSE) listed shares has increased rapidly and approached 70 percent in November 2001 (HSE, 2002). This makes the HSE one of the most internationalized stock exchanges in the world.

The rapid growth of foreign portfolio investment has improved the availability of equity capital for Finnish firms and made the Helsinki Stock Exchange a more liquid market place (Pajarinen *et al.*, 1998). The increasing foreign ownership has also pushed the corporate governance practices of large Finnish firms toward the Anglo-Saxon 'shareholder value' approach. Thus many firms have terminated their supervisory boards and restructured their management boards. In the latter, external expert members have increasingly replaced management representatives. The Finnish firms have also created new incentive mechanisms (for example

stock options) for their managements to meet the demands of international investors (Huolman *et al.*, 2000). The new efficiency-oriented governance practices mark a clear break from the stakeholder-oriented and corporatist governance structures of the 1980s.

Both outward and inward direct investment began to grow more rapidly in Finland in the mid-1980s. However, the outward FDI flows outpaced the inward flows as many large Finnish firms operating in sheltered domestic markets (for example insurance companies and banks) as well as some state-owned companies holding monopolistic market positions (chemicals, oil) increased their foreign investments. The poor financial performance of these investments and the subsequent disinvestments suggest that many of the original investments were made without the necessary ownership-specific advantages underlined by the established FDI theories (see Dunning, 1993). These investments can be better explained with some less well-known theories of FDI that emphasize the monopolistic rents of large firms in domestic markets and their exploitation by the management in foreign countries (Cowling and Sugden, 1987).

After a brief pause in the early 1990s, the rapid growth of outward and inward FDI resumed in 1993. The outward flows continued to outpace the inward flows during the rest of the decade. In the late 1990s, the stock of outward investment was about two times larger than the stock of inward investment. Pajarinen *et al.* (1998) discuss the impacts of FDI on the Finnish economy during the 1990s. The economic impacts of outward FDI are not very clear but empirical research suggests that the cross-border expansion of large Finnish firms improved their international competitiveness in most cases. However, at the same time, the investments also somewhat reduced the firms' domestic employment. The growth of inward FDI had more positive than negative effects on Finnish industry. On average, foreign-owned firms in Finland have grown faster and they have been more profitable than indigenous firms. Foreign firms have also provided new technology as well as new marketing and organizational skills to their Finnish subsidiaries. All this has reinforced the competitiveness of the Finnish economy.

The role of government in the Finnish economy was also reshaped after the crisis of the early 1990s. Instead of physical investments, the new strategy emphasized economic efficiency, innovation and growth (MTI, 1996). Finland moved towards a 'macro-organizational' policy approach that emphasizes the reduction of market failures as the core responsibility of the government (Dunning, 1992). With the severe economic crisis in the background, this strategy was easy to understand. The Finnish economy was increasingly exposed to foreign competition and could not compete without world-class efficiency, productivity and value-adding capacity. And

the popular welfare state could not be financially supported without an efficient and competitive economy. Having a strong engineering orientation, the Finnish value-adding strategy was based on technological innovation. Policy makers wanted Finland to become a true 'knowledge-based society' and the early success of the telecommunications cluster showed the potential of this strategy. As a result, the role of technology policy became central in the new growth strategy. Perhaps as a reflection of the old input-driven strategy, increasing national R&D inputs became a central goal of technology policy in the late 1990s.

EMERGENCE OF A NEW MENTAL PARADIGM IN THE 1980s

The structural transformation of the Finnish economy and society in the early 1990s was *triggered* by the economic depression. However, the rapid advance and broad scope of this transformation can be explained with the availability of a competing and respectable mental paradigm that could be adopted once the postwar mental paradigm was discredited by the economic crisis. The key elements of this new market-oriented paradigm had already emerged in public discussion in the 1980s but they did not gain widespread support until the economic crisis. During the great uncertainty and insecurity of the early 1990s, the new paradigm offered clear guidelines for the restructuring process.

Table 4.1 compares and contrasts the main characteristics of the postwar and the new mental paradigm in Finland. The two paradigms represent the shared cognitive frames, values and norms of the Finnish people before and after the economic crisis. The characteristics of the two paradigms are based on empirical studies of public discussion during the postwar period (Alasuutari, 1996; Alasuutari and Ruuska, 1999), interviews of key decision makers right after the crisis (Kantola, 2002) and empirical research on the changing values of Finns during the 1980s (Helkama, 1997) as well as the authors' own observations as active members of the Finnish society. The table also relates the mental paradigm shift to some of the key structural changes that took place during and after the crisis in the 1990s. The postwar mentality of the Finnish society has been characterized as a period of 'planned economy' (Alasuutari, 1996). There was a deep trust in the effectiveness of hierarchical planning as the key coordination mechanism in all sectors of the society. It was generally felt that the small national economy needed to be protected and closed from foreign influences and competition. A strong regulatory hand of government was also preferred in domestic markets.

There was a general consensus that the Finnish economy was based on two main sectors, forest and metal industries, which produced the majority of the country's export revenues. Owing to the capital intensity of the main sectors, decision makers viewed physical investments as the key competitiveness strategy of the Finnish economy. These investments were supposed to yield cost advantages through increased scale economies. As a result of the cyclical volatility of the leading sectors, occasional currency devaluations were accepted as a necessary complement to this strategy.

Particularly in the 1960s and 1970s, the main policy goal of government was generally believed to be social and regional equality. Sweden was considered to be a good policy making benchmark with its highly developed welfare state. The strong role of government was reflected in the assumption about the role of citizens. They were considered to be mere governance subjects who did not always know what was in their best interest. This gave rise to paternalistic alcohol, education, mass communication and cultural policies. Since the late 1960s, central labor market organizations were also considered to be legitimate partners in the public policy making process.

The Finnish national culture was very homogeneous during the postwar decades. Collective, conservative and protectionist values were widely shared and supported the other elements of the mental paradigm.

The key elements of the new mental paradigm emerged in the 1980s when the growing structural problems and inefficiencies of the Finnish economy made the discussion of new ideas increasingly legitimate. This alternative paradigm was based on the belief in the efficiency of free, open and competitive markets as a coordination mechanism of advanced economies and societies. The new market-oriented policy regimes in the United States and the United Kingdom provided a practical example of this new paradigm. The demise of Keynesian economics in the stagflation of the 1970s and the subsequent rise of neoclassical economics provided scientific support for the new ideas.

The new mental paradigm included a new engine of economic growth: the high technology industries. The growing problems of the investment-driven growth strategy focused attention to the emergent high technology sector that was not so dependent on price and cost advantages and successive devaluations as the forest and basic metal industries. The strategy of knowledge-intensive, high technology and high value-added production was increasingly seen as the only viable one for a country with increasing standards of living and high cost levels.

The new mental paradigm also included new thinking about the role of government. The idea of the citizen as the *customer* of public sector services gained ground from the early 1980s. However, a more fundamental philosophical shift did not take place until the economic crisis of the early

Table 4.1 Mental and structural change in Finland during the 1980s and 1990s

System characteristics	Postwar mental paradigm	New mental paradigm	Structural changes
Coordination mechanism	Hierarchical planning.	Market mechanism.	New organizational arrangements (corporate governance reform, networking), new public management (privatization, management by objectives, decentralization, law on public procurement).
National economy	Closed and regulated.	Open and competitive.	Deregulation of financial markets and foreign investments, increasing exports and FDI by Finnish firms, EU membership, deregulation of markets for goods and services, improvements in competition law and its enforcement, EMU membership.
Key sectors of economy	Forest and metal industries.	High technology sectors.	Rapid growth of the telecommunications sector.
Competitiveness strategy	Physical investments and currency devaluations.	Knowledge and technology.	Rapid growth R&D investments, development of VC markets, creation of the polytechnic system, management by objectives introduced in universities, increasing numbers of new PhDs.
Main goal of government	Social and regional equality.	Economic efficiency, innovation and growth.	Reform of industrial policy (reduction of investment and regional subsidies, increase in R&D subsidies, improving effectiveness of competition policy, development of service sector), cuts in public income transfers (including reduction in employment and income 'traps').
Role of citizens	People to be governed.	Customers to be served.	Decentralization and reform of public sector activities (management by objectives, one-stop service).

Role of labor market organizations	Strong participation in labor market and public decision making (corporatism).	Collective agreements on industry or firm basis; no participation in public policy making.	Two successive rounds of industry-level agreements in the early 1990s, then return to economy-wide agreements.
Culture	Homogeneous values and preferences, collectivism, conservatism, national protectionism.	Heterogeneous values and preferences, individualism, readiness for change, freedom and openness.	Abolishment of paternalistic regulation in alcohol, communication (TV, radio), education and cultural policies and growth of foreign immigration to Finland.

1990s. In that shift, economic growth and efficiency replaced equity as the most important goal of government activities (MTI, 1996). The economic crisis also challenged the active role of general labor market organizations in public policy making. The idea of a clear 'division of labor' between the labor market organizations and the public policy makers became increasingly popular among economists and policy makers. Many felt that the labor market organizations had gained too much political power in the society and had become the key stumbling blocks of structural adjustment.

Also the homogeneity of the Finnish national culture began to unravel in the 1980s. Individualism, readiness for change, freedom and openness became increasingly important for Finns during the 1980s (Helkama, 1997).

As we can see from Table 4.1, the structural changes made in the 1990s were based on the new mental paradigm. However, some features of the old paradigm have remained strong also in the changed techno-economic environment. Particularly, the social and regional equity goal is still very important for Finns and large parts of the population still favor corporatist decision making that gives the central labor market organizations considerable political power. Indeed, after a pause during the economic crisis, the government has returned its support to central labor market agreements and corporatist policy making.

SOCIAL INNOVATIONS OR HEGEMONIC CHANGE?

The rapid transformation of the Finnish economy and society can be evaluated from two different perspectives: *social innovation* and *hegemonic change*. In this section we apply each of them in turn, and then make an attempt to form a synthesis that includes both.

In Chapter 3, Heiskala argued that structural change can be seen as a social innovation if it fulfils three conditions: (a) it is something new in its context, (b) it changes the prevailing social practices, and (c) it leads to improved economic or social performance.

The mental and structural paradigm shift in Finland during the 1980s and 1990s clearly involved social innovations. As we saw above, the new mental paradigm was quite different from the postwar paradigm. Moreover, the economic and social structures changed considerably during and immediately after the crisis of the early 1990s. A considerable part of this structural change resulted from purposive (though sometimes hasty) decision making. The behavior of individuals and organizations changed with the new economic and institutional environment. Both adjusted to the more competitive, complex, technology-intensive and dynamic environment. The key economic and social indicators declined considerably during the crisis

but then generally recovered in the mid- and late 1990s. The national economy grew fast (4–5 percent annually) during the ‘seven fat years’ after the crisis. At the same time, unemployment declined gradually from the peak of nearly 20 percent in the early 1990s to under 10 percent in the early 2000s, and the social security expenditures dropped from a high of nearly 35 percent to about 25 percent of GNP. Thus, the transformation of Finland involved all three characteristics of social innovations: new structures, new practices and improved performance.

However, this is not the whole story. Besides increasing collective resources through growing employment and a growing economy, the transformation also involved major changes in resource distribution among individuals, sectors and regions. The ‘creative destruction’ was particularly evident during the crisis of the early 1990s but it has continued until now. First, the crisis pushed many unproductive firms into bankruptcy. Many of them had been trading with the Soviet Union in the 1980s. As a result, Finland has a much larger structural unemployment rate today than before the crisis.

The government has invested heavily into training and retraining of the unemployed but the results have been meager. So far, there has not been sufficient political will to develop the labor markets for low-skilled, low-paid jobs that have solved the unemployment problem in some other countries. At the same time, the income differences among Finns have widened due to the changing and increasing demand for skills in the labor markets, some changes in the Finnish tax code that favored capital income, and reduced income redistribution through the social security system (Uusitalo, 2002). However, the income differences are still relatively low in Finland compared to other industrialized countries.

The deep crisis of the Finnish banking sector added to the ‘creative destruction’ among firms. Their extremely tight lending policies during the crisis pushed even some ‘healthy’ firms out of business. This would not have been possible without strong financial support of banks by the Finnish government. Some of the released human and financial capital moved to the rapidly growing ICT sector in the mid- and late 1990s. But the unemployment rate is still nearly three times as high as on the eve of the crisis at the end of the 1980s. Moreover, many entrepreneurs lost their entire wealth and trust in the Finnish economic system. Many of them have never come back to business.

Also from a regional perspective, the structural transformation of the Finnish society created both winners and losers. The transformation favored particularly the Oulu region, which developed a considerable ICT cluster during the 1990s, as well as the Turku-Salo region and the Helsinki metropolitan area, and did not harm the Tampere and Jyväskylä regions

very much. However, the more scarcely populated regions that already struggled with their economic and social development before the crisis were severely hit by the structural transformation. The flow of their best educated and most creative young people to the above mentioned cities accelerated and the age structure of these regions turned increasingly unfavorable. Moreover, the Finnish government reduced state expenditures by transferring the responsibility for many public welfare services to the municipal level. The adverse demographic change and increasing welfare responsibilities pushed the budgets of many local municipalities into the red and started a vicious circle: increasing taxes and weakening services creating increasing incentives for the most able and mobile individuals to move away, which led to further demographic weakening, and so forth. This development has resulted in rapidly growing regional inequalities in Finland.

Hence the transformation in the 1990s can also be interpreted as a hegemonic change where some social groups, sectors and regions gained resources while others lost them. This has led some researchers and politicians to downplay the importance of the related social innovations because focusing on them tends to hide the fate of those who lose in the structural change process. For them, speaking about structural changes in terms of social innovations does not pay sufficient attention to the power games, conflicts and domination associated with structural change. However, we think that the two approaches can be fruitfully combined.

COMBINING SOCIAL INNOVATION AND HEGEMONIC CHANGE PERSPECTIVES

The two different perspectives to the transformation of the Finnish society suggest that they could well complement each other in a deeper analysis of structural change. Thus, the social innovation perspective would focus on the changes in collective power resources while the hegemonic change perspective would pay attention to the changing distribution of resources and benefits. These two perspectives are combined in Table 4.2, which presents a typology of six different outcomes of structural change processes. The table reveals that there are structural changes in which all actors and interest groups can have shared interests. Everyone can agree on changes that increase collective resources without changing the distribution of benefits among individual agents or social groups (1). On the other hand, there is a good reason for everyone to act in order to prevent structural changes that would reduce the collective resources without changing the distribution of benefits (5). Moreover, no one is likely to actively either promote or oppose

Table 4.2 The development of A's and B's collective resources and the distribution of benefits between A and B

		A's and B's collective resources		
		Increase	Stay as they were	Decrease
Distribution of benefits between A and B	Stays as it was	1	3	5
	Becomes more biased than it was to the benefit of either A or B	2	4	6

changes which do not change the available collective resources or the distribution of benefits (3).

The cases with the even numbers (2, 4 and 6) are more difficult as they involve changes in the distribution of resources and benefits. Most individuals and social groups are likely to oppose changes that would both reduce the collective resources and change the distribution of benefits (6). Only a ruthless dictator who could exploit the majority could increase his (and his closest supporters') resources and benefits in such a situation. Some immoral and corrupt top executives have recently been caught doing the same in large corporations by maximizing their own benefits at the expense of their firms' long-term development.

Case four involves structural changes which result in redistribution of benefits without increasing the collective resources available. Such changes may take place in democracies if a majority coalition can use its political power to redistribute benefits from a political minority. Progressive taxation provides a good example. Non-democratic systems may have other types of redistribution, too.

Finally case two, which involves redistribution in the context of growing collective resources, is a very common and important situation in today's global transformation. It can benefit all interest groups if the changes in the distribution of resources and benefits are not so radical that some individuals and groups would suffer in absolute terms despite the growth of collective resources. This may require compensatory measures such as income transfers, retraining or regulatory changes. Case two also describes best what happened in Finland during the 1990s: the rapid economic growth since 1994 came with major changes in the distribution of resources and benefits among different social groups, sectors and regions.

As we can see in the Finnish case, it is quite normal to have both social innovations and hegemonic change in the same structural change processes.

Hence, taking both perspectives provides a more elaborated view on the nature and consequences of structural change processes. Policy makers must consider both perspectives in order to develop realistic policy programs. Unfortunately, they do not have very good measures with which to evaluate the benefits and costs of structural changes for different groups of individuals, sectors and regions. Changes in relative income and wealth do not always tell the whole story about changes in well-being, the ultimate goal of policy. There are other types of resources (human capital, social capital, and so on) and the well-being of individuals is also affected by the context in which the resources are used. The same resources may yield different levels of well-being in different contexts. Finally, short-term changes in the amount and distribution of resources are easier to take into account than long-term, more uncertain effects. It seems that policy makers would benefit from a wider set of 'well-being indicators' that would indicate the aggregate and distributive impact of various policy alternatives in structural change processes.

CONCLUSION

Chapters 2 and 3 presented two different ways of conceptualizing structural change processes: the social innovation and hegemonic change perspectives. The Finnish case demonstrated that these perspectives are complementary and they illuminate different aspects of practical change processes. Finland's transformation followed the theory of social innovation process quite nicely. Increasing contradictions in the postwar mental paradigm and socio-economic model led to a discussion of an alternative paradigm and social model based on markets, competition and high technology. These new ideas did not have much practical impact before the economic crisis of the early 1990s discredited the old mental paradigm and socio-economic model. The new mental paradigm was quickly adopted by key decision makers and led to a major restructuring of the Finnish economy and public sector activities. This led to a period of rapid economic growth in the late 1990s. However, at the same time, the paradigm shift also resulted in hegemonic change where some social groups, sectors and regions gained while others lost.

The negative social consequences of structural change were more acceptable during and immediately after the crisis when the national economy and state budget had to be saved. However, recently popular opinion has been changing towards increasing social responsibility for the losers of structural change. The willingness to carry out changes at high social costs has evaporated.

There are now two major groups in Finland that have very different perspectives to the structural adjustment needs of the Finnish economy and society. The first group, which includes corporate executives and economic policy makers, demands rapid structural changes that would ensure the competitiveness of Finnish firms in global markets. By the OECD example, these ‘competitiveness hawks’ require increasing competition in domestic markets, more flexible labor markets, a decreasing tax burden, a more competitive university system and increasing public investments in R&D. These are all factors which have a direct impact on Finnish firms’ competitiveness in the international markets. The other group is more conservative. These ‘defenders of the welfare state’ try to protect the old welfare state model against the structural change demands of the competitiveness hawks. They are afraid that globalization will ruin the traditional Nordic welfare model and replace it with the Anglo-American neo-liberal model. In the last general election, all major parties and the majority of Finnish people seemed to belong to this group.

Unfortunately, neither of these two groups has any clear vision of how the whole Finnish society could be remodeled to survive in the new techno-economic environment. The competitiveness hawks focus only on those aspects of the society that have a direct impact on firms’ competitiveness. But they have very few well-developed ideas about how the rest of the society should be structured to be economically, socially and environmentally sustainable. Their opponents fear that implementing the competitiveness model would lead to an intolerable and unsustainable growth of income and social differences. However, the defenders of the welfare state are stuck to the old social model and have very few ideas of how it could respond to the major changes in the world economy. Worse still, these two groups seem unable to speak to each other in a constructive way.

Clearly there is an urgent need in Finland to build platforms for creative dialogue where different social groups could learn to better understand each other’s perspectives and then, together, develop a new and more sustainable socio-economic model for the future. Otherwise the contradictions of the old model will continue to accumulate in the rapidly changing environment and the Finnish economy is likely to move into a decreasing returns regime which ultimately leads to poor standards of living and declining social welfare.

NOTE

1. This chapter is based on Hämäläinen (2004), Hämäläinen and Heiskala (2004) and Heiskala and Luhtakallio (2005).

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5. Policy implications: How to facilitate the structural adjustment and renewal of advanced societies?

Timo J. Hämmäläinen

Major crises help socio-economic systems make radical changes to their collective mental frames, strategies and structures. However, producing a crisis is not a real policy option for decision makers concerned about their country's or corporation's structural adjustment problems. Instead, they should try to understand the mental and structural change processes of their system well enough to avoid structural adjustment crises by proactive and timely adjustment measures. Following Donald Schön (1973: 116), we can vision a socio-economic system that can continuously reflect upon and question its established mental frames, structures and practices, and adjust them when the changing environment or the system's declining performance requires. In this chapter, we will show how policy makers can play an important role in creating and supporting such *self-reflective learning systems*.

EXPERIENCE, INFORMATION AND COLLECTIVE LEARNING

The mental and structural change capacity of socio-economic systems ultimately depends on *collective learning processes*. Without such learning processes there will be no change in shared mental paradigms nor sustainable changes in socio-economic structures. Collective learning processes take place among members of various *communities* such as: the citizens of nations (for example Finns, Swedes, Americans), inhabitants of particular regions (Carelians, Welsh, Basque), members of business organizations (divisions, departments, teams), occupational groups (nurses, teachers, carpenters), civic organizations (rotaries, lions, political parties), recreational clubs (golf, fishing, sports, and so on) and various informal social groups.

Collective learning processes are based on the *shared experiences and information* of the community's members. The shared, real-life experiences may stem from the same cultural and geographical living environment, common occupational or educational background, membership in the same work organization, or shared leisure time activities. Over time, the increasing specialization of work and leisure activities as well as the differentiation of individual preferences has led to a growing diversity of individual experiences (Hämäläinen, 2003). This has diminished the importance of shared experiences in the collective learning processes of larger communities. Today, the 'social glue' (social capital) that holds together national and regional cultures, old political parties and national associations is typically based on impersonal information and mass media rather than widely shared practical experiences (Lindblom, 1990).

The mental impact of new experience and information depends on its relation to the established mental frame of the individual and the established mental paradigm of the community. Information that is *taken for granted* within the established frame or paradigm will routinely be neglected and thus have no impact on collective learning processes. Information that is *normal (expected)* and fits well within the established frame and paradigm will attract non-critical attention and, at best, lead to incremental first order learning. Etzioni calls this second type of information (or knowledge) 'stable': 'Stable knowledge elaborates and respecifies, even revises, secondary assumptions within the framework of a basic set which is taken for granted' (Etzioni, 1991: 30). These two types of information do not disturb the comfortable 'cognitive consonance' of the individual or the community (Festinger, 1957; Hämäläinen, 2003).

The third type of information (or knowledge) may be termed 'radical' or 'transforming' because it does not fit well within the established mental frame or paradigm. According to Etzioni, 'transforming knowledge rechecks and potentially challenges the basic assumptions of the system'. It causes 'cognitive dissonance' at the individual and community level and may lead to transformative second order learning (see Chapter 2). Since decision makers, like most other people, would like to avoid the unpleasant feeling of cognitive dissonance they tend to prefer normal (stable) to radical (transforming) information (Etzioni, 1991: 30).

Second order learning results in cognitive reframing and changes the mental paradigm, which facilitates major innovations and structural changes. This explains why breakthrough inventions are often made in situations where experts from diverse but complementary backgrounds engage in intensive communication (Hollingsworth and Hollingsworth, 2000; Anderson, 2003). The 'clash' of different perspectives creates cognitive dissonance that stimulates second order learning processes. Finally, if the new

information is too far outside the established cognitive frame and mental paradigm it will not be understood, which makes learning impossible.

The general policy implication is that communities need to be exposed to ‘radical’ new perspectives and information that does not fit well within the established mental models and public discourse in order to facilitate second order learning and improve their structural adjustment capacity. This policy implication applies particularly well to *scientific research, education and training systems, mass media* and *arts* whose activities, approaches and information outputs shape the collective learning processes in various communities. We will argue below that research, education, media and arts can be either *progressive* or *conservative* – they can either promote or hinder critical reflection and second order learning processes. It is no wonder that researchers and other intellectuals, education and training systems, the mass media and artists have always attracted special attention from revolutionaries and other institutional entrepreneurs, as well as their opponents.

There are also more specific policy activities or measures that can be undertaken to improve the quality and diversity of a community’s shared information or its capacity to effectively utilize it. These may include ‘strategic policy intelligence’ activities, small pilot projects, Open Source development networks, network facilitation, systemic vision and strategy development and the creation of learning-oriented organizational cultures. Figure 5.1 describes all these policy fields where proactive measures can facilitate collective learning and structural adjustment processes. We will discuss each of them in this chapter.

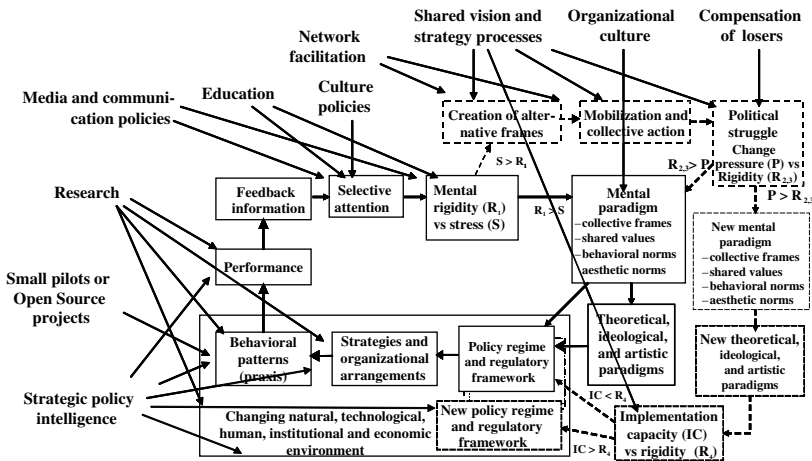


Figure 5.1 Facilitating change through policy interventions

STRATEGIC POLICY INTELLIGENCE

The techno-economic transformation of the world economy and the growing specialization and complexity of modern societies have increased the information needs of decision makers (Hämäläinen, 2003: 186–8). Information about changes in the system's environment and its performance are critical to its institutional and structural adjustment capacity. 'Early warning' information and understanding of major environmental changes and declining systemic performance help decision makers to make timely and proactive decisions in the adjustment process. This calls for an external and internal information system that is continuously monitoring emerging systemic problems and shifts in the environment (Schön, 1973: 120, 248).

The characteristics of such a 'strategic policy intelligence' (SPI) system have been discussed among scholars of *technology forecasting, assessment* and *foresight* (see Tubke *et al.*, 2001).¹ Although these scholars tend to focus on technology, their observations are relevant for building a broader SPI system that would not limit itself to technology but could also include intelligence on the other aspects of socio-economic environment and systemic performance (see Figure 5.1). Besides methods for analyzing environmental changes, the broader SPI system should include analytical methods for regular evaluation of the system's internal structures and processes such as *benchmarking, evaluation studies* and *cost–benefit analysis*.

According to Tubke *et al.*, a well-functioning SPI system should have the following characteristics. It should:

- take a *systemic perspective* to environmental changes (and system performance)
- utilize a *variety of decentralized information sources* (academic research, industry panels, workshops, and so on)
- involve *all relevant stakeholders* in collective learning processes
- use a number of *different methods* (forecasting, foresight, assessment, benchmarking, evaluation studies, scenarios, Delphi, and so on)
- have an *active node* that maintains centralized databases, directories, registers and other enabling facilities
- have transparent *access and quality assurance requirements*
- have a regular and reliable support by *public funding* sources
- be *evaluated in terms of* its contribution to an informed, qualified and legitimate *policy debate*.

Most organizations do not have an SPI system in place. According to a recent survey of 140 American corporations, 97 percent of them did not

have any early warning system (Fuld, 2003). The situation is likely to be even worse in public sector organizations. However, the information produced by an SPI system could benefit multiple users. Thus the system may take the characteristics of a public good. If the benefits of the SPI system spread widely enough public support may be warranted in its development and maintenance.

SMALL PILOTS AND OPEN SOURCE NETWORKS

Major social experiments involve high risks (for example, the Cultural Revolution in China) and strong opposition by special interest groups. Small pilot projects at the margin of the system are often the only way of testing new social innovations in practice. A small pilot does not risk the future of the whole system or attract the attention of established interests who could lose in a major systemic reform.

Stiglitz has argued that governments can support innovative pilot projects in order to foster 'social learning'. Such projects must promise widely applicable results to be a legitimate target for public intervention. Private benefits that do not diffuse beyond the project participants are not sufficient. Thus a critical aspect of a government-sponsored project is whether it can be *scaled up* in the case of positive results (Stiglitz, 1998).

A successful pilot demonstrates the feasibility and practical benefits of the new innovation. This increases the cognitive dissonance in the system and makes institutional and policy change more likely. Pilot projects should be accompanied by conceptual modeling and evaluation studies in order to facilitate the effective communication, transfer and diffusion of their results and practical experiences.

The Open Source (OS) model of innovation, originally developed in the software industry with products like the World Wide Web and Linux (Tuomi, 2002), is a promising new approach to facilitating collective learning and structural change processes in complex systems with modular sub-systems (Leadbeater, 2003; Feldman *et al.*, 2004). The OS model involves open innovation communities which (a) break down the system development into *modular sub-systems* that allow parallel innovation efforts and reduce system-wide coordination requirements, (b) set clear and *open standards* against which innovations can be judged and which facilitate the rapid diffusion of knowledge, and (c) have a *central design authority* that develops the system architecture, sets the standards, specifies the interfaces within and outside of the system, facilitates communication and integration of complementary knowledge among developers, acquires necessary complementary resources and motivates the community's innovation efforts.

The OS model provides an effective combination of grass roots initiative and knowledge with system-wide coordination required in the development of complex and interdependent systems. Hierarchical ‘top down’ approaches lack the first characteristic of the OS model, whereas decentralized (for example, market) solutions are weak in coordinating systemic change. Moreover, the parallel development efforts in the OS model speed up systemic innovation processes. This is particularly important in the public sector where information from local experiments tends to accumulate and diffuse rather slowly. Parallel developments in similar modules can also provide competitive incentives for innovation in the form of benchmarking or ‘beauty contests’ (Leadbeater, 2003).

There are some limiting factors that need to be taken into account when the OS model is applied to the development of social innovations. Some of these relate to the rather homogeneous community and context in which the original OS software innovations were developed. Despite their geographical distance, the OS software developers are a very homogeneous community of experts, all highly skilled computer programmers. Their common language, knowledge, interests and technology platform provide an effective basis for interaction and cooperation. Social innovation processes rarely involve such a homogeneous group of stakeholders and contexts. As a result, the need for local adaptation, tacit knowledge and face-to-face communication is greater. Social innovations also tend to involve complex interdependencies among sub-systems that may limit modularization and hence the benefits of the OS model.

RESEARCH

Research plays an important role in institutional change processes because it is generally considered to be the most respectable source of new knowledge. Social science research may influence decision making by: (a) raising new problems, challenges and opportunities (contradictions) to public awareness, (b) providing practical solutions to social problems, (c) developing concepts and theories with which new problems and issues can be analyzed, evaluated and understood, and (d) giving weight to political arguments (see Johnson, 2004; Lampinen, 2002; Kuitunen and Hyytinen, 2004).

Our theory of structural change processes underlines the importance of systemic contradictions in providing the motivation for policy changes. However, such contradictions must be recognized before they can be addressed. Paul Johnson argues that social sciences have been particularly useful in *identifying* the social problems of our time. According to him, they

have been far less successful in providing or evaluating alternative solutions to them (Johnson, 2004).

There are often great expectations about the role of social sciences in providing the solutions to complex social problems (Lauder *et al.*, 2004; Johnson, 2004). Many policy makers would like to consider research as a key input to their established decision making processes. Underlying this *instrumental* approach is an implicit assumption that the nature and context of the problem are well understood. There is only a lack of some specific piece of knowledge, which research can produce. Researchers are seen as outside experts who can provide that knowledge.

Despite their great expectations, policy makers are regularly disappointed with the usefulness of the research results (Johnson, 2004). Usually, they do not get the practical solutions and policy advice expected. As a result, social science research rarely has any direct impact on the policy agenda or specific policies (Lampinen, 2002; Turja, 2003). The instrumental approach to research corresponds to the evolutionary first order change process where established conceptual frames, institutions and policies are not questioned. It does not recognize the potential importance of research for collective reframing and structural adjustment processes.

The *conceptual and theoretical* approach to the utilization of social science research emphasizes its impact on decision makers' beliefs, assumptions and perspectives – their cognitive frames. Research conceptualizes and frames problem areas in meaningful new ways rather than produces well-defined solutions. Good conceptual frames and theories help decision makers in their individual reframing efforts and improve their understanding of issues. It is the conceptual and theoretical contributions of social science research that are often the most beneficial for decision makers in the current socio-economic transformation (Lampinen, 2002).

Finally, research results can also be utilized for *political* purposes either to legitimate established practices, structures and policies, or to challenge them. Political entrepreneurs can be quite selective in such utilization. Only results that support the pre-established political purposes may be picked up and utilized. Research projects may also be set up in order to delay some decisions that are deemed politically unwelcome (Lampinen, 2002; Turja, 2003).

The effective use of social science research in policy making is prevented by problems related to: (a) the characteristics of social science research, (b) the nature of political decision making processes and (c) the poor communications between researchers and decision makers (Lindblom, 1990; Lampinen, 2002). We will now discuss each of these problems in turn.

Academic research is done within academic communities that have their own incentives and institutions. Besides the quest for new knowledge, an

important incentive for research is gaining academic merit among peers. To gain such merit, researchers have to publish articles in well-respected journals that favor 'normal science' within established scientific paradigms (Kuhn, 1975). Such 'normal science' tends to be rather conservative because it identifies the research topics from within the established paradigm, approaches them from well-established perspectives, applies traditional research methods and reports the results in academic style and paradigm-specific language. Moreover, empirical research in social sciences often focuses on historical experience that may have little or no relevance for solving problems in a rapidly changing environment (Lindblom, 1990; Lampinen, 2002; Turja, 2003; Kuitunen and Hyytinen, 2004). The long publication processes of academic research make this problem worse. All these characteristics make social science research less accessible and beneficial for practical policy makers who come from a very different community and culture and must make decisions for the future (Johnson, 2004).

The causal chains are often very long and interdependencies complex in the society. Research can never analyze the whole socio-economic system. A researcher has to narrow down to a small part of the system to produce meaningful results. Over time, the increasing specialization of social sciences has emphasized the mismatch between narrowly focused research and complex social problems (Wiles, 2004). A policy maker cannot 'narrow down' in decision making; he must take the complex interdependencies and spillover effects into account. Depending on the issue and specific problem, he needs both narrow expertise and more encompassing knowledge (Etzioni, 1991: 32). He will even have to make decisions when different studies give inconsistent or contradictory results (Lindblom, 1990; Turja, 2003).

Finally, there is no such thing as purely objective research. It is always shaped by the subjective values and limited cognitions of the researcher. In addition, some researchers intentionally take a more political perspective to their research and its results. They may also work in think tanks or research institutes that have a clear political orientation. Once research becomes political in orientation it tends to lose its scientific neutrality and legitimacy in the minds of policy makers who may evaluate its results like those of any other information produced by special interests (Turja, 2003).

The other source of problems for utilizing social science research is the nature of political decision making processes. First, political decision making often involves setting social goals rather than finding the best means for achieving them (Lindblom, 1990; Turja, 2003). Research cannot help social goal setting, which depends on social preferences and values rather than knowledge. Second, political decision making processes are not rational and linear but highly interactive, haphazard and political, involv-

ing many different and often conflicting interests (Lindblom, 1990). Decision makers do not usually have enough time to wait for the long research processes to yield results or to properly reflect on their meaning and social implications. Instead, they turn to public media, think tank reports, staff memos, and other information sources that are more readily available (Turja, 2003).² Finally, the capability of policy makers to absorb and utilize research results may also be severely limited by their lack of scientific background and training (Lampinen, 2002; Cohen and Levinthal, 1990; Kuitunen and Hyytinen, 2004).

The utilization of social science research is further limited by communication problems. Research reports are rarely read by decision makers, who suffer from information overload and lack of time. And if decision makers find the time, the reports are often written in a form and language that is not understandable to them. Besides reports, researchers and policy makers have few alternative direct channels of communication. They do not usually meet each other. Thus researchers do not usually know which individual decision makers could be interested in their knowledge and findings. And, on the rare occasions that they do meet, researchers and decision makers tend to speak across each other due to cultural differences (Lampinen, 2002; Argyris, 2003; Johnson, 2004).

Let us now draw some policy conclusions from the previous analysis. How could the contribution of social science research to structural change capacity be improved? As before, we will structure our discussion into three parts: production, utilization and communication of research knowledge.

The usefulness of social science research for systemic change purposes may vary a great deal. Researchers and research organizations may be *progressive and proactive*, addressing new problems and opportunities or analyzing old issues from new and critical perspectives; or they can be *conservative and reactionary*, strengthening the traditional discourse and mental paradigms. Chris Argyris notes that many social scientists only feel comfortable doing traditional descriptive research on how things are. They are not used to describing 'what the universe would do if someone really wanted to change it' (Argyris, 2003: 42–6). At best, such research can identify and raise new social problems on the public agenda and hence raise the likelihood of proactive change processes.

More progressive research could criticize and question the established practices, cognitive frames, theories, institutions, policies and organizations in order to facilitate collective learning and structural change processes. Besides identifying new social problems and providing new theoretical approaches to old ones, progressive research can inform the public debate by making the competing political arguments and theoretical frames more explicit. For example, *discourse analysis* could be more actively used

to improve the self-awareness of decision makers and the public at large (Lampinen, 2002).³

A widely accepted theoretical paradigm, such as John Maynard Keynes's General Theory in the immediate postwar decades, can form a generally accepted framework within which public policies are carried out. In times of major socio-economic transformation, such deeply embedded paradigms may form a major obstacle to change. Hence, social scientists could facilitate structural change processes by challenging outdated theoretical paradigms. Unfortunately, modern academic institutions do not support such paradigm-challenging research (Hämäläinen, 2003: 292).

The development of new theoretical paradigms takes a long time. For example, it took Adam Smith 20 years to complete his *Wealth of Nations* and Karl Marx more than that to produce *Das Kapital*. The most potential challengers of established paradigms tend to be young researchers who have not, yet, become socialized into the old paradigm. However, today, bright young scholars are pushed by the academic 'publish-or-perish' culture to undertake short-term research projects on very specific questions within the established scientific paradigm. Once they become tenured, often after several years of hard work on the narrow issues, they have already become so deeply embedded within the established paradigm that they do not anymore have the capability or the will to challenge the old paradigm. From the structural adjustment perspective, there is a clear need to increase the support for long-term, path-breaking and paradigm-challenging research.

The need to facilitate systemic change processes also calls for more research on collective learning processes (Scott, 2001; North, 2003). A better understanding of such processes would help decision makers to avoid the trap of defensive thinking and mental rigidities as well as help them to identify and undertake the right types of interventions to facilitate the collective learning and structural upgrading processes. According to Argyris, the lack of such research 'limits social science as a discipline and as a contributor to a better world' (Argyris, 2003: 46).

Most social and economic activities involve private, public and third sector organizations (for example, education, health care, social security, security, infrastructure, and so on). Each private, public and third sector organizational arrangement has its specific strengths and weaknesses vis-à-vis the other organizational alternatives. Ideally, the best mix of private, public and third sector organizational arrangements in a particular sector would reflect such relative strengths and weaknesses. Moreover, the optimum mix would change over time as the nature of activities, socio-economic environment and organizational alternatives evolve (Hämäläinen, 2003: 247).

In real societies, there is no 'invisible hand' that would bring the actual organizational division of labor to the optimum. On the contrary, the discrepancy between the actual and the optimum organizational mixes in different sectors is likely to grow in rapidly changing environments. Hence, there is a need for regular research on the comparative advantages of different organizational alternatives for governing specific tasks in different sectors and contexts. Such comparative organizational analysis would reveal the most potential areas for organizational reforms. It would also help to redefine the role of government in the society (see Hämäläinen, 2003: 245–50).

The policy making and communication processes can also be improved in order to better utilize the knowledge of social sciences. First, policy makers should have more realistic expectations about the ability of social science research to provide solutions to practical policy problems. Research is better at challenging the established perspectives and conceptual frames of decision makers. Second, public support could be increased for holistic and future-oriented research that challenges the prevailing theoretical and policy paradigms.

Third, policy makers should develop and maintain a high level of 'absorptive capacity' in order to effectively utilize the research in social sciences (Cohen and Levinthal, 1990). This requires a critical mass and effective organization of academic research capabilities in the legislative and administrative branches of the government. The parliament and the ministries and agencies should have analytical units that form bridges between the academic research community and the policy makers. Their staff should consist of individuals socialized in both academic and policy making communities:

What is required both inside and outside government is a community of social researchers with an intelligent grasp of sociological, economic, psychological and other theories, deep knowledge of the specific area in which they are working and the necessary investigative skills . . . Also required is consistent, intelligent and appreciative demand among politicians and policy makers. (Johnson, 2004: 26–7)

Think tank organizations can play a similar 'boundary-spanning' role between the two cultures and languages. They interpret, summarize and package the results of academic research for policy makers in ways that make them easy to access and use. Instead of academic jargon and long reports, they offer short memos, written in non-technical language and presented in effective policy briefings over a nice breakfast or lunch.

The interaction between researchers and policy makers could also be intensified by creating new platforms for dialogue. Such platforms could

help the two groups to develop a common language and understanding of each other's perspectives, contexts, needs and knowledge. Cross-sectoral committees, training programs, SPI programs and strategy processes provide some examples of such platforms. Researchers and policy makers could also actively cooperate in the creation of the national, regional and sectoral visions discussed in 'shared vision and strategy processes' (pages 112–15).

MEDIA AND COMMUNICATION POLICIES

The *communication media* of the community plays a key role in selecting the new information and knowledge that becomes widely shared, sets the public agenda and forms the basis of collective learning processes. Depending on the community, the shared communication media may include e-mail lists, intranet solutions, trade and professional journals, Internet portals, local newspapers, national radio and TV, and so forth. The media place their own criteria and constraints on the ideas and information that will be diffused to the public (Schön, 1973: 135).

As with research, progressive media can facilitate institutional and structural change, while conservative media may slow it down considerably. Progressive media will raise new problems and opportunities for public debate, challenge generally accepted mental frames and behavioral patterns and critique outdated institutions and structures. Conservative media, in turn, do not pay attention to emerging environmental challenges or systemic problems. The argumentation in news, articles and programs supports traditional patterns of thought, values and norms, and theoretical paradigms. Those who control the community's communication media have a considerable power in choosing the information and knowledge that shape the shared agenda, perceived problems and challenges, and hence the shared mental paradigm of the community.

Herman and Chomsky argue that mainstream media tend to be quite conservative. They identify five interrelated 'filters' that limit the types of issues that rise on the public agenda (Herman and Chomsky, 1988). The first filter is the *large scale and concentrated ownership* of media corporations. The large investment requirements of the media sector raise the entry barriers for small upcoming firms that could challenge the big media corporations in setting the news agenda. As a result, a few big media corporations may control a large share of the national media market through share ownership or cooperative arrangements with local firms. The second filter on the public agenda is *advertisers*. Big media corporations are very dependent on advertising income. This creates another effective entry barrier to

the media market. Advertisers tend to favor media and contents that attract large and wealthy (conservative) audiences. They tend to avoid radical, complex and controversial media and contents that only attract small minorities and could upset the 'good consumption climate' among their customers.

The third filter on the public agenda is the *dependence of media on influential established organizations for news material*. Media corporations need a steady flow of fresh news material for their programs and publications. The established organizations form a reliable source of such material, which reduces the amount of resources that media firms need to invest in their own search and research activities. The established organizations also make it easy for journalists to access and use their material. As a result, the media become dependent on these organizations and do not want to disturb the good relations with disruptive or critical publicity. Hence the established organizations gain power to influence the agenda and perspectives of the media.

The fourth filter in the media is related to the *negative feedback* that some programs or articles may attract. Such critical feedback may come in the form of e-mails, letters, phone calls, threats, consumer boycotts, lawsuits, law proposals, articles, and so forth. It can be centrally organized or spontaneous reactions. If the organizers of such negative feedback have large resources at their disposal they may cause considerable costs to the media corporations. Thus the expectation of powerful negative feedback can lead to self-imposed censorship in the media. Finally, a *strong and widely shared ideology* – such as 'communism', 'fascism', 'anticommunism' or 'war against terrorism' – can narrow the public discussion and prevent certain issues or perspectives from entering into public debate. Such ideologies can also be readily used to attack any reform proposals that contradict them.

Herman and Chomsky (1988) observe that critical perspectives that contradict or challenge the established views and interests tend to attract two different types of responses in the media depending on the soundness of their argument. Weak arguments tend to receive a strong critique, particularly if their proponent is not an acknowledged expert in the field. On the other hand, good but disruptive arguments are often pushed away from the public and silently ignored.

Communication policies may improve the system's adjustment capacity by supporting competition and heterogeneity in the media (Stiglitz, 1999). This ensures that environmental changes and systemic problems will be detected early, new interests will be voiced in public, old institutions and structures will be challenged when needed, and institutional entrepreneurs will have a fair chance of winning support. As Mark Johnson points

out, new ideas and mental paradigms must have room to grow up and flourish:

The best program for [collective reframing] will be a group strategy that prizes variations for the social group as a way of experimenting with possibilities for evolutionary survival and flourishing. It is important to see that what 'works best' is not some one fixed method or state or social arrangement as such. What seems to work at one time, in one place, within one set of historical conditions may not work under other conditions . . . This does not mean that our current view is somehow absolute, simply because we seem to be getting by with it for the present. We need, instead, to experiment with ways of meeting changing physical, economic, social, and political conditions. Nor is the 'best program' simply that system which satisfies the desires of those who just happen, for the moment, to hold power. What is needed is rather a strategy that fosters ongoing criticism, self-reflection, and dialogue with competing views. (Johnson, 1993: 231)

Competitive markets may not always lead to heterogeneous supply, however. Everyone who has spent some time watching the numerous American TV channels knows that. Public broadcasting companies and other public media can increase the heterogeneity, quality and social relevance of publicly available information and knowledge in the highly competitive media environment. Indeed, that should be set as their main goal.

EDUCATION SYSTEM

The information about systemic contradictions and new innovations may not fall on receptive ears if individuals lack critical thinking skills (reflective capacity) and a flexible, 'multi-contextual' cognitive frame to understand its relevance (Weick, 2003: 88). Moreover, the cooperative development of social and other innovations by individuals from different backgrounds requires social skills such as flexibility of attitudes, tolerance of new perspectives, willingness to search for a compromise in conflict situations and to take responsibility in the group, self-confidence to defend one's own ideas and good communication skills (Hakkarainen *et al.*, 2004b). The development of such higher-level mental skills and capacities is currently a big challenge for the education systems (Argyris, 2003: 45).

Critical thinking skills and second order learning skills can be practiced by having students solve complex and authentic real-world decision making problems. Such 'problem-based learning' methods have become popular in some university faculties (for example, medicine) but they could be increasingly useful also in basic education. This means that the education system should include more research-like aspects in teaching.

A flexible, multi-contextual frame allows individuals to overcome traditional intellectual or disciplinary divides, helps them to recognize paradigm-challenging information and knowledge, and gives them an ability to change perspectives and integrate knowledge from different sources and paradigms (Hakkarainen *et al.*, 2004b; Weick, 2003). Such frames are not built in narrow, mono-disciplinary training programs. Students need to be exposed to the context, content, activities and people from multiple scientific paradigms and fields of expertise in the education system.⁴ Education should be both multi-disciplinary and socially interactive.

CULTURE POLICIES

Culture and cultural knowledge have recently gained increased interest as potential sources of economic competitiveness and growth. Cultural knowledge plays an increasingly important role in firms' research and development activities and brand strategies (Wilenius, 2004). Deep cultural knowledge can often provide firms with a more sustainable competitive advantage in R&D or marketing than an easily imitable technological innovation. Cultural inheritance and monuments have also been considered as key assets of the local tourism industry in many regions.

However, we want to underline the deeper and more indirect impact of culture on economic and social performance. This impact flows from culture through structural adjustment capacity to economic and social performance. Arts and artists play an important role in the structural renewal processes of their societies during major transformations.

Collective learning processes are facilitated not only by objective new information but also by *subjective impressions* which bring new economic or social challenges to the public agenda or provide a whole new perspective to established socio-economic issues. Artists provide new collective meanings by interpreting the 'spirit of their times' for their community (Hauser, 1982; Venkula, 2003). They often 'first scout out terrain that is eventually explored in a more explicit way by scholars' (Gardner, 2004: 3). Their subjective but holistic interpretations crystallize and explicate important new phenomena for public discussion. Art's main forms of expression – stories and metaphors – fit well with the environment of uncertainty and confusion during socio-economic transformation where there are no established mental frames or theories available for the interpretation of new phenomena (Hakkarainen *et al.*, 2004a).

Progressive art emphasizes social contradictions by bringing up new social problems, developing attractive future visions or describing the struggle between the society's progressive and conservative forces. As a result,

it stimulates public debate and catalyzes collective learning processes. Progressive art is often shunned by commercial sponsors due to its radical and critical nature (Mäki, 2004). They do not want to associate their products and services with socially controversial issues or approaches. At the same time, however, there is likely to be a lot of latent demand for progressive art that would help people to make better sense of the ever more complex and dynamic world around them.

Most new art is not progressive, however, but tries to please its audience (Venkula, 2003: 68). This is particularly true of today's mass entertainment and commercially based art forms. The current transformation is also likely to create demand for such *entertaining art*. It offers a temporary refuge for people from their everyday pressures and stress.

The structural adjustment capacity of a society could be improved by supporting progressive art with culture policy. This can be difficult politically, however, since the production of socially responsive and critical art is not necessarily preferred by either decision makers or the public at large. After all, the established policy makers are potential objects for progressive artists. Moreover, the support of decisions for such art could also easily become highly politicized. It is much easier and safer for a policy maker to support art forms that merely entertain and please the general public.

SOCIAL CAPITAL AND NETWORK FACILITATING POLICIES

Collective learning processes produce *social capital* that binds the members of social communities together: a shared mental paradigm (cognitive frame, values and behavioral norms) and a network of social relations characterized by various degrees of trust and reciprocity (Nahapiet and Ghoshal, 1998).

Individuals are normally members of various overlapping communities. In different activities and contexts, their behavior is guided by the cognitive frames, values and norms of different communities. For example, an expert may be guided by professional frames and ethics in routine work, rely on organizational vision and culture in ambiguous decision making situations, and organize his private life according to particular religious beliefs and worldview. Over time, the most enduring parts of social capital tend to become institutionalized in the communities' formal structures and organizational arrangements.

There are two opposing views on the economic role and impact of social capital which can be synthesized within the theoretical framework of the present study (Chapter 2). Some researchers emphasize the importance

of social capital in reducing the transaction and coordination costs in highly specialized value-adding systems (see for example Casson, 1990; Fukuyama, 1995). This positive view is challenged by others who underline the various systemic rigidities created by strong social capital (Schienstock and Hämäläinen, 2001; Florida, 2002).

The strong bonds of social networks involve the mental, economic, social and systemic rigidities discussed in Chapter 2. First, communities with strong ('bonding') social capital almost by definition have a strongly shared worldview, values and norms. A strong mental paradigm involves a lot of mental inertia. Second, the short-term efficiency gains of the established network and social capital raise the opportunity costs of long-term structural change. Structural change would sacrifice such short-term benefits. Third, the members of tightly knit communities do not often want to 'rock the boat' with individual change initiatives that could have a negative impact on their partners in the community. A tight network also makes individual changes less attractive since their benefits depend on complementary changes in other parts of the interdependent system.

The positive and negative views on social capital can be synthesized within the theoretical framework of our study. Social capital has undeniable efficiency benefits in stable contexts where the socio-economic system does not require major structural changes. The increasing specialization and productivity of value-adding systems is facilitated by strong social capital that reduces the transaction and coordination costs of economic agents. During stable periods, the social relationships and mental structures of the community tend to strengthen and become institutionalized into formal structures. However, during major transformations, strong social capital can have a negative impact on economic performance by locking the system into its established mental paradigm, structures and behavioral routines.

Some scholars have analyzed the changing role of social capital in the context of industrial clusters. They argue that the very networks of interdependence that are a source of strength in the early phase of cluster formation and growth tend to become, over time, sources of inertia and inflexibility, relative to firms outside clusters (Pouder and St John, 1996). Moreover, the 'restricted collective perspective' of cluster firms gives rise to competitive 'blind spots' which limit their innovative potential, strategic positioning, and ability to anticipate and react to industry-wide shocks (Martin and Sunley, 2003: 18).

The previous analysis suggests that stable conditions emphasize the benefits of strong 'bonding' (intra-community) social capital; whereas rapidly changing conditions make 'bridging' (inter-community) social capital more valuable (Woolcock, 2000). The 'weak' links of bridging social

capital facilitate innovation processes by bringing together individuals with differing perspectives and backgrounds and by facilitating their effective communication and cooperation (Hollingsworth and Hollingsworth, 2000; Schienstock and Hämäläinen, 2001). Hence, *the nature of social capital should evolve with the changing pace of socio-economic development in order to have a sustainable positive impact on economic performance.*

During major transformations, policy makers can facilitate structural change by supporting the development of new ‘bridging’ social capital and reducing the rigidities caused by strong ‘bonding’ social capital. This may call for ‘network-facilitating policies’ that build new relationships and networks in promising or challenging areas (for example, new economic clusters and complex social problems). Public intervention may be necessary due to the *public good problem* associated with network promotion and support activities (Schienstock and Hämäläinen, 2001).⁵ The network-facilitating policies may take the form of network programs or foresight and strategy processes which gradually build mutual understanding, trust, cooperation, shared frames and network-level strategy as well as coordinate complementary activities. At best, such policies can reduce the mental, social, systemic and economic rigidities by facilitating collective learning processes and providing the benefits of coordinated systemic change. We will analyze this topic more carefully below with ‘shared vision’.

SHARED VISION AND STRATEGY PROCESSES

Structural changes can be facilitated by the development of a *widely shared vision*. A widely shared vision has two important effects on structural adjustment processes. First, it provides the social ‘conditioning’ and individual incentives for change (Galbraith, 1984). An individual who has internalized the vision will strive for changes that are consistent with it. Social conditioning is particularly important in situations where resources for providing specific positive incentives for change are scarce (for example, tight public budgets) and the negative incentives are not effective (for example, in good economic times when the status quo is an attractive option despite the long-term risks involved). Negative incentives for change are effective only when a crisis is imminent or it has already begun.

Second, a widely shared vision provides an effective coordination mechanism for the change processes in highly dynamic and complex systems where both hierarchical ‘top down’ arrangements and decentralized *laissez-faire* approaches fail (Chang and Rowthorn, 1995; Stiglitz, 1998). As Stiglitz argues, economic restructuring efforts will not yield the expected positive results without effective coordination:

Having a sense of where the economy is going is essential: if, for instance, an economy is to move to the 'next' stage of development, the appropriate infrastructure, human capital and institutions all have to be in place. If any of these essential ingredients is missing, the chances of success will be greatly reduced. Not only must there be coordination of different agencies within and among levels of government, there must be coordination between the private sector and the public, and between the various parts of the private sector. (Stiglitz, 1998)

The development of a widely shared vision must be an open process that involves participants from all groups affected by the expected changes. The active participation and contribution of all interested parties creates the necessary acceptance and commitment to the shared vision and the institutional, organizational and behavioral changes required by it (Schön, 1973: 121; Stiglitz, 1998). Many reforms have been poorly implemented, or even failed, because they did not involve some important stakeholders in their development. The lack of participatory processes and social conditioning for change is still common in public sector organizations that have a long tradition of 'top down' hierarchical governance.

The research on modern innovation and strategy processes suggests other important features for the process of developing a widely shared new vision. The creation of a new innovation or a new, shared mental frame (the vision) tends to require intensive, long-term interaction among many individuals from different but complementary backgrounds (Schienstock and Hämäläinen, 2001; Nonaka and Toyama, 2003). Their creative efforts are facilitated by an inspiring *knowledge vision* – such as 'putting a man on the moon' – which provides the motivation and direction to the participants' cooperative learning activities (Nonaka and Toyama, 2003). The synthesizing of various ideas and perspectives into a coherent system, a widely shared vision, requires *open dialogue* where the participants' deep and often tacit thoughts, beliefs, assumptions, values and norms can be made explicit, shared and discussed (Bohm, 2004). The interaction and conflict between the different mental structures of individuals create higher, synthetic knowledge (Bohm and Peat, 1987; Nonaka and Toyama, 2003).

In the dialogue, the blockages of mind, in the form of rigid but largely tacit cultural assumptions, can be brought out and examined by all who take part . . . In this way the participants can turn their attention more generally to becoming aware, as broadly as possible, of the overall tacit infrastructure of rigid cultural and sub-cultural assumptions and bringing it to light . . . Only a dialogue can meet the challenge both of uncovering the intellectual content of a rigidly held basic assumption and of 'defusing' the emotional charge that goes with it. (Bohm and Peat, 1987: 243, 246)

Facilitating creative dialogue is not easy. The first challenge is communication among individuals from different backgrounds. Different disciplines, occupations, sectors and communities involve different types of activities, contexts and languages. Hence effective cooperation requires long-term, face-to-face interaction with a common objective (for example, a practical problem in a real context) in order to build a shared language and mutual understanding. According to Nonaka and Toyama (2003), such intensive interaction and shared objectives can be found in the 'creative routines' of innovative firms.

Successful interaction is also facilitated by a broad definition of the issue or system at hand. A larger number of changing elements leaves more room for finding a satisfactory solution for all stakeholders and it increases their incentives to behave cooperatively because it becomes more likely that there are also some shared interests among them (Bruijn *et al.*, 2004: 61–2).

Modern communications technology cannot, yet, beat face-to-face communication in creative processes where both information and understanding (frames) are insufficient (Daft and Lengel, 1986; Doz, 2003). Face-to-face communication, in turn, requires physical proximity and co-location. Communication of new ideas may also fail if too many new or strange concepts are used. As a result, creative dialogue and collective learning processes are facilitated by the use of *stories, analogies, metaphors*, and so on which build shared understandings and tie new ideas with the established knowledge structures (Van de Ven and Hargrave, 2003; Weick, 2003).⁶

Creative, open and long-term dialogue is not possible without some social capital (trust, reciprocity, shared understandings) among the participants (Nahapiet and Ghoshal, 1998; Schienstock and Hämäläinen, 2001). Creative interaction is also supported by a neutral and peaceful meeting ground, preferably far away from the participants' day-to-day activities and environments that tend to call forth and reinforce old thoughts and cognitive frames. Social capital and a neutral context help the participants to step outside of their normal occupational roles, reveal their tacit assumptions, focus entirely on the issues at hand, and reflect on them from new perspectives.

Structural change involves 'creative destruction' that produces both winners and losers. The social capital necessary for creative dialogue may be easily destroyed if those who lose from the anticipated changes are not somehow compensated for their losses. This may require that a part of the systemic gains from change are redistributed to them (Chang and Rowthorn, 1995). Structural changes will also be more acceptable if the losers are allowed to participate in the related policy making process (Stiglitz, 1999).

Facilitation of creative dialogue for systemic change is a public good – the whole system benefits. Hence there is a potential for public intervention. Public authorities can foster creative dialogue by developing system-wide SPI (foresight, benchmarking, and so on) and strategy processes, arranging cross-sectoral training programs around important economic and social challenges, and so forth. Besides participation and ‘voice’, such processes should offer their participants some private benefits (for example, new knowledge, intellectual stimulus, new contacts, prestige, and so on) in order to gain their commitment and time for the public effort.

Once the overall systemic vision has been created, the different sectors and sub-systems can create their own, more specific visions and strategies that are consistent with the higher-level vision and complement each other. Such visions and strategies will guide the development of new technological, organizational, policy-related and institutional innovations.

ORGANIZATIONAL CULTURE

In order to make collective learning processes sustainable, organizations in different sectors should build the reframing capacity into their organizational routines. Weick (2003) argues that organizations that are good at ‘sense making’ (reframing, second order learning) share the following characteristics. They:

- pay close attention to small, unexpected events that may foreshadow larger systemic problems
- are preoccupied with failures
- are sensitive to operations
- refuse to simplify reality
- avoid detailed planning before action
- try out different options and possibilities

In terms of our framework, such ‘learning organizations’ focus on the early identification of systemic contradictions and poor performance. They pay close attention to organizational and individual practices and environmental changes with all their real-life complexities. At the same time, the learning organizations do not subscribe to simple theories or engage in detailed planning which would reduce their sensitivity to contradictory feedback and slow down the reframing process in a rapidly changing environment. Instead, they tend to take action, try out different possibilities, and then reflect and learn about them, improve the strategy, try again with a new option, and so forth (Weick, 2003).

COMPENSATION OF LOSERS⁷

Structural change processes always involve both winners and losers. Structural adjustment costs never fall equally on all parts and agents of the economy. Some countries, sectors, organizations, groups and individuals benefit from change while others lose. This makes structural change processes inherently difficult. Major conflicts may arise which slow down the adjustment process. Solving such conflicts may require an intervention by an external agent such as the government.

Chang and Rowthorn (1995) note that there are at least three different approaches governments can adopt in 'conflict management'. The first is the neoclassical approach in which structural adjustment is left to market forces and losers on their own. However, if their losses are large, this approach may create severe social tensions and unnecessary write-offs of specialized productive assets. The second approach uses monetary, fiscal and exchange rate policies to reduce the possibility of major conflicts. These policy instruments are 'clandestine' because they appear to be neutral while they in fact favor certain groups over others. Thirdly, the government can endorse the interests of a certain group more explicitly by openly defying the 'imperatives of the market' to various degrees. This may involve either suppressing or protecting the losers. The former requires a particularly strong government.

In today's techno-economic transformation, adjustment losses tend to be large, macroeconomic policies insufficient to prevent conflicts and governments unwilling to suppress the losers. This situation has led to a very slow structural adjustment or even to an outright socio-economic 'sclerosis'. And this has happened despite the fact that slow adjustment can prove very costly in the long term and the group of beneficiaries from a more rapid adjustment could far outnumber the group of losers. The problem of slow adjustment is related to the fact that the adjustment losses occur first and are rather easy to measure but the benefits are more uncertain and usually come in the distant future (see Rodrik, 1996).

NOTES

1. Strategic intelligence is understood as tailor-made information to support decision makers in developing and implementing their strategies, policies and interventions (Tubke *et al.*, 2001: 1).
2. Lampinen refers to a typical study on the influence of social science research in Sweden in the late 1990s. In this study, only 5 percent of decision makers in private and public organizations had been influenced by social science research while making rearrangements in their organizations. Much more influential was the information gained from their superiors, colleagues and the media.

3. Discourse analysis can reveal the shared mental frames of the decision makers and the public. It analyzes the spoken and written language whose structure and concepts reflect the speaker's or writer's cognitive structures that cannot be directly observed (Alasuutari, 1996).
4. Karl Weick argues that people who study liberal arts 'get exposed to a wider variety and greater richness of values than people normally get in professional schools'. He places a lot of trust in executives who are generalists. They 'can often construct a richer, more useful version of what's going on than specialists can. At the very least, their broad experiences can help these executives not to get paralyzed [in crises]' (Weick, 2003: 88).
5. The benefits of a well-functioning network diffuse to all of its members. However, the costs of creating and maintaining the network fall entirely on those members who undertake these activities. Such costs may exceed the *private* benefits to any individual member though the *social* benefits of a well-functioning network could greatly exceed the costs.
6. Van de Ven and Hargrave (2003) argue that initial metaphors that are used to describe and evaluate a new system are based on the preceding established system because means and concepts to articulate the new system are not yet developed. Thus, for example, the early automobile was called a 'horseless carriage'.
7. This section is borrowed from Hämäläinen (2003).

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PART II

Additional perspectives to structural
adjustment in sectors, regions and
nation states

6. Structural adjustments and conflicting recipes in the US auto industry

J.-C. Spender

INTRODUCTION

This volume is dedicated to probing the interplay of national policy and economic performance. Renewed interest is following what the editors term the Third Industrial Revolution – which encompasses the violent global social, economic and technological disturbances precipitated by ongoing developments in information technology and international trade. Our intention is to press beyond naive notions of technological determinism or technologically framed economic restructuring, and develop policy insights that might be useful to governments. National economic policy is too complex and multifaceted to be captured in ‘sound bite’ variations of ‘out with the old and in with the new’. The editors neatly express the basic proposition: that, while technological innovation is clearly a significant ‘driver’ of economic performance, its impact is far from determining, history shows that the economic returns from technological breakthroughs are often harvested by others than those who make them. Other ‘drivers’ complicate, mediate or must be integrated before the nation’s economic engines seem to work to best advantage.

In this chapter we examine some aspects of the complex relationship between the US auto industry and the national or local policies that might be thought to shape that industry’s competitiveness or conduct. I do not intend a comprehensive review of what has already been said about this industry, one of the largest and most researched in the world. If anything, this chapter offers some observations on how this relationship might be thought about and, perhaps, researched. That the industry is embedded in and has shaped American culture, self-identity and everyday life is widely appreciated. Aside from its social and cultural impacts, it is a huge economic activity, embracing millions of jobs, trillions of dollars. At one time it generated one job in seven across the entire US economy. It is unarguable

that America's national policies have shaped and have, in turn, been shaped by this huge industry. Whether we think about education, especially engineering, design, styling and business education, or healthcare, workers' compensation, union law, urban and rural planning, product liability, anti-trust legislation, emissions, and so on, there are immediate implications for the auto industry. Some even suggest that the auto manufacturers' color choices, planned so far ahead of production, determine the fashion industry's seasonal colors.

Our challenge is to focus on the book's objective, to reveal insights into the relationship between the State and the industry that have the potential to illuminate, inform and possibly even guide national policy. In the course of thinking about this relationship we have come to think about institutional theory in a significantly different way, different, that is, from the current line of thought about 'new institutionalism' (Brinton and Nee, 2001; Powell and DiMaggio, 1991). We are drawn back to institutional theory's original politico-economic lines of argument, especially those of Commons (1924). Again, this chapter is not intended as a critique or comment on contemporary institutional theorizing, rather as a comment about what prevents us seeing as clearly as we might – especially when it comes to the relationship between government and an industry as cohesive, concentrated and powerful as is the auto industry. Others have made similar comments, typically focusing on the current theorists' reluctance to consider power, that most elusive of social concepts (Barnes, 1988; Seo and Creed, 2002). Social institutions are one of the principal structural linkages between the State, and its power, and its constituents. Developed nations are those in which the rule of law and the concomitant presence of sophisticated social institutions ameliorate the raw exercise of State power.

The chapter is unavoidably complex. There is much abstract discussion about the relationships between the auto industry's firms, government – Federal and State – the unions, the consumer, the marketplace, the global competition and the ecology. This conversation is typically exhortatory and unhelpful because the devil, as always, is in the details. Indeed, we argue the whole thrust of institutional analysis is that it must grasp the historically contingent details of the economic and legal situation before it can reveal anything useful about how or why firms or bureaucrats act as they do. So complexity is the necessary result of getting into the nitty-gritty of the industry and its history.

The chapter begins with a discussion of institutions and institutional theory, provoked by the editors themselves. On the one hand we see a Parsonian model now associated with 'new institutional analysis', which sees firms as embedded within powerful social institutions to which they must conform mimetically. On the other we also see an older and possibly

more Marxist model in which ‘institution’ is really a term of art designating any legitimated social entity that has the power to contest the power of others, be that of the State or otherwise. We take a brief look at the history of the US economic institutions and their relationship with the State through the prism of corporate law, seeing this as one arena of power struggle against that of the State.

Then we look briefly at the history of the US auto industry itself. Institutions differ in terms of their objectives and their sources of power, so State institutions differ from private sector ones. Our model sees institutions of all types struggling for ever against each other, that struggle being the core of their history. Strategic theorists have researched private sector firms extensively, focusing primarily on market power and these firms’ competing against each other. Such analyses have typically paid little attention to the firms’ or industries’ struggles with the State, though recent work on corporate governance is broader. So, given our primary focus on social institutions and their impact on the industry, we shall avoid the normal strategic frameworks. Instead we use Fligstein’s recent work on ‘concepts of control’ and Spender’s earlier work on ‘industry recipes’ (Fligstein, 2001; Spender, 1989). These approaches let us see the firm organized via a strategic selection from all the questions that need to be addressed by the senior managers. The simplistic textbook input–production–output model, with an entrepreneur deciding on a product, a means of production and marketing, getting financing, and so on, gives way to a more complex analysis in which some 12–15 critical issues are addressed. These are, of course, drawn from a much larger number of issues which might conceivably affect the firm’s strategy. The argument is that there is so much uncertainty and complexity in the business world that no one is able to forecast which of these very many issues will turn out to be strategic. Instead the collection of firms that constitute an industry find themselves engaged in an ongoing experiment at a very practical level, exploring what works and what does not. In this sense we see the industry’s selection or ‘industry recipe’ evolving and adapting over time, a type of analysis well suited to determining the ongoing impact of a socio-economy’s institutions on firms and the way they operate.

Overall our conclusions are that the US auto industry and its evolved recipe have remained largely impervious to pressure from America’s social institutions. Or perhaps the industry’s managers discovered ways of deflecting their impact. While there have been many changes, in the designs of the automobiles, in the technologies used to produce them, even in the location of the assembly plants, the industry’s underlying sense of itself, its options, its place in society, has remained largely unchanged. Does this matter, given the US notions of competitive global capitalism? A background

question, of course, is about what can be done, and by whom, to alleviate the social and economic costs of the continuing structural changes in the industry, given that the US domestic manufacturers – the Big Three of Ford, GM and Daimler-Chrysler (DCX) – seem to be playing a losing game against Honda, Toyota and even Renault-Nissan. Or perhaps the question is ‘Should anything be done?’ Should ‘market forces’ be left to rule? At the same time many citizens now feel the proliferation of vehicles, both on- and off-road, has gone beyond a ‘tipping point’ and that the total complex of social costs is exceeding the considerable values produced. Clearly public transport is under permanent threat in ways that have profound social effects, and pollution, urban decay and suburban sprawl are increasingly social afflictions. Rather than answer these many difficult questions completely or with assurance, we merely probe them.

CONSIDERING SOCIAL INSTITUTIONS AND THEIR CHANGES

Our editors propose two rather different models of social and institutional change. At the risk of gross oversimplification, we might say that Heiskala argues our study should focus on the social innovations that reshape society’s institutions rather than on the institutions themselves. These innovations emerge at the confluence of techno-economic and social-cultural change, suggesting a collision between concepts from Marx and Parsons: technological determinism on the one hand and cultural determinism on the other. Weber’s analysis, Heiskala suggests, offers a nuanced ‘third way’, allowing the interplay of these and multiple other social features.

Key are the practices that create and reproduce social order. Mostly habitual, these often persist until disturbed by emerging crises, conflicts and contradictions. Heiskala notes that changes necessarily lead to or are part of shifts in the systems of social power. Increased global economic activity has forced change in the boundary conditions around states as systems of power, bringing economic policy into the foreground and pushing social welfare issues into the background, provoking a shift from Keynesian to Schumpeterian policies. Nowadays the most effective social policy, perhaps, is the optimal economic policy. The resulting wealth trickles down and maximizes the nation’s policy options and power vis-à-vis other nations competing in the now globalized economy. The social innovations that facilitate economic activity become strategic indirectly, so standing in contrast to more direct political moves to increase social welfare.

Hämäläinen is more tightly focused on the society’s structural adjustment capacity and ability to take new ideas and practices on board, in

particular on what can be done to lessen the rigidities that hold outdated ideas and practices in place after they are no longer appropriate or optimal. The model is derived from the cognitive unfreezing–freezing models of Lewin and Festinger, now more often associated with Kuhnian paradigm shifts. Crises, failures, anomalies or persistent unease become triggers for a ‘problemistic search’ for new approaches, so the corresponding social or institutional entities must contain or allow for contradictions and internal stresses (March and Simon, 1958). Hämäläinen’s hope is that the change process can be facilitated through better institutional management so then crises need not become national catastrophes before change begins. Firms, institutions and nations, he argues, should become more reflective and self-observing, curbing their natural tendency to see things merely as they wish them. They might then be better able to adapt or enhance their ‘structural adjustment capacity’. Deliberate learning, he argues, combining systematic observation and self-criticism, is the key to timely institutional adjustment; knowledge is too socially consequential to be left to serendipity.

PRELIMINARY REMARKS ON INSTITUTIONS

Our editors differ in their definitions of social institutions. Hämäläinen aligns with the ‘new institutional’ position (Powell and DiMaggio, 1991). He sees a hierarchy of social systems nested within each other, from the highest and most inclusive socio-cultural level to the micro work-group and individual level. Lower level social entities, especially organizations, are shaped by the more powerful higher level forms, so leading to mimesis and isomorphism (DiMaggio and Powell, 1991). The model is Parsonian – a version of cultural determinism, as Heiskala notes. It leads directly to questions about the processes that might produce cultural or institutional change, well framed by Seo and Creed (2002).

Heiskala’s is a more dialectical position. He rejects Parsons’s concept of a stable, even unchangeable, structure as part of a system of social systems that support an over-arching society, and moves closer to the notion of social institutions as persisting but more changeable patterns of social practice. His model is more that of a decentered complex of social practices. In terms of the US auto industry, the editors’ differences are between a model in which the State, through its various institutional arrangements, effectively delimits and controls the industry, and a more contested one in which industries, such as the auto industry, and other social institutions compete with the government in a looser system of social power over which the government has only partial influence. In this chapter, we adopt the second model.

Two other differences are important. Weber and others distinguished purposeful practice, action towards a known goal, from 'habitual' activity that can no longer, or perhaps never could, be explained or warranted by reference to this goal. The thrust behind a policy of reflective practice is to address the possibility, nay certainty, that much social and industrial practice is habitual in this sense. Sometimes the habitual will impede the effectiveness of purposive practice. The implication is that such frictions and dysfunctions can be revealed by reference to the organizational, or institutional, or national, goals, and that corrective action can be taken – indeed this is the editors' principal thesis. It seems reasonable until we begin to think through precisely who is supposed to take this action, and where they get the power to make a difference.

Thus a second difference is that alongside the editors' questions about the mechanics of 'how social institutions change', there stands a seldom-articulated question about who has the power to effect change. Heiskala touches on this noting the distinction between a zero-sum redistribution of power and a more puzzling but important increase in collective power, corresponding sociologically to the economists' puzzlement about the production of wealth as opposed to its distribution. A great deal of the new institutional literature presumes that, although organizational and institutional managers have the power to change their own firms and institutions, they face only the structural problems of systemic intractability, obduracy among the employees, and a general excess of stability over 'adjustment capability'. Thus education, communication, employee incentives, and so forth become weapons in the armamentarium of those implementing internal change. At the same time external institutions are assumed to have the power to make these institutions conform, even if only by depriving them of necessary resources. The theoretical implication is that structural adjustment capability – like absorptive capacity – is a characteristic internal to the organization, and that any 'dissonance' or inappropriateness to meet the functional demands set by the environment is a kind of internal failure, most probably managerial. Fit is good – and external institutions, by definition, are taken to be more legitimate than the conforming organization.

This leaves open questions about how the social institutions came to be the way they are. The point here is that an analysis that fails to address the patterns and problematic nature of social power is inevitably going to focus internally on the cognitions or 'culture' that are taken to define the organization and its action rationality. There is no analysis of how firms and other social institutions shape and sustain each other in the manner suggested by Giddens's structuration theory (Giddens, 1984). Thus Hämäläinen argues that the most significant barriers to change are cognitive, preventing those

within the firm from 'reading' the realities of the taken-as-given environment. Heiskala, in contrast, is more interested in the redistribution of social power that might lead some cognitions to be treated as more legitimate than others.

The editors' differences revolve around the place of power in the analysis: presumed and backgrounded in Hämäläinen's view, problematic, foregrounded and contested in Heiskala's. We cannot resolve these differences of viewpoint by looking only at the practices within organizations, especially once we push beyond the notion that all cognition is explicit and that some aspects, elements or dimensions of organizational knowledge might be tacit. There are immediate and fundamental problems, for to try to analyze the firm's informal system of tacit thought and/or behavior is to head directly into the dilemma that Seo and Creed (2002: 230) reveal: how can we expect unreflective actors to comprehend or agree on the need for systemic change? Hence Hämäläinen's call to greater reflexivity so that the firm's situation and purpose can be surfaced from the tacit and unreflective. But can greater reflection alone provide the necessary leverage? Can an auto industry looking at the world through its own lenses learn enough to protect it from strategic and competitive crisis induced by others with different 'lenses'? Or must the analysis of the industry's relations with its 'institutional environment' move beyond Parsonian isomorphism to embrace its struggle for power and identity?

A SHORT DIGRESSION ON CORPORATE AND MANAGERIAL POWER

It seems easy enough to bring power into a discussion of institutions, for many social institutions are the direct instruments of State power, but it would be incorrect to define all institutions as such. Some, like mutual aid and educational societies, are set up by individuals to protect their own interests. Culture and language are institutions of an even subtler nature; they emerge rather than get set up – to recall Toennies's distinction between *Gesellschaft* and *Gemeinschaft* (Toennies, 1971). North, for example, sees institutions as socially constituted and legitimated arrangements to deal with collectively determined uncertainties (North, 1981). Legal and religious institutions illustrate his point. Their demarcating characteristic is that they are seen as legitimate constraints over individual behavior and thus as Durkheimian 'social facts'.

Hämäläinen implies the term 'institution' should embrace firms, industries and regions, so institutions can be patterns of either directed or emergent economic activity. In this sense a market is also a social institution.

Heiskala sees social institutions as patterns of explicit legitimated rules and norms backed by sanctions. Hence institutions are inherently tied up with and manifestations of the patterns and processes of social power and practice. The implication is that they can be classified according to the degree to which they are hierarchical manifestations of a narrowly held State power versus being emergent interpersonal arrangements in a context of distributed social power. The crux of the difference lies in the relations between the people involved; on the one hand we see patterns of subordination within a hierarchy and, on the other, a situation in which people are still free to act as principals – whose institutions emerge as stable patterns of expectation and action. Scott's familiar institutional typology, standing on the three pillars of regulation, norms and culture/cognition, reflects this dichotomy between hierarchical power and that distributed in an emergent structure (Scott, 2003).

If an institutional structure is emergent, a consequence of debate among the people served by that institution, then we necessarily arrive at the inward-looking puzzle noted by Seo and Creed: How can such an institution change itself? Hämäläinen's answer is 'by promoting greater self-observation and awareness of the environment'. Neglecting, for a moment, issues of how cognitive structures blind us to alternative possibilities, change ultimately depends on the power of the institution's managers to effect change, so there must be an analytically significant difference between the views of the managers and those of the rest of the system they are trying to change. An institution can only change into something its managers, or those who influence it directly from outside, can envisage.

Likewise, if we think of the institution as regulative, a known instrument of State power, then change can be the result of State action, whether the process is distributed and 'democratic', or the arbitrary action of a particular individual or group able to seize and control the State's power. At the same time institutions may be able to gather a form of power independent of the State's. In many developing countries multinational firms are 'independent' and competitive in the sense of having sufficient independent power to shape the State in which they do business. They compete with the host State for such power. Thus one notion of institutional change is about the contrast between hierarchical and emergent structures of power; another is about the contrast between the power available to the State and that available to managers able to acquire power other than the gift of the State. This leads us to a power-recognizing matrix of social institutions (Figure 6.1).

The relationship between the two-by-two in Figure 6.1 and Scott's tripartite typology turns on a discussion about the real differences between the normative and cognitive/cultural pillars, and whether they are actually about the nature and sources of social power, so collapsing the schema into

	Hierarchical system	Emergent system
State controlled power		
Independent power		

Figure 6.1 *A typology of social institutions*

a simple dichotomy. At the same time we can note the history of social thinkers proposing similar tripartite typologies: Etzioni's coercive, utilitarian and normative classification (Etzioni, 1961), Ouchi's markets, bureaucracies and clans (Ouchi, 1980), Douglas's use of the term 'enclaves' (Douglas, 1996) and Williamson's use of 'hybrids' (Williamson, 1991).

The reconciliation of these various institutional schemas is beyond this chapter. More important is the focus on power, which, as Heiskala notes, is typically under-considered by the current generation of institutional theorists. Commons, on the other hand, takes an essentially Hobbesian view: all forms of social order, especially the legal and economic orders, are considered manifestations of social power (Commons, 1924, 1931). Religious institutions, separated from government in a secular state, constitute alternative and competing systems of power. We also see social entities as institutionalized when they become vessels for the morality, norms and values of that society, hence Selznick's well-known comment that 'to institutionalize is to infuse with value beyond the technical requirements of the task at hand' (Selznick, 1957). But the question framing this chapter is whether the State controls all power, or whether social institutions such as firms or industries are able to contest the State's power and develop independent systems of norms, values, rules and behavior. Our argument, of course, is that we need to appreciate the US auto industry's institutionalized independence from government, Federal and State, and from the market power of its customers and suppliers before we can understand its history and practices.

While Hämäläinen's approach suggests reflective and right thinking would lead to a more productive and economically efficient harmony between firms and institutions, Heiskala seems to leave this conclusion open. Or to put it another way, will an economy organize itself so that its firms' interests are readily aligned with those of the State? Or are firms, and other self-identifying and self-interested economic entities, in some inevitable and fundamental competition with the State? In these respects are the goals and objectives of private sector firms similar to or different from those of public sector institutions? Should private sector firms be left to their own devices merely presuming that what is good for General Motors is also good for America?

These questions are as old as political economics, but nonetheless fundamental to our understanding the relationship between American society and its auto industry. Without complicating the analysis unreasonably, we can learn a great deal from a brief look at the history of the US economic and legal system. A short summary must do violence to the historians' and legal specialists' arguments, but the auto industry's position in the US economy is somewhat unique. We take as guides (a) the notion of social and economic institutions as mediating between the State and its citizens drawn from Coleman and North (Coleman, 1974; North, 1989), (b) the evolution of corporate law drawn from standard works (Friedman, 1985; Horwitz, 1992; Hovenkamp, 1991) and (c) the evolution of modern accounting (Johnson and Kaplan, 1987; Littleton, 1981; Tricker, 1967).

All these argue that, following the American Revolution, there was a widely felt need to restructure the new State's legal and economic system. In the terms of our previous discussion about the possibility of social systems reforming themselves, history suggests that while this national need was widely felt the options were far from clear and were bitterly contested. On the one hand were reformers, imagining a new social and economic future. On the other were those holding to a more conservative line and interested in preserving the 'best' features of the previous age. The social structure in colonial times was obviously British, reflecting centuries of political evolution 'back home'. There the principal institutions served to balance the absolutist feudal power emanating from the King against the distributed rights inhering in the concept of citizenship. Coleman argues that the social shift in the 18th century, a crucial prerequisite to the industrial revolution and the growth of the economy, was the emergence of a new genus of social institution that effectively gathered the distributed powers of the citizenry into social entities weighty enough to be able to contest the power of the transformed State, into which feudal power then passed. In this way a two-tier society evolved into a three-tier one, with a problematic new intermediate layer of novel social institutions holding a completely new kind of social power, essentially competing with both the citizenry and the State.

In the emerging capitalist democracy, the most economically significant of these new institutions was the private corporation. These rapidly became the economic engines of the new State. Looking at the evolution of corporate law from the time of the revolution up to the end of the 19th century, there is a clear overall trend. At its beginning all legitimate organizations were in the public sector, chartered by and serving local and national State interests. Publicly owned mines were sunk and canals, bridges, dams and water-powered mills built in order to further local and national economic progress. These new organizations were granted the power to

overturn citizens' private interests so long as their promoters were able to convince the local judges that the results would be in the general economic interest.

Later, given the inevitable problems of legal and managerial corruption as these new State agents preferred their own interests, private sector firms were allowed to compete with the public sector to challenge and ensure the latter's efficiency. In this way private corporations were granted greater and greater power and their competition with the State's agencies was institutionalized until, at the end of the 19th century, their victory seemed complete. As historians noted America was then less about politics and democracy than about an unfettered freedom to do business. At this point the public at large became alarmed that the corporations seemed to have more power to shape US society than the Federal government itself. Throughout the same period, of course, the law permitted markets to evolve and expand, creating the medium through which these new corporations interacted with each other and with the State and the citizenry.

In the US the first major legislation designed expressly to limit the power of the corporations, now largely operating as trusts, was the 1890 Sherman Act. For various technical reasons, the corporations were merely impeded and not actually constrained by this so called anti-trust legislation until the 1914 Clayton Act. The Acts were designed specifically to prevent the extraordinary leveraging of capital that we might now call a Ponzi scheme, arrangements through which a modest amount of capital was able to establish controlling ownership over a substantial quantity of the nation's productive economic resources.

The mere fact that the Federal government finally engaged the private sector in this struggle for power, which clearly continues today, did not mean that it would achieve a quick and easy victory. Quite to the contrary, there was little effective control until the more radical New Deal legislation that followed the social and economic disasters of the 1930s. In contrast, European governments periodically nationalized significant parts of their economies in order to seize control directly. Ironically the US economy was more or less wholly centralized during both World Wars. But from the point of view of corporate lawyers it was not until the Celler–Kefauver legislation of 1950 that they were finally effectively constrained by anti-trust legislation. That Act made all mergers subject to a Federal review to determine whether the level of competition would be reduced. Notably it also made executives personally liable for acts of collusion.

In similar vein, Fligstein has analyzed the institutionalized relationships between the State and the economy. He argues that managers inevitably act within a 'conception of control' (CoC), a socially institutionalized notion of what they can do and what constrains them (Abolafia, 2002; Fligstein,

1990, 1991, 2001). Each CoC is a reflection of a particular socio-economic context. He offers four historically sequenced stages:

- direct control of competitors
- manufacturing control
- sales and marketing control
- financial control (Fligstein, 1990).

Fligstein's argument is that the 'direct control' CoC dominated private sector practice to the end of the 19th century. Manufacturing control prevailed in the period leading up to but mainly following World War I. Between the 1920s and 1960s the marketing CoC dominated. Since the emergence of the conglomerate the financially centered CoC has dominated.

The notion of a 'conception of control' converges somewhat on the earlier notion of an 'industry recipe' (Grinyer and Spender, 1979; Spender, 1989). We shall make this term clearer later on, but we can already sketch it as a form of emergent industry-specific institution. At one level it acts as a cognitive frame and communal language within which the industry's managers determine the issues to be addressed in their strategizing. It becomes the lens that defines the industry's identity, environment, and inventory of strategic and competitive practices (Huff, 1982; Huff and Huff, 2000).

Fligstein's analysis raises questions about whether the auto industry's history is better seen as a sequence of industry recipes – dealing with the relationship between the firm and its institutional environment – or as an evolution towards an internally focused recipe in which power within the firm is progressively more contested, first between production and marketing and now between the financial, marketing and manufacturing centers of corporate power. History deals with both, of course. It is important to distinguish between an implicitly creative model in which greater internal effectiveness translates into greater external power (Nelson and Romer, 1996; Romer, 1990) and a neoinstitutionalist one in which the internal changes are evolutionary adaptations to external events and social change. Industrial historians offer many variations of this story (Dowd, 1974; Roy, 1997; Trachtenberg, 1982; Wiebe, 1967; Wright, 1990). Key to an intelligent reading is the interplay of socio-economic and institutional contexts – for that provides the legitimate spaces within which the private sector's creative economic activity takes place – and the purposive efforts of firms and their managers to use their acquired powers to grow and so dominate the economic space, and thereby achieve and sustain competitive or quasi-monopolistic advantage.

PROBING THE US AUTO INDUSTRY AND ITS RECIPES

The point of the previous sections is to clarify what we mean by a social institution, and thereby clarify the social and legal context of the US auto industry. We cannot overemphasize its success and accumulated power. It grew from being a minor economic player in 1900 to being the nation's number one industry by 1920. In spite of its relative decline during the 1980s and 1990s, it remains a dominant industry up to the present (Fligstein, 1990). While many firms formed, grew, failed and were reborn during this period, the long-term outcome is the emergence of today's Big Three (GM, Ford, Daimler-Chrysler or DCX) and their multi-tiered networks of subcontractors. These OEM (Original Equipment Manufacturer) names hide a complex of interdependent operations covering the manufacturing supply chains, the vehicle distribution systems and the after-sales service industries. This complex is relatively homogeneous in the sense that the Big Three are largely similar in culture, technology and strategic approach. For the most part the industry and its executives grew up together and evolved an idiosyncratic system of manufacturing, managing and relating to their market that remains largely unaltered today in spite of massive changes in buyer behavior, technology and global competition (Klepper, 2002).

As a culturally homogeneous collectivity, the industry occupies a position of enormous power over America's other social institutions, such as the law and the economy, as well as over the industry's customers. It is important to recognize that throughout its entire history there has been virtually no Federal or State legislation that has seriously constrained the industry's chosen *modus operandi*. Even now, it is almost impossible to show that the sum total of labor, operating and product legislation has significantly deflected the industry's majors from their chosen strategic path. This is one of the crucial points of this chapter's analysis. So, inasmuch as we can draw a quick conclusion that might illuminate policy makers' options, it is that this industry has shown itself to be almost unassailable, at least as far as the US government is concerned. Compared to the government's strategic and policy tussles with the telecommunications and computing industries, and with the airlines, the auto industry and the Federal government have yet to lock horns in any strategically significant way.

Global competition may be ushering in a quite different stage of the industry's long history. There is an addendum to the simple story of entrepreneurial activity, success and independence, one about foreign competition and the US industry's response. Here Hämäläinen's proposals seem especially pertinent. Had the industry been more reflective and aware, surely the social and economic costs of the massive restructurings that have

taken place over the last 20 or so years could have been significantly reduced? There is no question but that the US auto industry knew about the Beetle, the first Toyotas and the Volvos that helped establish new mores for suburban living. The urban myth that the industry was caught off-guard is unsupportable given that the industry employed huge numbers of people, many of whom were buying these foreign cars.

Maynard, for example, argues that the US Big Three companies were, and remain, too arrogant to listen to the market and so their market share continues to fall – presently to its lowest level ever (Maynard, 2003). We need to know more about why the industry seemed first to resist the kinds of change the editors call for and then, when change finally came, why it took the form that it did. It is also clear that the government set clear limits to the amount of protection it was willing to offer the domestic manufacturers and that by allowing foreign-owned companies to build vehicles in US plants they eventually acted strategically on the industry for the first time in its history. This action was successful, in that it produced a result. But, in the context of the editors' questions, it is not obvious that the results were those planned, intended or desired.

That the US auto industry is in difficulty is generally agreed, though the reports of its demise seem exaggerated. The Big Three's part of the industry is extremely large and fully capable of competing globally. Though their share of the US domestic market is smaller than it has ever been and is declining steadily, and now below 60 percent, these oligopolists remain the major players in the world's largest and most significant market. While recognizing that the Federal government, American culture and the unions are significant and powerful institutions, so is the domestic consumer. As Sloan assembled what is now General Motors (GM) he competed successfully against Ford by understanding that, while customers were segmented into distinct demographic levels, this implies no loss of their ultimate power over the OEMs. On the contrary, in the longer term, the US consumer was able to exert considerable leverage over the industry. The unions also exerted some leverage. Their history and their achievements are again a specialized area of analysis. While many argue they have been influential, and there is a huge populist literature about labor struggles in the industry, perhaps to the point of causing the decline in the industry's competitive power, in this chapter we argue that the union movement has always been, and remains, peripheral to the deeper strategic issues. To put this another way, compared with the other external institutions, government, customers and global competition, the union angle fails to provide much explanatory leverage. Put differently again, we argue that the industry has been consistently successful at achieving dominance over its workforce (Braverman, 1974; Chinoy, 1965).

THE EVOLVING US MARKET

The key to the industry's response to foreign competition lies in appreciating consumer market power. The common tale here is that the industry's executives underestimated their customers' willingness to replace the US's culturally defined notion of the automobile with another, or others, already embodied in cars designed in Europe and Japan. But the important consequence was not that the US OEMs lost a certain amount of market share and turnover to the new competition, though that happened. More important was the unanticipated consequence of their engaging the Federal government to protect their market share through political means rather than through product-oriented technological improvements. They called for teacher instead of taking on the playground's new bully. The Reagan administration, knowing the Japanese economy's dependence on the US markets, forced the Japanese auto suppliers into an informal import quota limitation scheme – in striking contrast to its widespread international efforts to lower trade barriers and tariffs around the world. But in return for the self-imposed quotas the US administration agreed not to place inordinately severe difficulties in the way of those Japanese manufacturers offering to set up their own assembly plants (transplants) in the US. From the administration's point of view it was politically attractive to be able to point out that job losses in the domestic OEMs would be made up by new job gains in these new plants.

An additional unanticipated consequence was that the domestic firms were then directly exposed, through their customers' reactions, to the newer 'lean' design and manufacturing methods developed by the foreign companies. The US consumers' knowledge of what could be delivered, in terms of automobile price/performance, expanded exponentially. In due course this exposure precipitated profound changes throughout the domestic industry (Womack *et al.*, 1990). But even now these changes have by no means run their course and the ultimate results are far from clear. It is not clear that the Big Three will be able to catch the overseas firms' quality and value. In particular it is not clear that the US market will 'equilibrate' with the domestics holding say, 50 percent, with the rest going to 'foreign-owned' firms importing, subcontracting and assembling domestically. It seems, on the contrary, as if the auto market could turn into another instance of the winner-take-all game we often see in high-tech, in which the US firms may not be in a good position to survive.

The American 'love affair' with the automobile is complex and multifaceted so it is easy to underestimate its strictly functional aspects. Though we often think of cars and trucks as capital investments, the truth is that they are simply large consumables: mass-produced pieces of the equipment

necessary for modern living that wear out and break if not destroyed in accidents. When times are hard people hang onto vehicles longer before passing them down the long chain that ends in the wrecker's yard and scrap smelter. In 2002 US consumers spent over \$100 billion on new cars, \$200 billion on used vehicles and another \$661 billion on fueling their vehicles, fixing them, paying tolls and getting insurance. With depreciation taken into account the average US owner can expect to pay more than \$10,000 a year for the privilege of getting ticketed, stuck in the traffic and avoiding public transport – when that is available. Multiply that expenditure by the total US population of cars and trucks in use (roughly 220 million) and you have seriously big money. Compare that with US healthcare, now nearly 15 percent of the economy with per person costs at \$5,400 per year, or education averaging \$11,000 per student up to and including college.

Gross sales of cars and light trucks go up and down, for this is a saturated consumer market that waxes and wanes along with the economy. Total US vehicle production in 2002 was 5.02 million passenger cars and 7.26 million trucks, 75 percent of which were pickups, SUVs and small vans, compared with the record years – 1973, 9.67 million cars; 1999, 7.39 million trucks (Ward's, 2003). In 2002 imports rose again – 6.08 million cars. Right now it is boom time for American buyers, for the sixth year in a row. Combined 2004 US vehicle sales are forecast around 18 million, up from 17.14 million in 2002 and maybe exceeding 2000's record sales of 17.81 million. It is correspondingly tough for the suppliers and assemblers, even though their volumes are up. Margins have been falling for the last five years, especially since 9/11, given the discounts and 0 percent financing incentives offered to 'keep America moving' after the terrorist attacks. Three years later those discounts are still in place and costing the US OEMs a huge amount of money. With lowered vehicle prices and higher personal income, Littman's 'auto affordability index' is at its best in 25 years (*Automotive News*, 2003). The 2002 Big Three market share dropped again to 61.5 percent of the domestic market. While US-assembled vehicles held almost 80 percent of the total domestic market, the Big Three produced only 63 percent of the cars and 84 percent of the trucks. The rest were produced in plants run by 'firms headquartered outside the US' – as the industry says coyly. The Toyota Camry and Honda Accord, the best selling US cars for several years, both outsold the Ford Taurus, the best selling Big Three car, yet again.

For their part cars have not changed that much – same old four wheels, steering wheel and gasoline engine (Mowery and Rosenberg, 1998). Tires are significantly better than they used to be – more secure and longer lasting – but fatal blowouts still occur, especially to SUVs. Even in this increasingly eco-conscious age fleet or corporate average fuel economy

(CAFE) mileages are getting worse because of the overall national shift to light trucks and SUVs – these now make up more than 50 percent of the total sales. While Toyota sold 434,000 Camry sedans in 2002, Ford sold 774,000 F-series pickup trucks and 434,000 Explorer SUVs. Chrysler sold 224,000 Jeep Grand Cherokees. Inasmuch as cars have changed at all it is that they are getting larger – along with American houses – heavier, less fuel-efficient, more loaded with engine-management and driver-directed electronics, and other distractions and/or entertainments, and significantly more likely to kill whomever they hit.

The mileage driven continues to increase. The US Department of Transportation estimated that the US's 191 million licensed drivers (65 percent of the population) drove 2.8 trillion miles in 2002 compared with 2.1 trillion in 1990, suffering 44,000 traffic related deaths, 6,000 of whom were pedestrians. Motor tax revenues in 2002 totaled \$533 billion of which the government spent \$60 billion on improving and maintaining highways and the rest to support the Social Security fund. Average speeds in the urban areas remain low, and US freeway speeds are among the lowest in the world. For all the hype about computerized driving, super-economizing hybrid cars, hydrogen fuel or electric power there is little more than hype so far (Shnayerson, 1996). In spite of the administration's rhetoric about supporting hydrogen-fueled automobiles, only around 40,000 hybrids sell annually, often to 'personalities' and middle-class professionals who relish the eco-statement but generally have a second guzzler in the garage. Interestingly, in spite of their own research and design efforts, and dominating the technology's patent stream, the US OEMs have made agreements with the Japanese firms to give them access to the technology developed for the Honda and Toyota hybrids.

The industry's employment rises and falls with production volumes. The US non-farm labor force is roughly 130 million, of which roughly 15 million are in the manufacturing sector. Though many sectors are affected by the industry's activities, direct 2002 employment was 911,000, down from peaks of 1,018,000 in 1999 and 1,004,000 in 1978. Assembly plants in the US employed 331,000 workers in 2002, down from 357,000 in 1995. But with the Big Three closing old plants in the Rust Belt, and transplants bringing new plants on-line, employment is moving to the Southern (Republican) states – and into non-union territory. Ominously, in some sub-assembly and parts manufacturing, after a decade of steady increases, employment is now declining – 2002 auto parts and accessories (SIC 3714) employment stood at 489,000, down from 552,000 in 2000, and in electrical equipment (SIC 3694) 2002 employment stood at 50,500, down from 69,700 in 1995 as manufacturing jobs are exported through NAFTA and other agreements to low-wage areas overseas. An increasing proportion of

these workers are 'contract workers', without full benefits. Likewise the exploding fashion for 'off-shoring' white-collar administration, programming, data-entry and customer support jobs to India, Eire, the Philippines, the Czech Republic, China and elsewhere via the Internet will lead to further industry employment changes.

The two trends noted above – industrial restructuring as the OEMs lose market share to the 'transplants', and the export of manufacturing and administration jobs – must be set against (a) the continuing US productivity improvements, presently the most rapid in the world, and (b) the continuing structural shift of the US economy from manufacturing to service. Manufacturing productivity is roaring ahead – with 1992 at 100 (the index) overall manufacturing productivity is now at 154 percent. But aggregated figures cover up many details; within motor vehicles the output per employee hour figure is at 141 percent while electronic components is at 805 percent.

Perhaps it is all about relative productivity and the implementation of the 'lean production' technology developed by the Japanese as the 1980s' 'one best way' (Womack *et al.*, 1990). In 1993 Big Three plants averaged 22.4 labor hours per vehicle, against 16.6 in Japan and 28.9 in Northern Europe (Kumar and Holmes, 1997). The primary difference lay in the degree of adoption of 'lean production' (Abo, 1994; Adler *et al.*, 1997; Fine and Raff, 2002; Kenney and Florida, 1993). The potential for US plants was obvious early. When lean production was implemented in 1987 at the Californian assembly plant joint venture between Toyota and GM, NUMMI achieved 19 labor hours per vehicle with a defect rate that successfully matched Toyota's Takoaka plant. But the productivity gap remains, especially puzzling when the MIT team reported that the US was 'regaining the productive edge' (Dertouzos *et al.*, 1989), the Harvard Business School team seemed on top of the industry's challenges (Clark and Fujimoto, 1989; Clark and Fujimoto, 1991; Dyer *et al.*, 1987; Dyer, 1996a, 1996b; Lawrence and Dyer, 1983), the National Research Council was sure the productivity gap could be closed (National Research Council, 1992) and the *Wall Street Journal's* Pulitzer winning authors Ingrassia and White were so confident that the Big Three would soon be leading the global industry (Ingrassia and White, 1995).

Recent evidence continues to be depressing. Nissan's US plant leads the field at 15.7 labor hours per Altima, Toyota's US plant is at 21.8, GM is averaging 24.4, Ford at 26.1, Chrysler at 28.0 and NUMMI at 28.4 (*Automotive News*, 2003). There is a striking contrast between the way the US industry embraced lean production and how Fiat set about completely transforming their manufacturing and assembly operations. Fiat's managers had the courage to let the operatives design their own plant, which then became one of the world's most successful (Patriotta, 2003).

Fligstein's argument is that the most recent strategic shift has been to a financial concept of control. Yet the changes discussed above do little to support his thesis. The industry has been managed by sophisticated money-men for many decades (Freeland, 2001). The changes we see taking place are logistic, technological and stylistic, and the industry's recipe is clearly evolving as a result. Some of the changes are about adopting features explored by the Big Three's global competitors: relocation to non-union labor areas, the introduction of lean production methods (to a degree), and new designs. Other changes are unique to the US owned companies and reflect their more aggressive handling of the domestic market, especially promotions such as 0 percent financing. Many think this a quality issue, for the foreign firms' higher product quality seems to make such marketing incentives unnecessary. But there is also the trend towards SUVs, pickup trucks and today's larger vehicles, sustaining the shift in consumer tastes first triggered by Iacocca's invention, the soccer-mum's van.

We are told the auto market is fiercely competitive, yet the precise dimensions of the market's segmentation and of buyers' attitudes remain puzzling. Even with modern marketing techniques at their disposal the OEMs make astoundingly costly mistakes by misreading their market. The Edsel was not a one-time marketing disaster – consider the Chrysler–Maserati affair or the Chevrolet Caprice (Ingrassia and White, 1995; Keller, 1989). How well do we really understand the auto market/s? Are autos a single product or a complex combination of many different products? Are they indicators of wealth and class or just the necessary accoutrements of a modern suburban life, wheels for getting to college or work, or for getting family members to school, doctor or train? Or is price/performance the key? What do we mean by the notion of 'quality', that Deming magic used to explain the ascendancy of the Japanese products (Gabor, 1992; Walton, 1991)? Why would anyone buy a Porsche Cayenne when a Toyota Camry or Infiniti FX45 is available? Where does Jaguar fit in, and why would Ford, which now also owns Volvo, Aston Martin and Land-Rover, pay \$2.5 billion for this functionally bankrupt British auto maker?

These puzzles are not unique to the Big Three. The deeper question is whether they are working the same industry recipe as their global competitors or not. If they are, their strategic challenge is to execute with equal or greater efficiency. But if they are operating to a different recipe, how do the two differ? The competitors' focus seems to be on global rather than domestic competition, though the sheer size of the US market means it must always figure largely in a comprehensive global strategy. Many of the stories about the global auto industry situation allude to national institutions and the absence of a 'level playing field'. One story is that the Japanese auto industry was 'targeted' for low interest investment and R&D support

by MITI, putting the US industry at a disadvantage (Johnson, 1982; Kodama, 1995; Odagiri and Goto, 1993; Okimoto, 1989). Another is that the quality of German secondary technical education is the root cause of the German industry's ability to produce the technologically superior vehicles predominantly purchased by educated Americans (Jürgens, 1993; Keck, 1993). A third is that acculturated Japanese workers will put up with extreme Taylorist work conditions that are unacceptable to US workers (Kamata, 1982). We can also recognize the US Federal and State governments' willingness to create tax holidays and cash incentives for setting up both US and foreign plants.

But it seems the new overseas-based firms have been able to learn something special about how to build and operate their extraordinarily complex design, subcontract, assembly, marketing and support systems. They have evolved a specifically global auto industry recipe that has yet to be adopted by any of the Big Three. This new recipe has been forged primarily by Toyota and Honda who, in spite of their many profound differences, appear to have learned something very special about how to first separate and distribute and then reconnect and administer their firms' activities. The US firms seem to have been able to do this once designs are complete, so that their manufacturing is totally globalized. But these costs are a diminishing proportion of the total. The Japanese firms seem to have been able to globalize, distribute, accelerate and coordinate many other activities, especially the design and marketing activities which the Big Three still concentrate in their traditional bastion territories. In a previous era there might have been economies of scale in the production and administration of these activities. Now, in the new knowledge-intensive age, there may be excess costs and under-responsiveness. The strategic balance between global integration and local responsiveness may have been radically changed as a result of new technology, new institutional arrangements and the steady march of history (Bartlett and Ghoshal, 2000).

American consumers make strategically significant choices driven by style, notions of quality, fashion, reliability, service efficiency, value for money, passenger safety and dozens of other complex product characteristics. They are clearly part of a powerful and functionally independent social institution and put huge pressure on an industry that remains intensely competitive, both in terms of the struggle between the domestic and foreign owned firms, and also among the majors themselves. Competition, we believe, improves the breed. But is the evident competition really as influential as it might be? What of the argument that US consumers are insufficiently demanding? They seem more interested in low mileage and overweight SUVs and pickups than in high mileage hybrids or electric vehicles. The resulting dependence on imported oil is a national

policy issue that seriously constrains the Federal government's options. To draw an analogy, left to their own devices would American consumers have instituted the anti-smoking legislation that will now save millions of productive years and national health costs? Given the social costs and benefits, what is the proper role of government with respect to the auto industry? Is there a need for government to drive the auto industry in ways that better reflect national priorities? Traffic-generated pollution and auto-related deaths are serious national burdens in terms of loss of the nation's productive effort, healthcare expense and infrastructure demands. Urban blight is the direct consequence of the auto-friendly policies that have created American suburbia. Is the relative lack of government influence over the auto industry a success, in the sense that market forces are left to rule, or is it a failure, in that socially desirable objectives are left unmet? Should the government seek to influence the evolution of the industry's recipes in ways that reflect national needs? In the next section we review briefly the history of the relatively small amount of government legislation that sought to influence the auto industry directly.

HIGHWAY PROMOTION OR HIGHWAY ROBBERY?

We must not lose sight of the fact that, though many see the automobile as a source of major social problems, and look for government policies to alleviate them, the private automobile is definitely the solution to most Americans' transportation problems, and it has been so for at least two generations (Dunn, 1998). As the principal mode of connecting employees with their work, to say nothing of their leisure, its social and economic impact is huge. Compared to Europe, the US balance between private and public transportation is markedly different. America is a large place, its population dispersed, householders expect more space in their houses and surroundings, and daily commutes of a 100 miles or more are not considered unusual. Dunn also points out that the US auto industry was essentially unregulated until the 1960s. The *laissez-faire* relationship under which the industry was free to design and produce in whatever way it thought fit was summed up in the quote attributed (incorrectly) to Charles Wilson, GM's president, that 'what was good for GM was good for the country' (Dunn, 1998: 52). When regulation did come it was not, as some wished, about managing the relationship between capital and labor, but rather to do with (a) highway building policy and (b) protecting the public from unsafe auto designs and excess emissions.

Dunn examines the many stories of how the auto, oil and tire companies conspired to deprive urban Americans of public transport and so force the

market for autos. Few stand up to close examination. Nonetheless it was obviously in the auto industry's interest to promote highway building. So who made this happen? In the US the State and Federal governments have the authority to raise auto-related taxes, principally on motor fuel. They also share the authority to plan, finance and operate roads. The non-US world is appalled at the continued low level of America's fuel taxes, arguing that nothing but good could come of adding taxes and so raising US gas prices by 100 percent or more – at which point they would be around half of what Europeans are long accustomed to paying. The manufacturers would be forced to offer smaller economy cars, parking requirements would diminish, miles driven would be reduced, greenhouse gases would be reduced, and the gas guzzling SUVs and trucks would be pushed off the highways. But woe betide any politician that makes such proposals. America, it seems, is far from ready for such ecologically or socially inspired policies and seems locked into a quite different orbit.

When Eisenhower became president in 1953 a public relishing the postwar boom demanded something be done about road congestion. Instead of making cars smaller, or fuel more expensive, so reducing auto use, the administration initiated a major highway building program. The result was the Federal Highway Corporation. First thoughts were to float a 30-year highway construction bond, to be repaid by fuel taxes. There was political mayhem as some objected and lobbied for pay-as-you-go financing. Private motorists suggested steeply graduated taxes on commercial trucks for 'damaging' the roadways, truckers protested that would put them out of business and hinder the growth of the economy, mayors wanted more funding for urban roads, and even the ready-mix concrete business, which would help make the roads, wanted their share too. In all some 18 trade groups took part in the extensive legislative debate that resulted in a one-penny fuel tax increase, to be directed towards the Highway Trust Fund. Interstate highways would be funded 10 percent locally, 90 percent by the Federal government, while other road works would be funded 50:50. Work began and all parties quickly discovered that the real costs were seriously underestimated, precipitating an uncontested additional one-penny tax increase.

By the late 1970s the government, responsible for meeting the ever-increasing requirement for construction and maintenance funds, became concerned that the more fuel efficient autos emerging from Detroit meant tax revenues would fall. Likewise in 1989 when the first President Bush came into office, oil prices and taxes fell due to the 'oil glut' and, at the same time, it seemed crucial to help finance the growing national budget deficit with fuel tax revenues. A five-cent tax increase was eventually agreed with 50 percent of the revenue diverted to the general account. This illustrated

the universal tendency for such ‘pork-barreling’ politics to pile one issue atop another until the whole legal edifice becomes gridlocked and collapses. In 1991 the Intermodal Surface Transportation Efficiency Act (ISTEA) was passed – now redrafted to become TEA-21, Transportation Equity Act for the Twenty-First Century – intermodal being a political ‘term of art’, implying the ability to move funds between highways, transit, pedestrian paths, urban light rail, and so on and, with it, the possibility of coordinated regional and urban transportation planning. Subsequent events suggest the only real achievement from such noble intentions was more extensive political and bureaucratic gridlock.

The instruments of this change were the 1967 National Highway Traffic Safety Administration (NHTSA) and the 1970 Environmental Protection Agency (EPA). They were the first indications of growing public concern about Detroit’s choices, their modest response to the success of the VW Beetle imported from VW’s Canadian plant since 1953, and the Japanese cars being imported since the end of the 1950s, which together claimed over 10 percent of the entire US market in 1960. There was severe industry embarrassment when it was revealed in Senate hearings that GM had hired a private detective to ‘dig up dirt’ on Ralph Nader, the author of a previously little known book protesting the unsafe design of GM’s Corvair compact (Nader, 1965). Newly elected Ted Kennedy trumpeted that GM spent only \$1.25 million a year on safety from its \$1.7 billion 1964 profits. So, in 1965, President Johnson saw an opportunity to claim the new public interest in auto safety as a plank in his Great Society political enterprise.

The first emission regulations were issued by the Department of Health, Education, and Welfare in 1966, to take effect in 1968. The 1970 Clean Air Act set emission reductions of 90 percent of the 1968 levels by 1975. It is important to appreciate that this legislation was not written by technologically illiterate politicians. On the contrary they were closely advised by engineers from the auto industry itself, and there were clear signs that emissions technology was readily able to meet these targets. The 1975 Energy Policy and Conservation Act created the ‘corporate average fuel economy’ (CAFE) standards setting fleet mileages to 27.5 miles per gallon in 1985. But by this time the auto industry’s powerful lobbying attempts to buy Washington influence over processes that had heretofore been entirely within their own purview were fierce and expensive. The industry position was that they wanted to eliminate or delay the CAFE standards, which they argued put them at a technological disadvantage to the increasingly popular imports. The real issue, of course, was that they felt unable to pass on the costs of the emissions-control technology without competitive and financial penalty. Eventually, on Reagan’s watch, the industry succeeded, only to be further successful during the first Bush administration.

INDUSTRIAL POLICY BY DEFAULT?

A politically interesting thing happened on the way to rolling back the CAFE standards. In 1979 Chrysler, the only one of the OEMs to have met them, employing 97,000 workers and the 14th largest industrial corporation in the US, suddenly appeared headed into bankruptcy. Would the government now take a direct interest in the industry and bail Chrysler out? The 1979 Chrysler Loan Guarantee Act provided for a complex of Federal loans and supplier, dealer and labor givebacks. As a result the CEO Lee Iacocca became a national hero, turning the firm around and repaying the loans. The government provided a \$1.5 billion loan, the unions over \$400 million, the corporation's banks \$500 million, overseas creditors \$250 million, state and local government \$250 million, and dealers and parts suppliers contributed \$180 million.

Most significant perhaps was the creation of a Chrysler Loan Guarantee Board, with the Chairman of the Federal Reserve and his Comptroller as full members, and the Secretaries (Ministers) of Labor and Transportation as non-voting members. This Board oversaw the company's affairs and ensured the Loan Act's conditions were followed. Such government action was familiar to Europeans. Chrysler knew all about holding its hat out to government, having been 'bailed out' massively in the UK in 1975 (Dunnett, 1980). The auto industry understood that, as labor-intensive employers, it could exert significant political power and that governments would pay the OEMs good money to preserve jobs. For their part the government negotiators learned, perhaps to their surprise, that auto industry executives could be sympathetic towards such public policy issues as mileage limits and labor relations while they were looking for taxpayers' funds (Dunn, 1998: 60).

Some saw the 1979 Chrysler bailout as the harbinger of a new kind of industrial policy or cooperation between government and industry, but in 1980 the newly elected President Reagan saw a different and more classically protectionist solution. Plunging Big Three sales and rising Japanese imports triggered a slew of Detroit-friendly legislation, including the deferment of the CAFE requirements and the beginnings of delicate negotiations designed to limit Japanese imports without actually passing such tariff setting legislation – which could have triggered serious trade wars elsewhere in the economy. Eventually, faced with a Hobson's choice, the Japanese agreed to a bundle of self-restraints. As a further unintended consequence, the now restricted supply of imports enabled them to raise prices and so generate greater profits than they would have otherwise garnered. That, in turn, enabled the Big Three to raise prices so ensuring that in the end the auto-buying public paid directly to keep under-producing US

workers employed. It also opened the door wide to the emerging Korean suppliers whose access was unrestricted by the legislation.

THE AUTO INDUSTRY'S RECIPE PROBLEMS

What is an industry recipe? The genesis, theoretical support and empirical evidence for the idea is laid out in Spender (1989). Others who adopted the concept considered it a mental map at the level above that of the organization (Huff, 1982). The general idea was that the organizational model was treated as a sub-set or instantiation of a more open and widespread model, that of the industry. To take an everyday example, men's haircutting is pretty basic. But there are important strategic differences between 'upmarket' fashion stylists and the average barber shop. So we can simplify the barbering industry as one pursuing two different industry recipes, remembering that almost all men now shave themselves. Two different business models are implied, but is a \$100 haircut 'better' or of more value than a \$10 cut? Certainly they seem to differ to those who pay the bill, but both gentlemen purchase something that depreciates in the same time and is not likely to prove more valuable except to their self-esteem. The product is not simply the neater head. There is the ambience and location of the salon, and the attentiveness of the barber, the possibility of additional services such as a shampoo or a perfume, and the possibility of meeting an important business client or hearing about a good horse. There is the experience of being pampered. The product turns out to be complex. Thus the original notion of the industry recipe, taken from Schutz and Kelly, was that the cognitive field in which managements operate is both complex and multi-dimensional but is nonetheless quite sharply delimited (Kelly, 1955; Schutz, 1972). It is socially and culturally given and far from arbitrary. It is made of up some 12–15 'constructs'. These cover the most important strategic questions managers must address when creating a firm. Firms operate within this field by making their own selections of the particular answers they give to the industry's 12–15 strategic questions. As a result firms cluster or form 'strategic groups' around particular sets of answers (McGee and Thomas, 1986).

The theoretical implication is that, while we can understand these constructs and the relations between them *ex post*, when they have been pointed out to us in ways that we judge convincing, we have no real way of discovering them *ex ante*. Managers operate under conditions of considerable uncertainty and are obliged to make selections about what to attend to. These are matters of judgment rather than being data-driven. The managers cannot attend to everything, yet they must also make

strategic decisions about how to position themselves in their markets. The industry recipe is an explicit denial of the possibility of an over-arching theory of corporate strategy, what we might nowadays call a modernist or totalizing theory. We discover the recipe as it emerges in the context of a group of firms experimenting with different ways to cope and gain advantage in the market place. This presents strategy making as a creative art form rather than as the application of a totalizing theory. The opportunities to learn from other firms, by imitating success and avoiding doing what seemed to fail, suggests that the creative process really operates at the level of the group – or species – and in that sense implies an evolutionary theory. But this is no random variation, selection, retention and reproduction model. Rather the recipe is guided by managers' creative activity, and the resulting diffusion and sedimentation. Since the creativity is purposive and problemistic we suggest it needs to be grounded in deep familiarity with the medium, the competitive challenges presented by the product, the market and the competition (March and Simon, 1958).

Such talk of shared or collective mental models needs to be significantly enriched in the case of the US auto industry. First, there is the concept of the operating and institutional environment. Technological options are especially restricted in the industry so it is likely that all firms construe their technological options similarly. That does not mean they adopt the same technologies or technology strategies. Thus GM under Roger Smith committed to automation in a major way, while neither Ford nor Chrysler chose to. Whether this was because they could not afford to, which was Smith's thought, or whether they felt it was inappropriate is beside the point. All the firms saw automation as a strategic question to be answered if they were to have a functionally relevant strategy (Patriotta, 2003). We have also seen that legislation is generally towards the industry rather than towards specific firms. Chrysler chose to meet CAFE standards, while GM and Ford chose not to. Recipes diverge when they begin to address different sets of strategic questions, not when the firms answer the same questions differently (Spender, 1983, 1989, 1992).

Treating an industry recipe as a purely mental model, within which a particular organization's business model or organizational idea is hung (Normann, 1977), misses a fundamental point. The recipe reaches beyond the purely cognitive and carries with it tacit dimensions manifest as industry-characteristic practices as suggested by the notion of 'community of practice' (Brown and Duguid, 1991; Wenger *et al.*, 2002). The recipe, as a system of social practice, is also a system of norms and ethical and moral values (Spender, 1989). It is clear that the values manifest in the US auto industry recipe are markedly different from those of the Japanese companies, not necessarily better but certainly different. The primary mode of

strategic dissemination is at the level of practice, especially as executives and skilled workers move from one firm to another. We can think of the system of industrial and managerial practices as the tacit and moral glue holding the mental models together. It is immediately evident that 'lean production' is not so much an approach to redesigning and operating an assembly plant as a rich and complex system of practice that carries deep tacit, moral and cultural dimensions. The degree to which the Big Three have taken up the methods developed by their overseas competition is thus sharply limited by the degree to which they have been able to absorb and translate these ideas into their own industry recipe. The underlying question is whether the US recipe is the same as or different from that of their competition and, if different, can it compete?

Our main conclusion is that today's US auto industry is an awesome oligopoly, the result of a half-century of prodigious commercial activity during which it had virtually untrammelled ownership of the world's largest auto market. Its recipe seems to work – in the evolutionary sense that it has changed little over the years. Lean production has clearly had some impact, as have the investment incentives offered by various states, especially those in the non-unionized South. New supply chain management techniques, and the resulting just-in-time methods, have produced some changes too. But has the US industry's underlying industry recipe really moved ahead?

In spite of their success, albeit declining, in the home market, it is notable that the Big Three have not been able to establish similar positions in markets overseas. Taking every advantage of the fundamental changes in US law, and following the pattern of the direct and manufacturing 'concepts of control' that characterized the rest of the US economy, these firms built up enormous power in the US. Their senior executives were and remain committed to doing whatever it takes to maintain and increase their firms' power; they have inherited empires rather than mere firms. They were powerful enough to shape the US's political discourse towards their interests, holding the line while governments set against them, as during the New Deal and, to a lesser extent, during the Eisenhower administration, but aggressively taking advantage when government was responsive, as during the Reagan and first Bush administrations. But overseas they experienced foreign based companies and governments determined to prevent them implementing the same strategy. Over the long run this led to a profoundly inward-looking industry culture that has seriously diminished these firms' ability not only to compete abroad but also to resist the steady loss of domestic market share to the foreign firms now landed on-shore, both importing and assembling vehicles of every type in their transplants.

The Big Three's senior executives are hugely rewarded and clearly wield their firm's power with their personal interests in mind. That the industry

was virtually unregulated before the 1960s, even though it was the country's largest, gave them a free hand. Labor organized and established lines of defense but has never been able to exert significant influence over the majors' policies, in particular to constrain massive pay differentials or force strategies that would prevent the incursion of the foreign-owned firms and the consequent structural adjustment to lower-paid non-union workers. The OEM oligopoly integrated forwards and backwards freely as the situation demanded, but was at no time forced to give up power, except in the instance when Chrysler's bankruptcy seemed imminent. Even then the firm was given the resources to buy its way out of close oversight by the Federal Board.

Meanwhile the auto industry transmogrified into a global activity with determined and resourceful groups, both Japanese and European, exploring fundamentally new modes of structure, integration and control that obviously work well as the non-US-owned firms contest for global market share. The US market, still the largest in the world, is pivotal for these global players, and on every front, especially technological, the US-owned firms appear to be in retreat. The US government's role remains ambiguous. On the one hand they have obligations to domestic industries and have repeatedly supported 'business-friendly' legislation and attitudes. Politically, they are intensely concerned with jobs and are clearly willing to take steps to save them. They are likewise concerned with overall economic growth and using international and free trade agreements like NAFTA and WTO to help open up markets to US producers, even though the auto industry is a modest exporter at best. The government is also about politics and concerned with opportunistically capturing elements of public concern with the automobile and turning them to their advantage. But in spite of its much remarked 'love affair' with the automobile, the US auto-buying public has been largely acquiescent throughout this period. Even the government's interest in regulation only arose through the 'entrepreneurial' politics of people like Nader, and the politicians who took advantage of them.

But there is an unanticipated institutional sting in the tail, one which, unlike the legislation above, notably fails to treat the auto industry as a special case. Along with every other US company the law requires the Big Three to attend to their pension and healthcare obligations. By mid-2003 it was widely recognized these OEMs were not able to fund their pension obligations. At the same time they are carrying a per vehicle health cover burden for their current workers at somewhere between \$700 and \$1,500, more than the cost of its steel. Credit Suisse First Boston, for instance, has argued that five sectors – autos, auto components, oil and gas, pharmaceuticals and airlines – now account for the bulk of the underfunded pension

plans. We should recall that the original contracts were built on defined benefit plans, which guaranteed retirees pensions and healthcare benefits forever. That was fine back in the day when a worker hired on at age 20, worked until 70, and died soon after. Now, a worker starts at age 20, retires at 50 and lives until 90, and the math gets disastrous. In 1999 the GM, Ford and DCX pension funds had plenty of cash; now they are underfunded by a combined \$52 billion. While the actual accounting of this deficit is complicated as the stock price waxes and wanes the underlying reality is that the transplants do not share this burden and competed without carrying such financial penalties.

The implication is that the Big Three have to find a way of translating their lifetime financial commitments to their workers into superior productivity if their industry recipe is to be competitive, getting some reciprocal value. But the opposite is the case; the newcomers generate greater productivity with lower overheads, a double advantage implying a workforce with strategically different expectations. In 2002 healthcare cost Ford \$2.8 billion in the United States alone. Of that amount, \$2.1 billion covered UAW-represented hourly workers in Ford plants and retirees, predominantly the residue of their blue-collar workforce. Much of the new knowledge-intensive workforce has fewer benefits. So the strategic question is about what the industry is going to do about this added burden. The steel companies and airlines have been quick to shift it onto the taxpayers, declaring bankruptcy and transferring their pension obligations onto the Federal government. Once again there is talk of holding a hat out for government help and widespread speculation that in order to survive the competitive attacks from the overseas companies the Big Three will have to persuade the government to protect jobs by picking up these pension and healthcare obligations. Insiders say the question is simply one of timing: when, not whether. At the same time to put the necessary funds into pensions severely diminishes the capital these firms would like to have available for improvements in production methods, design methods and global integration and administration.

As we consider the national policy issues considered earlier in the chapter – the environmental issues, the OEM's declining market share, the Southward flow of jobs, and the eventually lowered international competitiveness of US-based operations – we can only conclude that the government seems:

- disinclined to add greatly to the Big Three's difficulties by demanding stricter safety and CAFE standards
- disinclined to intervene in ways that affect market shares
- disinclined to stem the flow of jobs, either South, or overseas

- disinclined to take a hand in improving the US-based industry's international competitiveness
- disinclined to protect the Big Three from the heavy pension and healthcare obligations of a labor-intensive industry.

At the same time the Big Three show little inclination to transform themselves and put in place the more complex and effective global systems of design, production and integration being developed by their major global competitors Toyota, Honda and Nissan-Renault. Their determination to keep power in Detroit, far from the locations where technology, consumer taste or operating efficiencies are developing fastest, reaffirms their insularity and commitment to a domestic rather than a global recipe. Chrysler may be somewhere in the process of being integrated into DCX and, given the emerging problems within the Mercedes division, it is not yet clear what strategy will be finally adopted. But the continued institutionalized introverted attitudes and infighting among the US firms' senior executives, in contrast to the apparently quieter determination of the Japanese groups, do not bode well for their eventual competitiveness.

Aside from their financial expectations labor remains a secondary issue, in spite of the long and impassioned history of labor disputes within the auto industry and the popular belief that better shop-floor relations are the key to industry productivity. In fact there is little empirical support for this assertion. The picture is increasingly complicated by the shift towards white-collar 'knowledge work' (Reich, 1992). Today white-collar unions probably have more potential to constrain and disrupt the OEMs than the blue-collar unions, given the falling participation rates and the increasing migration to non-union regions. Ultimately, as with pensions and healthcare, labor relations in the auto industry reflect those economy-wide. Relative to European unions, the US auto unions seem toothless against the OEMs. As Orren has argued, the power garnered by big business in the US, and legitimated in the evolution of corporate law, is unmatched in democratic societies (Orren, 1991). In the same vein, Howes argues that the US unions have successfully institutionalized practices that a global industry recipe cannot contain (Howes, 1993). The current Bush administration is not likely to intervene in the pursuit of some dream of more humanistic labor policies. Indeed, given its willingness to encourage greater use of illegal Mexican labor, it seems headed in precisely the opposite direction. The alternative, of course, is to see both the Big Three's plants AND the transplants migrate off-shore as the now fully globalized industry adjusts in the light of the evolving international labor markets. It is not at all clear that the cost of transporting parts or even complete vehicles around the world seriously constrains these options. Until there are major changes in

American society the balance between management and labor is unlikely to change significantly. Yet it is clear there are important gains to be made if the US-owned firms found some way to adopt their own versions of the Japanese firms' quite differently balanced global design, administration and supply chains. But without question, this would require major adjustment to the institutionalized practices evident in the industry today. The alternatives may seem even less acceptable, and perhaps the time for direct Federal intervention has arrived?

CONCLUSIONS

The approach offered here presumes society as a heterogeneous system of practices and interaction between a complex of competing social institutions. Referring to Table 6.1, these are of different types. Some are the instruments of State power. Others have evolved in the open spaces of the democratic capitalist system and enshrine the non-given objectives of citizens' interest groups. Contrary to Parsons, we believe there is no inherent order in this system, and such order as might be observed is the day-by-day achievement of the society's political and social processes – themselves aspects and features of a specific historically contingent population of institutions. Each institution is capable of some degree of self-maintenance, reproduction and continuity, provided it can protect itself from the destructive challenges from the other institutions with which it is interacting and competing. These interactions are about identity, and the seeking, protection and exercise of socio-economic power. Some institutions are able to create their own power or to attract the power flowing in and around the social system, albeit all ultimately devolved from the State. Institutions – and firms and industries – have identities and become legitimate to the extent that they possess and use this power.

The US auto industry is remarkable for the extent of its power, garnered over a long period of growth in size and economic and political influence, and manifest in its embeddedness in the complex of practices that constitute American social and economic life. Its identity as an American institution is part and parcel of the automobile's place in the American Dream – privatized, self-directed, free, a capital investment, an object of envy and desire, a social statement, a mechanical and truly modernist marvel (Kay, 1997). But the US auto industry remains profoundly domestically oriented and its power here is relatively meaningless in the broader global context, save when the US government commits its broader-based powers to defend and advance the industry's interests overseas with today's variants of trade negotiations, economic pressure or 'gun-boat' diplomacy. But now

the industry no longer holds its own domestic consumers captive and, given that it has failed to secure the full support of the Federal government to protect it against competition, the industry recipe evolved in the period from Sloan to the contemporary successes of the SUV is now fully exposed to the quite different global recipe being evolved by Honda, Toyota and Renault-Nissan. And the outlook is bleak.

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7. From path dependency to path creation? Baden-Württemberg and the future of the German model*

Gerd Schienstock

INTRODUCTION

In this article I describe the problems occurring when a region that has been economically quite successful for a long period of time is confronted with recession and aims at developing a new growth path to overcome its economic difficulties. At the beginning of the 1990s, the German Land Baden-Württemberg with its traditional industries (automobile, mechanical engineering and electronics industries) was confronted with such a situation. Together with the deepest economic crisis Baden-Württemberg had been confronted with since the Second World War, structural problems in its economy became increasingly visible. In the current state of development it is difficult to judge whether the efforts to turn to a new growth path have been successful; recent developments seem to indicate, however, that such an undertaking is more difficult and takes more time than expected by the actors involved.

Because of the great regional differences in the economic structure and related economic problems, I have selected a single Land as a research subject instead of Germany as a whole. I have chosen Baden-Württemberg because this Land more than any other represents the German production and innovation model which has been very successful in producing economic growth and social welfare during the postwar period up to the early 1990s. This model has been characterized as the 'flexible specialization model' (Sabel, 1989) or the 'diversified quality production model' (Streeck, 1991).

Baden-Württemberg, with the Stuttgart region as its economic core, is presented in the industrial district discussion as an example of a successful economic development. And in the new model of the European development, characterized as a decentralized regional network economy (Naschold, 1996), Baden-Württemberg is given a decisive role. Besides

some other regions, the German Land is seen as one of the motors of a decentralized network-based economic and social integration in Europe. Hilpert (1994), who has carried out an analysis of the regionalization of technology and science-based production, has documented Stuttgart's place in the ten 'innovation islands' that have dominated the innovation process in Europe for many decades.

Baden-Württemberg developed as a state in the German federal system in 1952 when the former independent regions Baden, Württemberg-Baden and Baden-Hohenzollern were united. With its 10.4 million inhabitants Baden-Württemberg is among the three largest federal states in Germany. The Land is situated in the southwest of Germany; its area amounts to more than 35,000 square kilometers. Economically Baden-Württemberg is not homogeneous; it includes rural areas as well as four industrial agglomerations. Different technological and sectoral specializations are characteristic of these conurbations. The region around Stuttgart, the capital of the Land in which almost 25 percent of the population of Baden-Württemberg live, is the center of the regional production and innovation system. The fact that Baden-Württemberg's average income per capita in 1999 was about 27,000 euro, which is well above that of Germany (about 23,500 euro) and Europe (about 20,000 euro), indicates the economic strength of this federal state.

This chapter is subdivided into eight sections. In the first section I will present the conceptual framework which has guided the analysis. The second section discusses the historic roots of the production and innovation model in Baden-Württemberg. In the third section I present some data that indicate the Land's economic success until the beginning of the 1990s, but also disclose the economic problems in the second half of the decade. The fourth section deals with the main characteristics of the Land's postwar production and innovation model. Some doubts are expressed about whether the economic success of Baden-Württemberg can be explained by its specific production system in the first place, referring to the flexible specialization model. I also discuss companies' restructuring strategies as a reaction to the economic crisis.

In the fifth section I take a closer look at the institutional setting and to how it contributed to the economic success by influencing and supporting the production and innovation model. I also refer to some new developments, which indicate significant institutional changes. The sixth section analyzes the government's technology and innovation policy and the changes that have occurred after the economic crisis. The seventh section deals with recent attempts to develop new industrial clusters to overcome the dependency on the traditional clusters. The last section discusses the problems and chances of developing a new growth path in Baden-Württemberg and what policy measures have to be taken to achieve this aim.

CONCEPTUAL FRAMEWORK

The Concept of Path Dependency

Evolutionary economics puts the concept of path dependency in the foreground. The strength of the path dependency perspective is that it does not separate technological innovation from past developments, but assumes some kind of continuity in the process of technological change and industrial development. New technologies line up with earlier technological changes having historical antecedents of novelty (David, 1985: 332). Today's technological advantages, as Foray argues, lay the foundation for succeeding rounds of progress (1997: 65). The more a specific kind of technological knowledge has been produced and is embodied in new product and/or process technologies, the easier it becomes to produce even more related knowledge, a phenomenon which is characterized as the 'increasing returns logic' (Arthur, 1996).

Continuous accumulation of knowledge leads to the formation of a technological trajectory, which delimits the options for further development. The concept of trajectory expresses the idea of channeled change, a change limited by constrained opportunities (Metcalfe, 1997). In this respect, we can speak of path dependency of technological development (David, 1985). Path dependency embodies strong prescriptions about which direction of technological change should be pursued and which should be neglected.¹

There is evidence that institutional differences across countries play a crucial role in shaping technological change (Lundvall, 1992; Nelson, 1993). Dosi's (1982) distinction between a general technological paradigm and various national trajectories underlines the argument that technological development is not driven by a single scientific or technological logic but that there is room for social structures and critical incidents as well as social choices to shape its direction. While the cumulative nature of the process of technological development narrows down the range of potential choices, national trajectories increase differentiation and diversification as offshoots from the main development path (OECD, 1992). The concept of path dependency therefore provides us a way of viewing innovation activities as being temporally located and socially embedded (Garud and Karnoe, 2000).

Here I will follow Kogut's argument (1991) that countries also differ in their organizational arrangements, which, according to Kogut, tend to persist for a long time. Taking up this argument, Castells suggests considering – parallel to the notion of technological trajectories – 'the development of different organizational trajectories, namely specific arrangements of

systems of means oriented towards increasing productivity and competitiveness in the new technological paradigm and in the global economy' (1996: 153). Organizational innovations are channeled in the same way by the national institutional framework as technological innovations.² But instead of distinguishing between two separate development paths, a technical and an organizational one, I will use the term 'techno-organizational path', assuming that technology and organization forms co-evolve (Pavitt, 2000).

A well-established techno-organizational paradigm tends to form a synergistic combination with society's institutional structures.³ According to Freeman and Perez (1988), the synergistic complementarities among technological, organizational and institutional paradigms provide a sound basis for long-term economic growth. As the prevailing norms, institutions and policies are continuously reinforced by the positive experiences and feedback stemming from the evolutionary phases of technological, organizational and institutional development people tend to have internally consistent 'mental sets' similar to each other. We may speak of a 'mental paradigm' shared by most economic actors, or at least by the dominant coalition, which further stabilizes the established growth path (Hämäläinen, 2003).

Path dependency, however, always carries the risk of turning into what is referred to as a 'lock-in' (Grabher, 1993; Johnson, 1992). An old technology, but also a traditional organization model, can lock the economy of a country into an inferior option of development and may in the long run result in a loss of competitiveness and in retarding economic growth. We may further distinguish between a 'structural', a 'political' and a 'cognitive' lock-in. One can speak about a 'structural lock-in' when most of the resources of an economy are bound to one or to only a very few technologies and when the organizational and institutional setting is mainly tied to this technological system, leaving no room for industrial diversification and development of new industries. A 'political lock-in' exists when the dominating power structures in an economy become a hindrance for techno-organizational change. Finally, we can speak of a 'cognitive lock-in' if economic actors, because of their earlier success, continue to adhere to the existing techno-organizational development path even if it can no longer ensure global competitiveness and economic growth.

Path Creation as a New Research Perspective

Under the conditions of a shift in the techno-organizational paradigm we can no longer talk about a channeled change, as the institutional setting in which the traditional trajectory was embedded itself becomes increasingly fragile. The unfolding of a new technological paradigm within national trajectories can only take place, as Perez argues (1983; see also David, 2000;

Freeman, 1987), together with not only fundamental organizational but also institutional and cultural changes. It is likely that the social and institutional framework, hospitable to one set of technologies and a specific organization form, will not be suitable for radically new developments. Whereas incremental techno-organizational innovations can be easily accommodated, this may not be the case with fundamental technological and/or organizational changes, which by definition involve an element of destruction.

Getting out of path dependency and creating a new development path is not an easy task; it is not a question of single factors or simple models. Instead it must be seen as the outcome of an interaction between a 'window of new opportunities', general societal forces, major change events and courses of action within the system. The existence of 'a window of new opportunities', opened up by an emerging new techno-organizational paradigm, is decisive for the creation of a new development path. New technological and organizational opportunities, however, do not themselves trigger major transformation processes, as they are associated with high uncertainty and generally entail mainly a promise.

Instead countries or regions may be forced by societal pressures to take advantage of the emerging new paradigm. Economic globalization can be seen as the most important factor that drives countries to undertake a fundamental transformation inspired by the new techno-organizational paradigm, as globalization not only contributes to the increasing of competition, but also establishes new competition criteria. In a globalizing economy companies as well as countries can no longer expect that their successful products and production practices of the past will keep them viable in the future. Instead they have to prepare themselves for harsh innovation competition, which makes it necessary to adapt to the new techno-organizational paradigm, as it becomes increasingly difficult to develop radical innovations in the old paradigm.

Of course not all countries will feel the same pressure to adapt to the new paradigm and to create a new national techno-organizational trajectory. Leadership in the old paradigm may be an obstacle to a swift diffusion of the new one, as leading countries may feel less pressured to fundamentally change their successful national development path. They may also hesitate to undertake major changes because they are bound to the traditional development path that has absorbed most of the available resources. However, as radical, growth enhancing innovations become increasingly difficult to make along the established techno-organizational trajectories, the leading countries in the old paradigm may increasingly suffer from decreasing returns and may therefore be also forced to adapt to the new techno-organizational paradigm (Hämäläinen, 2003).

It might be possible that only if lagging behind in the new emerging techno-organizational paradigm results in a serious economic crisis, countries or regions may feel pressured to undertake major structural changes and to adapt to the new techno-organizational paradigm. A serious economic crisis is often mentioned as an important 'change event' that can trigger fundamental transformation processes. In an economic crisis it may become more risky for companies as well as countries to stay put than to move in the wrong direction (Sabel, 1995).

It is quite obvious that the development of a new national growth path cannot be explained by referring to objective factors such as new technological and organizational opportunities, general societal forces and major change events only. Instead we have to emphasize the importance of the human will and endogenous change processes (Bassanini and Dosi, 2000). But under the threat of a fundamental change people often develop cognitive rigidity, which makes them stick to the traditional institutional setting in which the old techno-organizational trajectory was embedded and reject cultural change. The change process therefore depends on the engagement of certain people who are particularly good at imaginative exploration and creation (Johnson, 1992; Hämäläinen, 2003).

An anticipatory institutional change in the science system becomes an important part of the transformation process (Galli and Teubal, 1997), as radical innovations are increasingly nurtured by new scientific knowledge. Universities and public research institutes have to refocus their research activities, to be able to produce the scientific talents that are needed to be able to participate in the globally organized knowledge creation process (Audretsch, 2001). Being involved in the creation of a new techno-organizational paradigm from the beginning may give countries a competitive edge in an era of fundamental changes.

Schumpeter in his early writings (1934) saw the will of the entrepreneur as decisive for the creation of a new techno-organizational development path. Even if there are many scientific talents in a specific region or country familiar with the new paradigm, the lack of an entrepreneurial culture may become a decisive hindering factor for the development of a new trajectory (Audretsch, 2001).

Summing up we can argue that the path creation perspective differs from the path dependency perspective in the way in which economic actors are perceived. Rather than being treated as passive observers in a stream of events, they are seen as knowledgeable agents with a capacity to reflect and act in ways other than those prescribed by the existing social rules and taken-for-granted technological artifacts. Path creation is seen as a process of a mindful deviation; it implies an 'ability to dis-embed from existing structures defining relevance and also an ability to mobilize a collective

despite resistance and inertia that path creation is likely to encounter' (Garud and Karnoe, 2000: 235). Furthermore linkages and cooperation are important for the development of a new national development path. These linkages have to include intensive knowledge flows between entrepreneurial firms, between the scientists involved and these firms, between firms and universities, and between high-tech small firms and large established firms (Freeman, 1991; Schienstock and Hämäläinen, 2001).

Pioneering entrepreneurs and scientists as well as innovative networks can take up the function of a trailblazer in the transformation process; however, a full transformation of the whole economy has to include the vast majority of companies of a national industry (Galli and Teubal, 1997). Knowledge, information and the experience of those leading companies that are in the frontline of techno-organizational development and of those organizations they are cooperating with need to be diffused throughout the whole economy. Such a collective learning process requires a process of institutional and cultural re-embedding; a new institutional infrastructure and new cultural patterns need to be developed that can support the creation of a new trajectory (Teubal, 1998). Without major institutional and cultural changes, which have to take place together with companies' restructuring processes, a 'homing' of the majority of companies into the evolving trajectory is not possible; it is very likely that the path creation process will lose dynamics and the whole transformation process will fail.

The Changing Role of the State

Stable and lasting processes of path creation can only emerge if all actors of an economy become involved and march in the same direction. In this respect the state has an important role to play, as companies may not always be able to develop the generative impulse that is required to set a path creation process into motion. However, the state can no longer act as a sovereign economic actor taking control over the dynamics of technological progress either through the setting of new research incentives or by setting up publicly owned research institutes, which would allow a direct intervention into the change process (Schienstock, 1994). In a period of fundamental transformation, uncertainty, as for all other participants, becomes a key issue for policy makers as well. 'There can be no presumption', as Metcalfe argues, 'that the policy maker has a superior understanding of market circumstances or technological information; rather what he does enjoy is superior co-ordination ability across a diverse range of institutions' (1997: 274).

This does not necessarily imply that the state loses its influence in steering the process of techno-organizational development. In a situation of

fundamental transformation, in which companies because of great uncertainty about future developments have difficulties in acting strategically, the state has to take the leading role in helping companies to get out of path dependency due to its superior coordination ability. This means that while the significance of direct technological interference may decrease, the role of the state in the process of path formation remains strong (Hirst and Thompson, 1992). The new role of the state can be described as a catalyst for innovation processes, a supporter of ongoing research and innovation activities, a facilitator of cooperation in research and innovation processes, a moderator of diverging interests, an organizer of a dialogue between various economic actors on future developments, and an initiator of questions and new tasks (Schienstock, 1994).

The state has to become more sensitive to the increasing demand for different expertise in innovation policy, to a growing complexity of political power and the increasing need for joint problem solving in a transformation period. The state therefore becomes more and more dependent upon other collective actors like large companies, research institutes, unions and employer associations and is forced to let these organizations participate in the process of policy conceptualization and to integrate them into the process of policy implementation.

Because of the growing integration of private and public actors in the process of policy formulation and implementation, policy networks become a new form of governance in the field of technology and innovation policy. Kickert, Klijn and Koppenjan (1999: 6) define policy networks as '(more or less) stable patterns of social relationships between interdependent actors, which take shape around policy problems and/or policy programs'. These policy networks increasingly replace direct state intervention in the top-down manner, as well as more businesslike market-oriented governance (Mayntz, 1996: 471ff.; Kickert and Koppenjan, 1999).

The framework presented here will now be used to analyze the economic development of Baden-Württemberg after the Second World War and the organizational, institutional and structural changes triggered by the economic crisis at the beginning of the 1990s. But first I will briefly discuss the economic and cultural roots of the production and innovation model of Baden-Württemberg.

THE ROOTS OF THE PRODUCTION AND INNOVATION MODEL IN BADEN-WÜRTTEMBERG

The historical roots of the socio-economic development path which during the last 50 years has brought Baden-Württemberg into the league of the

most successful economic regions in Europe can be traced back to the beginning of industrialization in the southwest of Germany in the middle of the nineteenth century. Although the current economic structure cannot be related directly to the early industrialization process, there are nevertheless some similarities and linkages that cannot be overlooked. In the following I discuss the economic structure and cultural elements of the emerging industry at the beginning of industrialization. The economic situation in the southwestern part of Germany can be characterized by the following three elements: the principle of real division (*Realteilung*) of economic possession,⁴ the development of a multi-skilled labor force, and an intensive non-market-based form of public economic support (Bechtle and Lang, 1996: 73).

The Agricultural and Economic Structure

For quite a long time the economic development of the southwestern region of Germany was dominated by small farms-based agriculture and a dense network of small craft businesses. Owing to the principle of real division of possession, farmers in general only owned a small amount of land and they were forced to search for additional income by working in other sectors of the economy (Boelcke, 1987). Craftsmen and other workers carrying on a trade often also, because of their small turnover, had to work on larger farms. This situation led to an increasing overpopulation of multi-skilled people in agriculture and other parts of the economy, which could then be used in the emerging industry. Furthermore the specific economic structure became the basis of a craft-based small business industry, which did not trigger a dynamic departure for the industrial age in the southwestern part of Germany (Flik, 2002).

At the beginning of the second half of the 19th century some modern textile factories and together with them some workshops developed. These workshops laid the foundation for the strong mechanical engineering industry in this region. The economic upswing at the end of the 19th century partly transformed the small business industry into a large-scale industry. Particularly in the emerging automobile industry global firms such as Robert Bosch, Daimler Motoren-Gesellschaft and Benz & Cie developed; the two latter ones were merged in 1926.

In the middle of the 19th century very severe economic problems caused the regional government to especially economically support small companies.⁵ The main aim of this public support was to create an institutional environment that would stimulate the economic initiatives of business people; the focus was on enabling economic initiatives rather than on providing financial incentives in the form of tax reductions or

direct subsidies (Maier, 1987). The following measures in particular should be mentioned:

- support for education of local workers in foreign countries to acquire new knowledge
- hiring of highly qualified foreign workers to give advice on new production methods and technologies
- introduction and diffusion of new machines and tools
- building up of a region-wide education and training system in cooperation with cooperatives as organs of self-government of the economy
- building up of a credit and insurance system
- development of measures to support exports (Bechtle and Lang, 1999: 23–4).

It can be concluded that even in the early phases of industrialization the government in the southwestern part of Germany had an important role to play in supporting economic growth through the development of an enabling institutional setting.

Pietism as a Cultural Dimension of the Production and Innovation Regime

The economic development in the southwest of Germany is also associated with the thoughts and diffusion of Pietism, a specific form of Protestantism (Trautwein, 1972), although there is no direct relationship between Pietism and industrial development (Leibinger, 2002). Bechtle and Lang (1999: 24–5) consider the following characteristics to be central for Pietism in Württemberg:

- autonomy as liberation from the spiritual authorities
- brotherhood between the members of a Pietistic community, which caused some kind of social closure
- specific relationships between one's own occupation and the Pietistic community.

Opposition to the hierarchical structures of the institutionalized church, which led to the general questioning of the legitimacy of any authorities and legal rules, had an important impact on the development of strong self-consciousness among Pietists. The human being was highly regarded in comparison with the institutions whose aim was to control human behavior. Striving for autonomy and the desire for independence often became the basis for giving up traditional practices and searching for new options.

The strong individualism, however, was increasingly limited by the growing importance of regional and local leaders and their specific doctrines. To become an accepted Pietist it was not enough to lead a modest life; this increasingly depended on being a member of one of the brotherhoods, which formed around the regional or local leaders. Religious meetings within these brotherhoods became very important as they went beyond their religious content and became some kind of educational events. As regional and local leaders often had a poor background, they were particularly eager to develop their linguistic capabilities and general knowledge, which helped them to progress in their own occupation but which also became a model for all members of the community. It is also important to mention that in Pietism observing nature was seen as a particular way to God besides reading the Bible and searching one's conscience from which an inclination towards research and scientific thinking emerged. And the need of finding one's own way to God created the contemplative attitude that is still an ideal disposition for economic success (Leibinger, 2002).

The combination of the specific agrarian and economic order on the one hand and Pietistic religion on the other caused a specific labor force to emerge. When having to work in different jobs, laborers became multi-skilled but, due to their specific religion, they also developed a high vocational ethic, strong demand for autonomy and inclination to fiddle with things. Because there was not a mass of dispossessed workers in the region, an industrial proletariat could not develop, which in turn supported the craft-based, small-business-related economic development. Lack of raw material and energy reserve supply became a hindrance for the development of an industrial monoculture, and this opened the way for early specialization in the textile, metal, musical instrument and watch industries. In addition, the relatively qualified labor force gave way to some flexibility in the organization of work processes.

In the following section I present some data that demonstrate the economic success of Baden-Württemberg during the first decades after the Second World War. They also show the deep economic crisis at the beginning of the 1990s and the slow recovery in the second half of the decade.

SOME DATA ON THE ECONOMIC DEVELOPMENT IN BADEN-WÜRTTEMBERG

The attraction and competitiveness of an industrial location can be described in multiple ways. In the following I depict the competitiveness of Baden-Württemberg by using a number of different indicators. Until the early 1990s this German Land had experienced a very successful economic

development. Not only did the GDP of the region, but also its share of Germany's whole GDP, increase continuously. Owing to its economic success, the Land developed into a space open to immigrants. At the beginning a stream of immigrants from Eastern Europe and the former GDR ensured the availability of the highly qualified labor force necessary for further economic expansion. Later on the population continued to increase as less qualified foreign workers were recruited to enable rapid growth, particularly in the car industry.

High levels of exports in the key industrial sectors contributed significantly to Baden-Württemberg's economic success; the Land's export rate at the beginning of the 1990s was close to 30 percent. The main focus was on European markets, with a share of exports of about 70 percent, while Baden-Württemberg's companies were only very weakly represented in future markets such as Asia or South America. However, owing to its traditional specialization profile, Baden-Württemberg's economy was less capable of exporting high-tech products. Until the beginning of the 1990s the Land gained from high productivity increases in the industrial sector, which allowed unions to push through high wage increases. Baden-Württemberg can therefore be characterized as a region of high productivity and high wages.

Owing to the recession at the beginning of the 1990s the economic picture of the German region changed significantly. The negative economic trend in the German economy turned out to be even worse in Baden-Württemberg: the mechanical engineering and automobile industries, the cornerstones of its economy, were severely hit by the economic crisis. The year 1993 marked the low of the economic downturn; in that year GDP shrank by 3 percent compared to 1992. Production in the automobile industry declined by 16 percent and in the mechanical engineering industry by 13 percent. During the crisis, employment in industry shrank significantly, particularly in the two core industries; in 1997 the unemployment rate went up to 9 percent.

Although Baden-Württemberg's economy started to recover in the mid-1990s and at the end of the decade showed strong growth, the economic recession had a long-term negative impact. For example, the economy grew by 1.4 percent in the 1990s, which was slower than in many other parts of Europe. The slow economic growth also had an impact on employment; it increased on average by only 0.7 percent during this decade. However, the unemployment rate kept decreasing from its peak in 1997 to about 4.9 percent in 2001. Productivity increases, which were very strong in the 1970s and 1980s, also slowed down after the economic recession; in the 1990s, they were below the European average. At the same time Baden-Württemberg's advantage concerning social welfare shrank, because after

1993 income per capita increased by only 1.5 percent per year, again less than in many other European regions.

Baden-Württemberg, it can be concluded, was able to increase its economic competitiveness continuously in the 1960s, 1970s and early 1980s. However, the dynamics of the economic development slowed down in the late 1980s and the economic crisis at the beginning of the 1990s marked a turning point. The German Land lost out significantly against the strongest regions in Europe, although the economic growth picked up again by the end of the decade. So far the renewed economic downturn which started in 2001 has not reached the dimensions of the recession of the early 1990s, but it already shows some negative results as both GDP and employment have been shrinking slightly since 2002. It remains to be seen whether Baden-Württemberg is able to keep its strong economic position in the European economy or whether it will fall behind in international competition.

THE PRODUCTION SYSTEM IN BADEN-WÜRTTEMBERG AS A CASE IN POINT OF THE FLEXIBLE SPECIALIZATION MODEL?

The fact that the strong economic development in Baden-Württemberg in the second half of the last century is based neither on richness in natural resources nor on a location favorable for trade has made researchers look for other explaining factors. Scholars associated with what is called the flexible specialization school (Sabel *et al.*, 1989; Herrigel, 1989, 1993), referring to the early phases of the industrialization process, point to organizational, social and cultural factors for explanation. According to them, Baden-Württemberg can be seen as an excellent example of the flexible specialization model. This model has been described very often in the literature, although researchers have focused on different dimensions (Sabel, 1989; Piori and Sabel, 1984; Sengenberger and Pyke, 1992).⁶ The following characteristics are generally seen as important dimensions of the flexible specialization model:

- multitude of small and medium-sized and highly specialized firms
- close cooperation among these firms in pre-competitive phases on the one hand but strong competition on the basis of innovation on the other hand
- flexible and decentralized organizational structures designed to support innovation activities and intensive use of flexible ICT
- multi-skilled and highly motivated workers

- relations of trust between management and workers and a strong commitment of workers to their company.

The embeddedness of the economy in a dense network of different supportive institutions, such as research institutes, technology transfer institutes, training institutes, regional banks, universities and others, and the existence of a proactive regional technology and innovation policy putting the aspect of cooperation into the forefront are often seen as core elements of the flexible specialization model.

The production model that has developed in Baden-Württemberg during the postwar period, however, corresponds to the flexible specialization model only to some extent. For example, although the economy is known for its strong *Mittelstand*, it is not dominated by one industrial cluster consisting mainly of SMEs. Instead, we can distinguish two very different industrial clusters: the automobile cluster dominated by large companies (Daimler-Chrysler, Porsche and Audi) and the mechanical engineering cluster in which medium-sized companies form the core.⁷ In addition, the strong electronics industry, which includes a number of subsidiaries of huge multinationals such as IBM, Hewlett-Packard, SEL-Alcatel as well as SAP as one of the biggest software producers in the world, is closely linked with both clusters.⁸ Nevertheless the geographical distribution of suppliers as well as of customers underlines the importance of the production site Baden-Württemberg for both industrial clusters, at least until the beginning of the 1990s (Bechtle and Lang, 1996: 77).

Furthermore, besides high specialization, companies in Baden-Württemberg did not cooperate intensively either vertically or horizontally (Cooke and Morgan, 1990). The coordination of the specialization process took place mainly as 'negative coordination', as companies agreed on the limitation of the range of their products and on the division of markets. Coordination was not aimed at pooling resources but at demarcation, autonomy and independence. Despite various attempts by confederations of industries to form production and innovation networks an extensive exchange of interests, knowledge and products did not take place between companies in the region, which can partly be explained by the fact that many companies were family-owned (Morgan, 1994). Forms of inter-organizational cooperation were more or less limited to particularistic producer–customer interactions. Cooperation between core companies and supplier firms often took place in an asymmetric manner, seldom based on trust and partnership.

Empirical research confirms that during the 1980s companies invested extensively in modern technology, particularly in the automobile and the mechanical engineering industries (Kerst und Steffensen, 1995), which was

possible due to the strong machine industry. However, this technology push resulted in the diffusion of CIM concepts in the first place,⁹ aiming at the substitution of human labor by machinery as far as possible (Lay and Wengel, 1994; Wengel and Gagel, 1994). It was assumed that the new technology would help to overcome the contradiction between effectiveness on the one hand and flexibility on the other.

In addition the way in which companies in Baden-Württemberg used their manpower did not correspond to the idealistic view of the flexible specialization model.¹⁰ The industrial workforce included both a significant number of engineers and a high share of unskilled workers (about 50 percent). In addition, many skilled workers were underused, because they had to work on assembly lines. These figures indicate a clear polarization of the workforce. Furthermore the vocational education system produced strict demarcations of responsibilities within the production process, resulting in the development of strong hierarchies of experts and in a disproportionate administrative machinery (Wasserloos, 1996).

In the 1980s, however, the opinion gained acceptance that the flexibility potential of the new technologies had to be supported by organizational innovations. New production models made their arrival in Baden-Württemberg, in which group work became the core element. Together with the upgrading of manufacturing, companies withdrew from extensive division of labor; several tasks were integrated in such a way that work reached a high professional level and an extension of the skill profile in the direction of multi-skilling took place. A new type of 'skilled worker' became the core of the production process (Kern and Schumann, 1984). However, although companies introduced some organizational changes, those restructuring measures could hardly be interpreted as core elements of a post-Fordist production logic (Schienstock, 1997). The new work forms on the shop floor represented something new, but not a new organization logic and a fundamentally new model of the firm.

In conclusion it can be said that the organization of the production processes of the 1980s in Baden-Württemberg differed significantly from the flexible specialization model because it contained a number of Fordist elements (Braczyk and Schienstock, 1996; Naschold, 1996). This raises the question of the extent to which the production structures of the 1980s had contributed to the economic success of the region in the postwar period. Some authors argue that to explain the success story of Baden-Württemberg one has to focus on the demand side in the first place (Semlinger, 1994). With slight exaggeration one can maintain that in the 1960s, 1970s and 1980s, when cheap mass products became less attractive, companies did well when they were able to produce high-quality goods

independent of their specific production system (Semlinger, 1994; Schumann *et al.*, 1994: 406).

Germany and Baden-Württemberg as latecomers in the economic development were forced to apply a niche strategy focusing on the market segment of high quality and high prices, as the mass markets were already taken by other economies, particularly by their US competitors (Schienstock and Steffensen, 1995). Across all branches quality and technical excellence became the seal of industrial production in Baden-Württemberg. Therefore the concept of 'diversified quality production' (Streeck, 1991), which focuses on the demand side in the first place, may be more suitable than the flexible specialization model to characterize the specificity of the production model that had emerged in Baden-Württemberg and in Germany as a whole in the postwar period.

Naschold, pointing to the inconsistencies in the production system, spoke about 'the lost 1980s' (1993) when the organizational opportunities to increase productivity and innovativeness opened up by the flexible production technology were not exploited by most companies in Baden-Württemberg. And Streeck (1997) called into question whether the German production model, for which Baden-Württemberg had become some kind of a showcase, would on the whole be capable of standing up against the Anglo-American variant in the long run.

New Challenges in the 1990s

The success story of Baden-Württemberg's economy had been interrupted several times by economic downturns, but the recession in the early 1990s was different. It was the deepest crisis the region had faced since the Second World War. This time it was not just another cyclical downturn but a crisis that disclosed major structural weaknesses in the production system of Baden-Württemberg and that had accumulated since the 1980s due to slow adaptation to the fundamentally and very rapidly changing economic environment. This fact remained in the background during the German unification, although only for a short period of time.

Together with the increasing globalization of the economy in the mid-1980s, the strong economic position of companies in Baden-Württemberg started slowly to erode, as new competitors from Japan and Southeast Asia entered the scene. Owing to the opening of the Central and East European markets after the collapse of the Soviet bloc and the building up of new production sites in this region, Baden-Württemberg's economy was confronted with additional competitors. And the realization of the European internal market in 1993 also contributed to the aggravation of economic competition.

Many companies in the region had been taken by surprise by the fact that the new global economic environment affected them in the first place. They were convinced that the globalization process would force a structural change that would put the traditional mass production under pressure, but not the diversified quality production in Baden-Württemberg. But contrary to this assumption the globalization process had obviously established a new type of competition. It was no longer enough to produce products of high quality and technical finesse. Instead, due to the erosion of the niche markets, price and time became new competition criteria. All global players had to be capable of producing high-quality products on a low-cost basis, of selling them for a reasonable price and of delivering them on time.

It is not that individual solutions for specific problems, the stronghold of Baden-Württemberg's companies, were no longer rewarded, but this market segment became smaller and smaller. In the mechanical engineering industry, the new type of competition was opened up by Japanese companies that had been able to penetrate the high-quality market segment by offering cheaper standard machines. And in the automobile industry it became obvious that companies, by focusing on high-quality niche markets and giving up the mass markets, were easily taken by surprise.

The establishment of the Zukunftskommission 'Wirtschaft 2000' in 1992, in which all the important decision makers were represented, indicated that the region became more conscious of the deepness of the economic crisis. However, hidden behind the diagnostic consensus of a severe structural crisis there were very different ideas about the specific character of this crisis and also about the adequate therapy (Naschold, 1996). On the one hand, the structural crisis was mainly interpreted as a cost crisis; labor and social costs as well as taxes and other regulation costs were particularly mentioned as factors that hindered companies in Baden-Württemberg from competing successfully in the global market. This view assumed a decline in economic development, which could be made up relatively quickly by crash programs aiming at costs reduction and redistribution of the heavy economic burdens.

There is no doubt that labor costs in Germany, including Baden-Württemberg, were rather high compared to those in other regions in the industrialized world and that this had become a disadvantage in the increasingly global competition.¹¹ Furthermore, companies in Germany suffered from inflexible regulations on working hours and hours of machine use. But still a number of experts maintained that the structural crisis and the decreasing competitiveness of firms in Baden-Württemberg were not a sign of over-high labor costs in the first place. They explained the declining competitiveness of firms in the Land by referring to the

comparatively poor productivity and innovation dynamics (see for example the minority vote to the report of the Zukunftskommission 'Wirtschaft 2000', 1993; Wittke, 1995: 725). It was argued that a structural dilemma between the basic parameters of the production regime in Baden-Württemberg and the dominant modernization trend had emerged which could only be overcome by creating a new development path focusing on a strategy of improving companies' ability to produce more radical innovations. Major changes in the social organization of production and innovation processes were seen as the core element of such a renewal strategy.

Particularly with respect to innovation competition, the production regime in Baden-Württemberg showed great weaknesses. It was typical of companies in the region to focus on incremental innovations. Companies hardly aimed at extending their range of products to open up new business fields and markets, taking up impulses that came from their workers or from competitors. In addition, particularly in the automobile and electronic industries, the capability to bring new models in quick succession to the market had put into perspective the strategic importance of a large variety of variants. As time to market became an important criterion of business success (Wittke, 1995: 727), companies in Baden-Württemberg lost competitiveness due to large bureaucratic expert hierarchies and sequential organization of the innovation process.

However, the problem of innovation cannot be reduced to the time aspect only. Global competitiveness increasingly depends on the capability to produce radical innovations, which often become the entrance tickets to new industrial fields. These radical innovations develop at the interfaces of branches breaking up the boundaries of single industries. Owing to its concentration on middle high-tech industries, Baden-Württemberg showed rather weak innovation dynamics. In the 1990s companies in Baden-Württemberg were hardly represented in fields of high technology with radical innovations. This had a negative impact on the dominating traditional industries, because their economic development became more dependent on the transfer of new knowledge from high-tech industries.

In conclusion, one can say that during the postwar period when the economic environment was stable companies in Baden-Württemberg were very successful, because they were able to exhaust the potential of the existing development path by continuously producing incremental innovations. However, such adaptive learning became a hindrance for further development in a dynamic and more complex environment. The incrementalism of the companies deterred them from innovative learning, which is sensitive to external risks, but also enables companies to take advantage of new opportunities outside the existing development path.¹²

Lean Production as the new Leitbild of Restructuring

It is no surprise that lean production became the new Leitbild [guiding model] not only of business renewal, but also of the restructuring of the whole economy in Baden-Württemberg (Schienstock, 1997). The threat to the global niche markets dominated by local companies was seen as coming from the Japanese competitors, who were capable of gaining tremendous cost advantages for their high-quality products by implementing the flexible mass production model (Berggren, 1992). The message that German car makers had lost out against their Japanese competitors, in terms of both price and innovativeness, spread through the book titled *The Machine that Changed the World* (Womack *et al.*, 1990). It came as a shock to the whole industry in Baden-Württemberg, particularly as similar judgments were published concerning the German mechanical engineering industry (Brödner and Pekruhl, 1991).

The merit of the MIT study was that it stressed the importance of organizational and other social innovations to increase productivity and innovativeness. It was due to this publication that the basic principles of an effective business organization such as zero-fault orientation in the production process, customer orientation in the process chain, decentralization of responsibility, concentration on core competencies through outsourcing, trans-functional cooperation, continuous improvement, just-in-time delivery and others gained attention. The study had pointed to main shortcomings of the production regime in the region, that is, companies in Baden-Württemberg focused more on technical than on organizational restructuring measures.

Guided by the lean production model companies in the two dominant industrial clusters have undertaken many restructuring measures. These included programs of cost saving through streamlining and outsourcing as well as the introduction of flat hierarchies, the establishment of trans-functional design teams and profit centers and the development of broader network structures. A new form of business governance emerged characterized as discursive coordination (Schienstock, 1995; Braczyk and Schienstock, 1996).

Daimler Benz, for example, having made a loss of close to one billion euros in 1993, characterized its restructuring program as a 'cultural revolution', triggered by the successful introduction of the Lexus by Toyota into the North American market. The Japanese company was able to demonstrate that luxury cars could be produced much cheaper than the German car maker was able to do. Mercedes Benz's restructuring program included the following measures: a lean and flat management structure, a product development program oriented by target prices, changed work practices

through the optimization of work flows, new supply strategies (global sourcing, system suppliers), a quick succession of new models and an increased range of products (Smart). Other companies in the automobile as well as in the mechanical engineering cluster have introduced similar restructuring programs.

Some observers have commented, however, that the transformation of the lean production model into practice was too slow, that the character of the change process was more additive than holistic, and that the focus was mainly on cost reduction, which means that the model was only partly applied (Naschold, 1996; Braczyk and Schienstock, 1996). For example, the fact that in-house manufacturing still exceeded a share of 40 percent can hardly be seen as an indicator for systematic outsourcing strategies. Also, concerning the introduction of group work as a measure to increase flexibility and to reduce costs, companies seemed to fall short of expectations.

The introduction of quality circles remained a marginal phenomenon; the management interpreted suggestions for change and improvement from the shop floor more as disturbance than as support. The idea of 'improvement from below' contradicted the imagination of the dominant technology-push perspective (Naschold, 1996: 199). Also the strategy of systematic personnel development, which can be seen as an important precondition for continuous improvement, was met with little approval. In addition, due to the fact that the lean production model itself was rather inconsistent because it not only triggered up-skilling processes but also required an excessive work effort, it was widely opposed by the unions.

Nevertheless, the restructuring programs had some positive effects. Quite a few companies in the automobile, mechanical engineering and electronics industries that had chosen the option of price and costs leadership in the world market were rather successful even under conditions of high wages. It became clear that companies could become successful in price competition without reducing wages to the level of developing nations if they exhausted all the possibilities to improve productivity (Fuchs and Renn, 2002).

Also problems in inter- and trans-organizational cooperation have been remedied rather slowly, which has had a negative impact on the innovation capability of companies. On the basis of a firm survey conducted in 1996, Bechtle and Lang (1999) characterized the innovation profile of companies in Baden-Württemberg as follows. Conferences, fairs, specialized literature and customer firms played the most important role as sources of information about new technological developments, while universities, supplier firms and technology transfer centers were seldom mentioned as important sources. And cooperation in the innovation process itself took place mainly with suppliers and customers, while the impact of other institutions such

as universities and research institutes as well as external consultants and technology transfer centers was again rather limited.

The authors interpreted their findings as indicating strong self-centeredness of companies, which is based on the philosophy of self-invention and therefore prefers internal solutions. Companies did not cooperate because they feared the loss of knowledge. In general they were convinced that they had all the needed knowledge at hand accumulated within their workforce. They seldom expressed the idea that cooperation could also accelerate and improve innovation processes because it allows access to knowledge not available within the company. Not only did companies in Baden-Württemberg generally innovate in isolation but also the borders between production and innovation within companies were very strict. This meant that the learning potential both of firm networks and of an intelligent work organization was underused (Kern and Sabel, 1994).

However, some changes in the way firms organize their innovation processes have occurred recently. Not only does cooperation take place within the value chain between core firms and their suppliers but more often manufacturers that are competing in the market cooperate in the development of new knowledge and new products. Not least has growing digital networking contributed to the development of horizontal as well as vertical production and innovation networks (Fuchs and Renn, 2002). At the same time companies have started to decentralize the innovation function. Multi-skilled workers have become the core element of a new innovation strategy in a number of companies. However, in most cases the innovation potential of the new type of knowledge workers has not fully been used because planning and development tasks are still highly centralized (Wittke, 1995: 731).

The adoption of the lean model has also caused some contradictions; it actually endangered the growing innovation dynamics within companies. The profit center concept as a core element of the lean production model, which aims at tightly controlling the use of resources, became a key problem for the innovation potential of companies. Both vocational training, which has always been a core activity of large companies in Baden-Württemberg, and research and development became the objects of revision and had to prove their usefulness. Companies interpreted these costs increasingly as overheads that could be cut back easily (Walla, 2002). If companies continue to reduce their training and research budgets, they may improve their competitiveness in the short run, but may actually reduce it in the long run, because their sources for the continuous modernization of products and processes may dry out. In particular the production of more radical innovations becomes highly unlikely. In the future the fact that a large number of *Mittelstand* firms are without successors will

also slow down their innovation activities, because their current owners are not prepared to take major risks.

Companies in Baden-Württemberg pursued their niche strategy on the basis of high export rates, which had the implication that they did not develop their know-how on how to open up new markets. Not least because of this missing know-how the industry in Baden-Württemberg fell behind its North American and Japanese competitors with respect to the development of global production and innovation strategies. Daimler-Benz's merger with Chrysler and the new firm's investment in Mitsubishi signaled a dramatic revision of the export-oriented strategy. Owing to the fact that for the first time the car maker was present in all three segments of the triad economy, it developed into a real global player.¹³

Medium-sized companies in the region, however, followed this example only slowly; they hesitated to set up global production networks (Schäfer and Hofmann, 2002). They tried increasingly to take advantage of low personnel costs in the neighboring Central and East European countries by establishing strategic production networks, but were not always successful due to serious quality problems. This may explain the fact that the share of regional supply in the mechanical engineering and automobile industries, which was already down at 50 percent, has increased again in recent years. Yet some companies felt the pressure to ensure their dominant position in the production chain as system suppliers or first-tier suppliers by setting up global production, marketing and research capacities. Bosch is a good example of a supplier firm that started to grow globally.

These remarks suggest that in the 1990s companies in Baden-Württemberg started to restructure more fundamentally, to regain their global competitiveness which they had lost due to the more contested and shrinking niche markets. It remains to be seen, however, whether the restructuring measures they have undertaken were radical enough to sustain economic growth. While the companies themselves were convinced that they had taken the needed steps to regain competitiveness, foreign observers were much more skeptical about the fundamental character of the restructuring measures and their capability to significantly impact on productivity and innovativeness (Naschold, 1996). In addition, it has to be taken into account that the lean production model as the Leitbild of restructuring produced new contradictions, which had an adverse effect particularly on the innovation capacity of the firms.

Serviceization of the Industry?

Baden-Württemberg's industrial strength also points to the weakness in its economy: it has a comparatively small service sector. While in Germany as

a whole the share of those employed in the service sector had grown to more than 50 percent by 1987, only in 1995 did the majority of the employees in Baden-Württemberg work in this sector. This is also true for the Stuttgart region, although in general capital cities become service centers. Although compared to other conurbations (Hamburg, Munich) the number of jobs offered by the Stuttgart region is above average, the share of jobs in the service sector is below average (Strambach, 2002).¹⁴

While in recent years the service sector in the Stuttgart region has been growing more rapidly than in most other parts of Germany, the share of employees in the service sector in 2002 was still below 60 percent, much lower than the average in Germany as a whole. And Germany is much behind in the tertialization process compared to the service economies such as Britain. The trend towards a service society, however, becomes more visible if we focus on occupations. In 2002 more than 70 percent of all employees in Baden-Württemberg worked in service occupations and fewer than 30 percent in manufacturing jobs.

Among the various service sectors, business services and particularly knowledge-intensive business services (KIBS) (consulting, engineering, marketing, R&D, and so on) represent a sector of rapid growth and great innovative dynamics. Business services in Baden-Württemberg produced about 7 percent of the whole turnover in industry in 2002 (Lay *et al.*, 2000). With a share of 13 percent of the whole service sector, the KIBS sector in the Stuttgart region is far behind other European metropolitan areas (Strambach, 2002).¹⁵ However, it has to be taken into account that in the Stuttgart region as well as in Baden-Württemberg business services functions are often performed within industrial firms rather than in independent service firms. About 40 percent of all employees in the manufacturing industry carry out service jobs.

Nevertheless the share of KIBS of all supply has increased significantly in recent years (1998: 53 percent). However, contrary to the general trend of an increasing regional supply, KIBS are often bought from outside the region and even from foreign countries, which fact demonstrates the still existing weakness of the sector. There is the risk that due to this weakness SMEs particularly may not consider KIBS as important. And the big share of self-sufficiency may well endanger the processes of specialization and optimization (Fuchs and Renn, 2002).

KIBS firms can also play an important role in national and regional innovation systems. On the one hand, technology-based KIBS especially are themselves producers of innovation and, on the other hand, by taking up a bridging function between different companies KIBS firms become involved in processes of knowledge diffusion and the transfer of outside knowledge. It is very likely that the development of the technology-based

KIBS sector, by performing the function of a catalyst, which stimulates innovations, can contribute to the stabilization and expansion of the economy in Baden-Württemberg. A particular problem in this Land is, however, that many KIBS are produced by public or semi-public institutes, which may hinder the development of private initiatives.

THE INSTITUTIONAL ENVIRONMENT

To explain the economic prosperity of Baden-Württemberg in the postwar period researchers have often referred to the existence of a dense institutional setting (Semlinger, 1996). In this section I discuss some of these institutions and their contributions to the economic success of the Land. But I will also refer to institutional lock-ins, which may explain problems of early institutional adaptation and innovative learning. I address the science and knowledge transfer system, education and training system, finance system, system of industrial relations, and cultural system. After that I discuss changes in the technology and innovation policy.

The R&D System and Technology Transfer Institutions

According to Porter (1990), knowledge-creating and knowledge-diffusing institutions are the most important ones that contribute to the competitiveness of a national or regional economy. Baden-Württemberg has a highly developed research and development infrastructure, which is indicated by the fact that in 1999 about 100,000 people worked in R&D jobs; over 70 percent of the R&D personnel worked in industry, a much larger share than in Germany as a whole (about 60 percent). The Land has the highest concentration of research institutes in Europe and accounts for 30 percent of Germany's R&D capacity. It is important to mention that in 1999 Baden-Württemberg with an R&D intensity of 3.9 percent of GDP was ranked top of 60 EU regions of the NUTS-1-level, even above Sweden (3.8 percent) (Heidenreich and Krauss, 2004).

Most R&D in Baden-Württemberg is done in the private sector; in recent years about three-quarters of all R&D expenditure has come from the private sector; the rest can be divided between universities and public R&D institutes. Firms in this Land have contributed one-quarter of the R&D budget of the private sector in Germany. However, in recent years the building up of additional research capacity has slowed down, as research personnel have increased by only 2 percent per year. So far the manpower stock in R&D has not reached the level of the early 1990s before the economic crisis. A key problem is that the share of R&D personnel in the SME sector

is only 15 percent, while about 60 percent of the employees in Baden-Württemberg work in this sector.

About 95 percent of all R&D resources come from companies in the industrial sector. Corresponding to the industrial structure of the Land, a major part of all R&D resources come from the following three sectors: the automobile industry (44 percent of total research personnel); the office industry, electronics, precision mechanics, optics (24 percent); and the mechanical engineering industry (14 percent). The fact that in 1999 about two-thirds of the turnover in the automobile and aviation industries came from products that had been introduced to the market or significantly improved no longer than five years before indicates that high R&D expenses result in innovations. On the other hand, R&D expenditure of the service sector in general (about 5 percent) and the KIBS sector in particular was very small.

With about 1,100 patent applications per million inhabitants at the German and about 420 patent applications at the European patent office in 1999, Baden-Württemberg can also be considered to be very successful compared to other German Länder (Statistisches Landesamt, 2001; Heidenreich and Krauss, 2004). Again the dominant technology fields in the region (vehicles and transport, engines or turbines, electricity, engineering in general, measuring, testing, optics and building) were also the most successful ones. In high-tech sectors (biotechnology and communication technology or computing) the number of patent applications was comparatively small (Grupp, 2002).

Besides private enterprises, public and publicly supported institutes of science, research and technology represent an important part of the R&D scene in Baden-Württemberg. With about a hundred R&D institutes in the public sector, the Land is endowed with a rich and differentiated R&D infrastructure outside the university sector. With nine universities, two recently founded private universities, six colleges of education (pädagogische Hochschulen), eight colleges of art, 21 state-owned polytechnics (Fachhochschulen, including 16 with a technical orientation), ten private polytechnics, seven colleges for administration and eight Berufsakademien (Bundesministerium für Bildung, Wissenschaft, Forschung und Technologie, 2000: 221), Baden-Württemberg has one of the most dense research and development networks in the university sector in Europe. Medical science, mathematics and natural science were the fields that have expanded the most in recent years (Heidenreich and Krauss, 2004).

Baden-Württemberg is also excellently equipped with technology transfer institutions, for example confederations of industry such as the VDMA or the Industrie- und Handelskammer (IHK), whose main function is to inform and consult firms with respect to technological change and innovation

opportunities. The Steinbeiss Stiftung für Technologietransfer represents a rather unique institution, not comparable with any other institution in Europe.¹⁶ The main aim of the Steinbeiss Stiftung is to connect the praxis-oriented polytechnics as consultants with the SME sector to support them in solving primarily technical problems.

Meanwhile the Steinbeiss Stiftung has established about 300 technology transfer centers not only in Baden-Württemberg, but also in other parts of Germany and in some other European countries. However, Baden-Württemberg still remains the core region in a growing network of technology transfer institutions.¹⁷ Although the technology transfer centers have gained more significance in the innovation process, they are still lagging behind universities as business consultants (Heinemann *et al.*, 1995).

There is no doubt that the R&D and technology transfer institutions as cooperation partners and consultants of the dominant industrial clusters, in which significant technological leaps are associated with high expenditures, have contributed significantly to the economic strength of the industry in Baden-Württemberg (Heidenreich und Krauss, 2004). They have helped the companies in exhausting the technological potential of the existing development path. But this particular focus on the existing industrial cluster may also explain why Baden-Württemberg has certain weaknesses in high-tech and other promising fields. One can criticize the fact that institution building and institutional development in the fields of R&D and technology transfer have not been anticipatory but, instead, rather conservative in consolidating the status quo. To some extent one may blame this institutional setting for having contributed to the loss of competitiveness of the economy in Baden-Württemberg.

The fact that the various institutions in the field of technology transfer hardly cooperated with each other has been mentioned as another shortcoming, which often resulted in sub-optimal solutions (Cooke *et al.*, 1993). And the question has been raised whether the thinning out of the institutional setting could actually increase efficiency as the dense network of public and associational institutes had become too confusing providing a number of hardly coordinated services.

The Education System

The basic institution of vocational training and professionalization is often mentioned as a stronghold of the German production model. In fact the overlapping and interlocked qualification structure from the skilled worker to the technician and then to the engineer ensures a rather successful transformation of technology-intensive production concepts into

business reality (Naschold, 1996: 196f.). The manufacturing-oriented production model and the vocational training system have a mutually stabilizing effect.

However, the operational level is widely excluded from this training system and a great number of workers in the industrial sector must be characterized as unskilled or semi-skilled. Particularly in the automobile industry a significant number of skilled workers carry out only semi-skilled jobs (Schöngen, 1993). The underuse of skilled workers detracts from the advantage of an efficient vocational training system. Further training is offered only by about 20 percent of all companies and again in most cases the unskilled and semi-skilled workers are excluded (IAW/ZEW, 1993).

Some critics argue that the German vocational training system has become increasingly dysfunctional, as under the conditions of the new decentralized organization forms occupational distinctions are blurring and hybrid qualifications are becoming increasingly important (Geissler, 1991). The German system with its highly specialized vocational training is too rigid to produce the increasingly needed 'multi-skilled worker'. In addition, the vocational training system focuses too much on vocations for which demand is likely to shrink, while more future-oriented training in IT vocations is lagging behind although more recently new IT occupations have been introduced. This mismatch between skills demand and skills supply has caused the unemployment of a significant number of skilled workers during the 1990s.

The fact that the vocational training system in technical colleges and polytechnics promotes high vocational specialization has often been blamed for continuously reproducing a strong hierarchical system with little horizontal cooperation (Kern and Sabel, 1994). Owing to this rigidity, open information exchange and integration of knowledge hardly takes place (Lullies *et al.*, 1993: 59). The conflict of power and prestige between various professional groups at the vertical and horizontal demarcation lines may explain the often criticized 'over-engineering' of products in companies in Baden-Württemberg. Instead of searching for the optimal solution, specialist groups try to get their sub-optimal partial solutions accepted, which ends up in the development of highly complicated products that can hardly be sold on the emerging markets in Southeast Asia, South America and even Central and Eastern Europe.

One can also question whether the praxis-oriented dual vocational training system in Germany meets the skill demands of the emerging knowledge society. Such a system may serve the demand of a process of incremental technological change, of which learning by doing and using is typical. However, in the knowledge society more comprehensive solutions for new and complex problems have to be developed. Employees are confronted

with high demands concerning their cognitive capabilities, as they have to deal with selecting, analyzing, judging and interpreting an increasing amount of data.

The fact that in Baden-Württemberg in 1999 about 60 percent of all employees had finished their vocational training but only about 8 percent tertiary education, which is much below the level of other countries such as Canada, the USA, Finland, Japan or Sweden (OECD, 2001), indicates that the regional economy is not well prepared for the emerging knowledge economy. The education and training system may become a hindering factor for the introduction of IT-based production processes as well as for the development of IT-based products, as only a few scholars continue to the tertiary education level.

On the other hand, the fact that about 23 percent of all employees do not have a vocational school qualification can trigger segmentation processes in the labor market. In an increasingly knowledge-based economy those workers may have serious difficulty finding jobs with long-term prospects. There is the danger that in the near future when the low-birth-rate age groups enter the labor market, high unemployment figures among unskilled workers will coincide with increasing demand for highly qualified employees.

The Financial System

The regional banks in Baden-Württemberg have also been ranked among the institutions that have contributed significantly to the economic success during the postwar period (Sabel *et al.*, 1989). Credit associations, Raiffeisen banks and saving banks have most often been the main financiers of SMEs. At the same time owners or top managers of the most important companies of the district have been members of the supervisory boards of those financial institutions. Owing to these linkages, the regional banks were very well informed of the economic situation and the strengths and weaknesses of their customers and they were therefore able to offer tailor-made consultation and financial services.

The regional banking system fitted perfectly into the incremental innovation patterns of the Baden-Württemberg economy. Continuous product development contains a rather limited investment risk. Less calculable, more radical innovations, on the other hand, would have been too risky for such small financial institutions. The concentration of most supplier firms in the region can also be explained by the specificity of the financial system as the regional banks had an excellent overview of the local markets but were hardly familiar with the global economic situation and foreign markets. Therefore together with the globalization of the economy, their

consultant and financial services became insufficient and companies were increasingly unsatisfied with the support by their home banks (Zukunftskommission 'Wirtschaft 2000', 1993: 39). Furthermore newly founded technology-based firms had difficulties in getting financial support as banks concentrated on the clients they had been acquainted with. In addition, generally the preparedness to offer venture capital is much less developed in Germany than in the US.

Owing to growing risks and rocked by record debts, financial institutions have become more reluctant to grant SMEs loans, with the consequence that this group of firms has increasing financial difficulties. The traditional sources of finance have dried up, as banks reined in lending. On the other hand many Mittelstand firms resist outside capital. This can become a serious problem as in the near future, as we have mentioned before, a great number of SMEs will be without successors. These companies need to seek outside investment in order to survive.

While earlier financial institutions chose the option of 'voice' influencing business decisions, they now prefer more often the choice of 'exit'. The collapse of the Neuer Markt segment of the German stock exchange, which was founded to help high-tech SMEs to get access to capital resources, has increased the problem of financing rapid growth for this group of companies. According to external experts, the German financial system is in a deep crisis because of its high fragmentation and it will take years before it becomes competitive again. Small financial institutions are particularly at risk of collapsing as the number of insolvencies grows, and the need to write off bad loans increases. This naturally also has a negative impact on the economy as a whole and its renewal and innovation potential. The deepening difficulties of Baden-Württemberg's Mittelstand risk dealing a heavy blow to the Land's economy and to Germany's economy as a whole. There are some signs that banks are prepared to increase their Mittelstand lending but they do not accept any extra risk.

The Industrial Relations System

Besides the R&D system, the education system and the financial system, the system of industrial relations has a significant influence on the productivity and innovativeness of the economy in Baden-Württemberg. The German model of industrial relations is characterized as a cooperative model of conflict regulation, which gives the unions a great influence in the process of rule making. In Baden-Württemberg, which often assumed the role of a trailblazer in the national bargaining process, particularly in the metal industry, the cooperative model of conflict regulation was well established, not least due to a large share of unionized workers.

The large car producers played a crucial role in the industrial relations system of Baden-Württemberg. They not only dominated the bargaining process in the metal industry but, as key bargaining often took place in this industry, they also had a major influence on the industry as a whole. Because strike actions would have had very negative effects, large car producers were particularly interested in maintaining the industrial peace. Edzard Reuter, the chairman of the supervisory board of the Daimler-Benz AG at the beginning of the 1990s, characterized the situation as follows: 'The large automobile companies in Baden-Württemberg had gotten used to giving in to the demands of the unions, although they knew that this could sooner or later lead to serious economic problems' (Gow, 1993). The interests of the less prosperous, cost-sensitive SMEs, on the other hand, were hardly taken into account in industry-wide bargaining processes. Their economic situation got worse as large car producers started to pass on the increasing cost and price pressures emerging from the globalization process to their suppliers. All this has contributed to the shrinking of the supplier industries causing a great number of job losses.

As the socio-economic environment in which companies operated became increasingly different, it was less and less possible to standardize working and performance regulations (wages, working time, and so on), a precondition for the functioning of industry-wide bargaining. When companies started to make firm-level agreements and thereby undermined the validity of collective norms, industry-wide agreements came under growing pressure. Work councils, by negotiating firm-level agreements, assumed greater responsibility to ensure the survival and competitiveness of their companies.

Within unions the decentralization of negotiations and the flexibilization of work regulations are highly disputed. While modernizers speak of an inevitable adaptation process as companies drift apart with respect to their economic situation, other groups insist on a high wage strategy based on industry-wide agreements, arguing that the strength of the German and Baden-Württemberg industry has never been based on low wages but on highly developed product engineering and high-quality production (Roth, 1992). The success of the German Land, they argue, can be explained by the fact that a high productivity, high wages order has developed.

Focusing on quantitative issues mainly, the unions had little influence on the processes of organizational change and accompanying training measures. In the process of restructuring, work councils were left to their own devices as they got hardly any advice from the unions. We can speak of a 'competence trap' (Lilja, 1998), which characterizes a situation in which the unions' internal organization and the specialized expertise of their officials are not well suited to handling issues related to work organization, skills or

management. Then the unions have very few chances to support work councils, when these issues are negotiated in enterprises. We can find the same 'competence trap' when we look at the employers' associations.

Besides the deregulation and decentralization of the system of work and performance regulation (Naschold, 1996) and the development of company-level labor relations (Braczyk and Schienstock, 1996: 326f.), a certain alienation between the negotiating partners at the company level, on the one hand, and their representative bodies, on the other hand, took place. But it is too early to decide whether these trends will lead to the development of a new company-level bargaining system at the expense of the traditional industry-wide bargaining system and representational participation systems. Formally, the position of trade unions has remained strong in bargaining on traditional distributive issues such as wages or working hours in connection with change (Kern, 1994). However, one can have some doubts that the cooperative model of conflict resolution will survive in Baden-Württemberg and in Germany as a whole, as the traditional high productivity, high wage order comes under increasing pressure.

The Cultural System

Scientists have repeatedly noted that within industrialized countries a fundamental value change has taken place (see for example Inglehart, 1977). They argue that old values, such as respect for duties, determination and persistence, have lost importance, while what are referred to as values of self-development, such as creativity, self-actualization and experience of pleasure in work, are becoming more important. The change in values, as Klages (1996) argues, is particularly widespread in Germany.

Does this mean that the cultural basis of the economic success in Baden-Württemberg is eroding? In fact the traditional values that are seen as important elements of Baden-Württemberg's success story are nowadays judged more critically. For example, the pattern of incremental innovations, seen as one of the key success factors of the quality-based niche market strategy, has been attributed to the tinkering of the Swabians. However, this inclination to tinkering has been characterized negatively as 'being addicted to technology', which develops technology for the sake of itself. As the inclination for tinkering results in technological complexity and extensive time to market, it turns out to become a disadvantage in a globalizing economy.

Striving for independence, earlier mentioned as an important characteristic of entrepreneurship, has also been reinterpreted as the inability and unwillingness to cooperate and is blamed for the incapability of companies to produce more radical innovations because these depend on extensive

information and knowledge exchange among companies. And 'aiming for concerted conflict solutions', positively characterized as the capability to joint optimization, is now seen as a key factor that hinders the development of more radical innovations which more often result from disagreement and conflict (Naschold, 1996; Morgan, 1996).

The traditional values are by no means outdated, however. What is important is to develop a new value system that binds together old and new values. This would give traditional, more conservative industries new impulses, while at the same time the new dynamic industries would be placed on a solid value basis. In addition such a cultural basis would significantly ease the cooperation between the old and the new industries, which often fails because of controversial value orientations (Leibinger, 2002).

A strong tendency towards risk avoidance as a key element of the cultural system in Baden-Württemberg can explain, at least to some extent, why businesses in this Land focus more on incremental instead of more radical innovations (Bechtle and Lang, 1999: 62ff.). Radical innovations are connected with bringing together heterogeneous knowledge stocks as well as with cultural differences in thinking and reasoning. Connecting that kind of diversity, however, results in increasing complexity and therefore implies a high risk of failure: the greater the complexity that has to be admitted, the more risky innovation decisions become.

The preparedness of taking high risks requires a Schumpeterian type of entrepreneur, a character which contradicts the Swabian disposition. Besides, family-owned firms as well as the management of big companies are both in general led by engineers, who often follow the strategy of dealing with low and easily calculable risks. This results in focusing on incremental, path-dependent innovations and in turning to familiar persons to cooperate with. Such a strategy of closure, however, carries the risk of leading to complacency and conceitedness, which may explain why companies in Baden-Württemberg ignored the first signs of economic downturn in the late 1980s and reacted rather late to the economic crisis in the 1990s. The region's specific engineering culture (Cooke *et al.*, 1993) only started to be challenged when the economic crisis forced companies to undertake more fundamental changes. However, a culture of entrepreneurship, necessary for the undertaking of more radical innovations, has not emerged in Baden-Württemberg yet, indicated also by a low number of spin-offs and new businesses.

In addition the fact that together with the development of high-risk technologies more and more people oppose a strong technology orientation is mentioned as an important factor that hinders the development and diffusion of radical innovations. Here I quote the report of the Zukunftskommission 'Wirtschaft 2000':

In Germany the consciousness of the ongoing process of structural change towards a high-tech society of the information age is less developed than in Japan and the USA, but also France and Great Britain. Here we have a status quo mentality, which results in an increasing encrustation of the society and in which a multitude of small and larger pressure groups oppose change. Minorities that are afraid of technology and combating technological progress have a comparatively great influence. This mental situation is Germany's most important and most basic locational disadvantage with respect to investments in new high technologies. (13)

The report emphasizes the importance of overcoming the mentality which opposes technological progress¹⁸ for the economy in Baden-Württemberg to regain its global competitiveness.

However, realizing a fundamental cultural change is very difficult. It requires, as Fuchs and Renn (2002) argue, the establishment of a new *Leitbild* of technological development and innovation. To develop such a new *Leitbild* depends on close interaction between producers, consumers, the public, politicians and intermediary institutions within complex network structures. Such unconventional networks provide a breeding ground for new and often radical technological and social innovations, which will at the same time limit social and ecological risks.

Taking social and ecological consequences of innovation processes more seriously not only may increase global competitiveness but also will contribute to the reduction of technological skepticism in some parts of the population. The creation of such networks is primarily the task of companies; however, they can be supported by intermediary institutions and policy makers. In Baden-Württemberg some political initiatives have been started to support companies' network activities through establishing a discourse on the creation of a competitive and sustainable economy. However, such a *Leitbild* cannot be implemented in a top-down manner, but it has to be developed within an intensive discourse between technology producers, technology users and those affected by technology. It will probably take time before a new *Leitbild* becomes the key guiding post for technology development processes in the German Land.

Conclusion

The above remarks demonstrate that Baden-Württemberg has a complex system of institutions supporting economic development. Some critics argue, however, that in this respect Baden-Württemberg hardly differs from other economically successful regions in Europe and other parts of the world. And less successful regions in Germany have a similar density of support institutions. This makes it difficult to assess the qualitative

contribution of the institutional setting to the economic success of Baden-Württemberg. Obviously economic success depends less on the density of an institutional setting and more on its specific characteristics and its particular contributions and performance (Heidenreich and Krauss, 2004).

The dense and rather stable institutional setting may have contributed to the economic success of Baden-Württemberg by supporting incremental innovations within the existing development path. However, in the course of the economic crisis and fundamental technological changes, the chaneling of technological change and innovation processes by the institutional setting may have caused a lock-in situation as yesterday's success formulas have been solidified and have become a hindrance factor for the development of a new growth path. We may argue that the institutional setting in Baden-Württemberg has contributed to the fact that companies have been able to widely exploit the productivity and innovation potential of the traditional development path as long as the techno-economic situation had been highly stable. Such adaptive learning, however, has impeded innovative learning sensitive to external risks and opportunities. In order for Baden-Württemberg to regain global competitiveness, a systemic approach with some kind of anticipatory institutional change and cultural renewal is needed. While some institutional changes have taken place in recent years, major steps will still have to be taken. The process of cultural change has a long way to go before new guiding principles of technological development take effect.

TECHNOLOGY AND INNOVATION POLICY

Opportunities for German Länder to significantly influence techno-economic developments are reduced in several ways (Sturm, 2002). First of all we can argue that the more companies orient themselves globally, the weaker is the influence of the policy makers in general and on the regional level in particular. This is the case in Baden-Württemberg, where the government's technology and innovation policy focuses particularly on SMEs.

Institutionally, the room of a German Land government for maneuver is limited by the EU and the federal government. For example, with respect to taxes, the most important sources of revenue, the government of Baden-Württemberg has to come to an agreement with the federal government and with the governments of all other German Länder. The same holds true with respect to important joint tasks, such as the establishment of new universities or the improvement of regional economic structures.

With some minor exceptions all subsidies provided by a Land government to create an advantage for its local firms are controlled by the EU,

which aims to stop any kind of unfair competition. This means that a Land government can only pursue its own economic development policy within the limits of the boundaries drawn by the EU. The EU on the other hand influences regional development through different kinds of programs such as the structural funds, the cohesion funds or the INTERREG programs. However, Baden-Württemberg benefits from all these programs only to a minor extent.

The regional government of Baden-Württemberg has concentrated on measures to improve research and technological development as well as skill formation aiming at enabling SMEs particularly to modernize their products and production processes (Bernschneider *et al.*, 1991). These fields become the more important, the more macro-economic policy conducted at the level of the national government is limited through the control of global markets and the guidelines of the EU with respect to national debts. By completing the system of vocational academies and supporting further training, by establishing a multitude of industry-related research institutes and technology parks and by developing a dense network of technology transfer institutions, the regional government has created an institutional environment that distinguishes itself by its strong practical orientation.

In the 1980s Baden-Württemberg pioneered a new interventionist technology and innovation policy among the German Länder both programmatically and conceptually. The Land stood for 'selective corporatism' (Sturm, 2002); only at the end of the 1980s did unions become a partner in the policy process. The international model concepts in knowledge transfer, such as the Japanese technopolis, have been imitated, as can be demonstrated by what is referred to as science city Ulm. External relationships have been built up by establishing what are called the four motor initiatives, including, besides Baden-Württemberg, the regions of Lombardia, Rhône Alpes and Catalonia. However, technology policy in Baden-Württemberg in the 1970s and 1980s could hardly be characterized as proactive. It focused more on making the existing industrial structures more effective than on anticipatory institutional change to lay the ground for a new development path (Braczyk *et al.*, 1995).

At the beginning of the 1990s expectations concerning the possibility of politically influencing the economic process were put into perspective; the government started to interpret its role in the techno-economic development process in a new way. Instead of aiming at steering the economic process in a bureaucratic top-down process, the government saw itself as a moderator of future-related dialogues, as an initiator of new developments, as a supporter of ongoing renewal processes and as a provider of terms of reference regarding the future of the society (Zukunftskommission

‘Wirtschaft 2000’, 1993). Within future-oriented dialogues, the process of cooperation became an integral component of the product (the renewal of global competitiveness) (Morgan, 1996). The concept of networked modernization became the core of a new innovation policy (Sturm, 2002). In this respect, the principle of self-organization became increasingly important, as can be demonstrated by the foundation of joint initiatives, for example in the automobile industry, in which representatives from the big companies, the IHK (Industrie- und Handelskammer) and the IG Metall participated.

It is primarily due to the recommendations of the Zukunftscommission ‘Wirtschaft 2000’ (1993) that the regional government started to adjust its technology and innovation policy to the demands of the emerging knowledge economy and to focus more on fields of high technology. The development of new sub-regional industrial clusters can be seen as forming the core of the new policy approach (Technology Factory Karlsruhe, Multimedia region Friedrichshafen or Mannheim International as well as BioRegio Ulm and Biovalley Oberrhein). While the assessment of the worth of the support is still in the hands of the regional government, the realization of the programs is the responsibility of sub-regional decision makers. It is assumed that because of their factual and spatial closeness they will be able to develop more efficient strategies to transform the general programs into concrete practice.

Together with such an approach a bottom-up element of regional policy is implemented, while the concept of an intervening central state has been abandoned (Sturm, 2002: 291). There are, however, some doubts about whether a policy concentrating on local networks can lead to the development of competitive new industrial clusters. The sub-regional approach is blamed for representing nothing else than the pragmatic acceptance of the polycentric character of Baden-Württemberg, instead of being a deliberately developed new policy approach. In addition, the development of trans-industrial networks has been rather difficult because many companies are tightly linked to networks geared towards the needs of the dominant industrial clusters.

Two institutional novelties were established in the 1990s: the trans-departmental innovation advisory board on the one hand and the Academy for Technology Assessment on the other. The aim of the innovation advisory board is to support the regional government in developing its innovation and technology policy by collecting and presenting information on the latest technological developments. The idea of establishing the Academy for Technology Assessment was part of a dialogue-oriented policy approach aiming at involving different stakeholders and interest groups in the innovation process and opening up a platform for future-oriented

discourses. The closing down of this institutional novelty by the end of 2003 marks a significant break with what is referred to as a bottom-up approach based on discursive coordination.

The new technology and innovation policy approach, it can be concluded, is based on a non-linear innovation model. It abandons a one-sided technical orientation and puts more attention on organizational and other social innovations. The main aim is to develop a dynamic innovation system in which the old and the new industries are closely linked together. Table 7.1 gives an overview of major changes that took place in technology and innovation policy in the 1990s.

The fact that in the future the industrial core will lose its economic importance for the region will become a major challenge to public technology and innovation policy. The linkages between the economic success of the big companies in the dominant industrial clusters on the one hand and the development of economic growth and social welfare on the other hand begin to dissolve. At the same time the fates of single companies, owing to globalization strategies, outsourcing and global subcontracting, become increasingly independent from the demands of the regional economy (Braczyk and Krauss, 1997: 223). The foundations of the regional

Table 7.1 Changes in the innovation policy in Baden-Württemberg

Characteristics of innovation policy in the 1980s	Characteristics of innovation policy since the mid-1990s
– Strategies oriented towards a linear innovation model	– Strategies based on a more complex innovation model
– Initiatives focusing on technical innovations and technology transfer and diffusion	– Initiatives including technical, organizational and service innovations, focus on knowledge creation, technology transfer and diffusion
– Measures with strong sectoral orientation, focus on specific actors (e.g. SMEs)	– Multi-sectoral measures integrating multiple actors, including private and non-private institutions, small and large firms
– Limited to the national and regional level	– Support of sub-regional knowledge concentration, at the same time support of international cooperation
– Measures oriented strongly on results	– Process-oriented measures, promoting self-organization
– Focus on traditional industries	– Integration of traditional and new industries

Source: Adapted from Strambach (2002: 227).

innovation system become increasingly shaky; only by cooperating more closely with the federal government and the European Commission may the regional government be able to keep some space for a focused innovation policy.

THE DEVELOPMENT OF NEW INDUSTRIAL CLUSTERS

There is no doubt that the deep-rooted sectoral structure of the economy in Baden-Württemberg will undergo a fundamental change process. Of course, the traditional industries will still form the basis of the industrial structure. But processes of industrial renewal limited to the dominant industrial clusters will no longer be sufficient to guarantee economic growth and social welfare; their importance as leading branches in the economic development of the southern part of Germany is diminishing. More recently Baden-Württemberg has started to search for new growth areas. Multimedia and biotechnology, but also environmental technology, have been identified as core areas for the development of new industrial clusters.

Multimedia

Among the possible candidates to form a new industrial cluster the multimedia industry in the Stuttgart region may have the greatest growth potential (Fuchs and Wolf, 1999). There is general agreement among politicians and business people that Stuttgart should develop into a 'multimedia city', or 'net city'. Establishing a multimedia cluster does not mean that one would have to start from scratch. Already about 230,000 employees work in a broadly defined media sector (Grammel and Iver, 1998: 17). Important elements of a potential multimedia cluster already exist, one of them being the existence of a strong electronic industry.

The growth potential of the multimedia sector is linked primarily with a dense institutional setting. Particularly in the field of education and research Stuttgart has its institutional stronghold which can support the development of a multimedia cluster (the Polytechnical School for Printing, the Polytechnical School for Library Sciences, the Information Science Center at the University of Stuttgart, and the Fraunhofer Institute for Industrial Engineering). Finally the government has created the Media- and Filmgesellschaft Baden-Württemberg (MFG), also located in Stuttgart, a special agency established to coordinate media projects in the region and to function as a hub for media-related activities.

The electronic industry in Baden-Württemberg has its stronghold in the hardware sector; the Land is home to a few important hardware companies such as SEL-Alcatel, Bosch-Telecom, IBM and HP. But while Sony and Nokia still have production in Baden-Württemberg, the companies mentioned above shut down their production facilities in the 1990s. The region is also home to some important software producers, SAP, for example, which is one of the biggest software houses in the world but with little multimedia orientation.

To become a multimedia center in Germany and Europe, the Stuttgart region is lacking important preconditions; there is neither a strong film industry nor a national newspaper. And Baden-Württemberg does not have a network operator which could compete with Deutsche Telekom, the leading company in Germany. In these respects other German multimedia sites such as Cologne, Hamburg or Berlin have some advantages. And the capability of innovating by networking is not very well developed in the multimedia industry; in particular SMEs in this sector hardly use the services of the great number of support institutions (Fuchs and Wolf, 1999). The multitude of SMEs in the field of contents and application developments lack the clout to transform their presence into a cluster.

The larger firms of the electronic industry hesitate to join the emerging multimedia industry. This is partly due to the fact that foreign multinationals have their core research and design centers in their home countries (Alcatel, IBM and HP), while the larger local firms are closely linked with the automobile cluster, which so far has little demand for multimedia. The heterogeneity of interests of the big companies stands in the way of a cluster formation, as can be demonstrated by the fact that the up to now most ambitious project, named 'Interactive Video Services Stuttgart' (IVSS), came to nothing (Fuchs and Wolf, 1999). The basic idea behind the project was to induce cooperation between regional actors to develop new iTV-related products and services. From the beginning, the project ran into a lot of technical and organizational difficulties, which caused Deutsche Telekom as the provider of the telecommunication network to withdraw from the agreed pilot project. From the region's point of view, the failure of the project had the side effect that for some years other multimedia-related activities in Baden-Württemberg were stymied.

Only recently have new activities been launched in an attempt to integrate the traditional industries as potential niche markets in the formation of a multimedia cluster. Such a strategy may produce some positive results in the future. But whether Stuttgart can reach its goal of developing into a node of the global network of the multimedia industry remains to be seen. The place that Stuttgart is aiming to take is highly contested. Other German municipal regions seem to be ahead, not least because the

development of a new growth path based on the multimedia industry has not been tackled categorically by the regional government (Fuchs and Wolf, 1999). Besides, the image of Stuttgart as a location of the not so glamorous automobile industry is hardly attractive for the lively and colorful multimedia industry.

Biotechnology

The situation of biotechnology in Baden-Württemberg demonstrates a number of problems with which the formation of a new industrial cluster is confronted in this region. Heidelberg, a medium-sized city in the Land, is known for the high standard of its research in molecular biology, genetics and cancer. A number of world-famous research institutes such as the German Cancer Research Center (DKFZ), the European Molecular Biological Laboratory (EMBL), the Center for Molecular Biology Heidelberg (ZMBH), and the Max-Planck-Institute for Medical Research were established in the 1970s and 1980s. However, the excellent know-how produced by these institutes was hardly used by the large chemical and pharmaceutical companies in the region (BASF; Boehringer, nowadays Roche; and Merk) and only a few new biotech firms were founded in the 1980s. Instead, the economic exploitation of new knowledge took place in the US competence centers for commercial biotechnology (Krauss and Stahlecker, 2001).

However, in recent years we have seen some new developments occurring which have improved the outlook for the bio-industry in Baden-Württemberg (Schell and Mohr, 1995; Dohse, 2000). Up to now almost 400 new biotech companies have been founded and situated mainly in four 'bio-regions' (Freiburg/Bio Valley Upper Rhine, the Rhine-Neckar Triangle, Stuttgart/Neckar-Alb, and Ulm). Particularly the BioRegion Rhine-Neckar Triangle¹⁹ has become known, as within the framework of the BioRegio Program of the German government it was selected as one of the three leading regions in Germany in this area. The development of new start-ups has triggered a catching-up process, which may increasingly gain from the dense and highly competitive institutional setting. In addition, new bridging institutions such as the Heidelberg Innovation Gmbh & Co and BioScience Venture KG have been set up, offering financial support and other services to SMEs in this field.

Based on the strategy to establish sub-regional clusters, the regional government supports all four bio-regions in the Land evenly. This policy has been heavily criticized; some observers argue that the formation of new industrial clusters can only be successful if the available resources are concentrated on the most promising regional centers.²⁰ However, such a

strategy of focusing on only one or two strongholds can hardly be pursued in a heterogeneous and polycentric Land such as Baden-Württemberg. Characterizing the relationship between the regional government and the four government districts we can speak of a 'joint decision trap' (Scharpf, 1986).

Not only the unfocused policy of the regional government and the backwardness compared to North American industry, but also the restricted legal regulation and the fact that people in Germany are very skeptical with respect to high-risk technologies may seriously hinder the rapid growth of a bio-industry in Baden-Württemberg. Furthermore the enthusiasm for expansion in the bio-industry may come to a sudden halt in Germany as well as in Baden-Württemberg as a painful selection among the small start-ups has started. Nevertheless Germany has the fastest growing bio-industry in Europe. And the German pharmaceutical industry, which so far has established new research institutes in the USA because of much better framework conditions there, has now started to invest in new biotech activities in Baden-Württemberg. It seems that the bio-industry, strong enough to absorb know-how produced in the research labs, is slowly emerging.

CONCLUSION AND PERSPECTIVES

Essentially there are four approaches to explain innovativeness and economic competitiveness: the structural approach (Smith, 1998), the institutional approach (Nelson, 1993), the interactive approach (Lundvall, 1992) and the organizational approach (Zaltman *et al.*, 1973). The structural approach links economic success with processes of specialization and industrial cluster formation. The institutional approach on the other hand sees the royal path to success in the establishment of an institutional setting, adapted to the specific economic structure. And the interactive approach associates economic advantages with close interaction and intensive knowledge exchange between the economy, science and policy. In addition, researchers turn their attention increasingly to the microeconomic level and analyze the contribution of the business organization and organizational innovations to economic success and competitiveness.

In an attempt to explain the economic success of Baden-Württemberg up to the early 1990s, we can refer particularly to the first two approaches. The development of the automobile and mechanical engineering clusters and the focus on high-priced quality production on the one hand and the establishment of a dense institutional setting on the other hand have often been mentioned as the main factors to explain economic prosperity in

Baden-Württemberg in the postwar period. The interactive approach seems to have less explanatory power as cooperation between companies took place mainly to draw clear dividing lines between markets.²¹ Also concerning the introduction of organizational innovations, the industry in Baden-Württemberg seemed to be rather reluctant, although rigid Fordism as in the North American automobile industry never emerged. We can characterize the production system in Baden-Württemberg as representing flexi-Fordism (Boyer, 1991).

However, because of the fundamental techno-economic and social changes currently taking place, the strengths and weaknesses of the economy in Baden-Württemberg mentioned above have to be reassessed. We have to ask the question whether under the dramatically changing economic environment the German production and innovation regime can still survive and what kinds of problems it will be confronted with in the future. There is no doubt that the traditional core industrial areas, the automobile, mechanical engineering and electronic industries, although their employment volume will decline also in the future, will continue to take the center stage. This does not imply, however, that major structural changes become unnecessary.

In an increasingly globalizing economy in which innovation becomes the core competition criterion the economy in Baden-Württemberg with its traditional less innovative industries is not very well positioned and it is threatened with falling behind the leading economies. There is no doubt that to stay competitive the German Land has to renew its economic structures by turning its attention towards high-tech industries. Attempts to develop a bio-industry and a multimedia industry can be seen as leading in the right direction and show some promising results. Critics have argued, however, that Baden-Württemberg's specific way with respect to the multimedia industry is less clearly marked out. The challenge for Baden-Württemberg is to become more clearly aware of its specific strengths and to find a particular niche for its multimedia industry (Fuchs and Wolf, 1997). As there is much evidence that for the development of a new industry the existence of local demand is very important (Kemp, 2002), the automobile and publishing industry may open up a niche to develop the multimedia industry in Baden-Württemberg (Fuchs and Renn, 2002). Concerning the bio-industry, to better link the excellent scientific institutional setting with the strong German pharmaceutical industry becomes a great challenge.

In the future traditional industries will depend less on their ability to continuously produce incremental innovations but more on being able to develop more radical innovations, which take place mainly at the interfaces of different sectors. Because of the changing innovation patterns, the com-

petitiveness of traditional industries in Baden-Württemberg increasingly depends on knowledge transfer from the high-tech sectors; the formation of new clusters including the old and the new industries therefore is becoming an important part of the structural change.

Services are increasingly important to manufacturing, which makes it clear that the backwardness of the service sector in Baden-Württemberg can be seen as a weak point of its economy. There are clear signs of a catching-up process in this sector, but the fact that a greater share of KIBS is still produced in-house indicates that the productivity and innovation potential associated with independent KIBS firms have not been exhausted as yet. Because independent KIBS firms can take up a bridging function between companies and sectors, they can play an important role in the process of creating and especially of diffusing knowledge. The development of the KIBS sector may also have some influence on the innovation process itself, as it may put into perspective the one-sided technical approach and may support a focus on organizational and other social innovations.

Being embedded in a dense supportive institutional setting is often seen as giving companies decisive advantages in global competition, of which the scientific, knowledge-producing institutional environment is the most important. However, concerning the relationship between industry and science, too close an orientation of scientific research on industrial demand may actually be counterproductive; when the firms' competitiveness depends on their ability to produce more radical innovations, functionalization of scientific research is likely to exhaust the fountains of technological progress. There is no doubt that the R&D infrastructure in Baden-Württemberg had an important impact on the high innovativeness of the core industrial clusters (Grupp, 2002). But the rather close linkages between knowledge-producing institutes, including universities and traditional industries, may also explain why Baden-Württemberg is less able to produce more radical innovations.

On the other hand, a strong R&D infrastructure *per se* does not guarantee economic success if knowledge creation and the production basis of an economy are not compatible with each other. For example, one can doubt whether strong public engagement in biotech research is worthwhile as long as the economic effects are more likely to occur in foreign countries and other German regions than in Baden-Württemberg. Although anticipatory institutional change in the science system is necessary to trigger and support fundamental change processes, it should not be done without reflecting on a possible production basis.

Concerning the education system, some kind of disorientation seems to exist. Vocational training comes under growing pressure; focusing on

single vocations the system seems to be less suitable to support the realization of major organizational innovations, including the integration of direct and indirect production work; actually it is increasingly seen as a hindrance factor for fundamental organizational restructuring. Even more, one may ask whether the dual vocational training system which puts the skilled worker at the center of the production system can function effectively in the emerging knowledge society. The other side of the strong dual vocational training system is that, concerning tertiary level education, Baden-Württemberg as well as Germany as a whole is behind the leading EU countries. The vocational training system, which has always been seen as a stronghold of the German production and innovation model, may become a weak part of the emerging knowledge-based economy in the long run.

The increasing demand for more flexible work regulations becomes a great challenge for the industrial relations system in Baden-Württemberg. It is hard to predict whether in a changing environment flexibilization of work will take place within a stable system of industrial relations and whether the cooperative model of conflict resolution can still survive. There is evidence that the system of industry-wide bargaining is increasingly undermined by firm-based negotiations, as the problems companies are confronted with become more and more different. It remains to be seen whether Germany as a whole and Baden-Württemberg in particular can sustain the advantage of industry-wide cooperative conflict resolution with some additional autonomy and flexibility on the firm level or whether negotiations will become more conflict-loaded and the industrial relations system will split up, with the firm level assuming much greater importance.

The fundamental transformation process which has caused great uncertainty about future developments also has major implications for the way in which the regional government interprets its role and carries out technology and innovation policy. State interventionism aiming at directly controlling technological progress in a bureaucratic top-down process has been widely replaced by a bottom-up approach. The government focusing more on indirect control methods sees itself less as a doer than as a coordinator of various interests, a moderator of future-oriented dialogues, an initiator of new concepts and developments and a promoter of technological innovation. The concept of 'networked modernization' represents the core of a new technology and innovation policy and the principle of self-organization is becoming increasingly important.

However, the dominant non-interventionist ideology of the state is confronted with increasing critique. Focusing on the mechanism of discursive

coordination is interpreted as lack of guidance by public authorities. There is a need to develop a new *Leitbild* of techno-economic change which not only outlines possible paths of technological development and economic growth, but which also reflects on possible social and ecological implications (Fuchs and Renn, 2002). The regional government's half-hearted support of the development of new industrial clusters indicates that it does not have such a *Leitbild* to guide the transformation process. The government's acting on the techno-economic change looks more like muddling through with little reflection on social and ecological aspects than as a *Leitbild*-oriented guidance of economy and society. The development of such a *Leitbild* may also help to overcome technological skepticism, which is seen as a significant hindrance factor in creating more radical innovations.

Concerning the modernization of the traditional industries, we cannot really speak about a fundamental restructuring process. Although companies in Baden-Württemberg started to adopt the flexible mass production model when they opened up to mass markets (Springer, 2001), the organizational innovations they introduced were less radical than the general rhetoric would have us believe. In addition the development of global production networks progressed rather slowly, with a stronghold in European markets, while their presence on the emerging markets is still limited.

But while changes in the production model have started to take effect, attempts to improve innovation processes have made less progress. Even more, by aiming at short-term cost reduction companies began to cut back on their research and training expenditures. As the capability to carry out more radical innovations is becoming increasingly important in a globalizing economy, such short-term thinking may undermine companies' long-term competitiveness. In particular the *Mittelstand* will either discover its old creativity or sink deeper into stagnation and drag the economy down with it. Furthermore, with the exception of developing close relationships with their customers, companies have continued to isolate themselves from their business environment. But to improve the ability to innovate more rapidly, companies are more often forced to find partners with complementary know-how even among their competitors. The failure of large projects to develop the multimedia industry due to the unwillingness of companies to cooperate indicates how difficult it is to change the dominating innovation model in Baden-Württemberg.

Table 7.2 not only shows some changes in the production and innovation model that have taken place in the last few decades, but also indicates some shortcomings that still exist.

Table 7.2 Changes in the production and innovation model in Baden-Württemberg and the remaining problems

	Old model	New tendencies	Remaining problems
Economy	Rather closed (controlled by the financial system) Export orientation	More open (disinvestment by the financial system) Direct investments in foreign countries	Comparatively little FDI Focus on Europe, low investments in emerging markets
Governance structure	(Partial) corporatism	Industrial networks (sub-regional)	Lack of political guidance
Key sectors of the economy	Automobile cluster (large companies), mechanical engineering cluster (SMEs)	Growing service sector, emerging new industries (bio-industry, multimedia)	Underdeveloped KIBS sector (in-house production), missing links between new industries and traditional clusters
Production model	(Flexible specialization) diversified quality production	Flexible mass production	No holistic restructuring approach, underdeveloped innovation model
Competition strategies	High-quality, incremental innovations	Price, time, innovation and quality	Too few radical innovations
Financial system	Voice	Exit	Lack of finance for SMEs
Industrial relations	Consensual conflict resolution, industry-wide bargaining	(Informal) agreements on firm level	Undermining of industry-wide regulation, increasing conflict orientation
Main goal of government	Steady economic growth	Global competitiveness (cost efficiency and innovation)	Increasing unemployment
Role of citizens	Consumer	Rational decision makers (e-governance)	adjustment of the welfare state Ineffective bureaucracy
Culture	High work ethic, risk avoidance	Self-realization, sustainability	Integration of traditional and new values

NOTES

- * This chapter was completed in 2004. It does not reflect latest developments in Baden-Württemberg.
1. Carlsson and Stankiewicz (1991) argue that the development of technical systems can best be studied in sector analysis.
 2. For example, flexi-Fordism can be seen as a specific trajectory of the Fordist organization paradigm developed in Germany due to its specific institutional environment (the dual vocational training system and a strong position of unions in collective bargaining).
 3. For a distinction between organizations and institutions, see Edquist and Johnson (1997).
 4. The principle of real division implies that agricultural possession is equally divided among all children independent of their sex.
 5. Ferdinand von Steinbeis was the initiator of the support program for SMEs. He worked in the Zentralstelle für Gewerbe und Handwerk founded in 1848. This was a regional committee under the Ministry of Economic Affairs, which was able to operate rather independently.
 6. In the literature the model is highly disputed, because some researchers hardly distinguish it from the industrial district concept (Brusco and Sabel, 1981).
 7. What is called Swabian Mittelstand includes a great number of companies with more than 1,000 employees ('Swabians' are a historical tribe which settled Baden-Württemberg some 300 years ago). Characteristic of this Mittelstand is not so much the size of companies but the fact that they are often owned by families.
 8. Some researchers speak about a third industrial cluster (software) because of the size of the companies involved.
 9. CIM represents a concept of a comprehensive technological integration of production processes including administrative and service tasks.
 10. This model, assuming a slight division of labor, characterizes the workers as highly qualified and specialized in their products and in the production process.
 11. For example, labor costs per hour in the European, North American and Japanese subsidiaries of German companies were up to 50 percent lower compared to those in the German mother company (Zukunftskommission 'Wirtschaft 2000', 1993: 30–31).
 12. For the distinction between adaptive and innovative learning, see for example Johnson (1992).
 13. The globalization strategy of the German car maker turned out to be less successful. Cooperation with Chrysler resulted in great losses for a longer period of time and Daimler-Chrysler's investment in Mitsubishi caused major economic problems, which led to termination of the investment.
 14. Compared to other large Länder, the same holds true for Baden-Württemberg.
 15. Methodological problems, however, may contribute to the underestimation of the share of KIBS.
 16. The chairman of the Steinbeis Stiftung is also the government representative for technology transfer and therefore represents the interface between public administration and development praxis.
 17. In 1998 technology transfer was outsourced to a private firm called Steinbeis GMBH and Co für Technologietransfer.
 18. Empirical findings indicate, however, that Germans do not oppose technological progress in general; their opposition is limited to high-risk applications in specific high technologies.
 19. BioRegion Rhine-Neckar Triangle consists of three Länder: Baden-Württemberg, Hessen and Rheinland Pfalz. However, Heidelberg, situated in Baden-Württemberg, is the center of the bio-region.
 20. The US biotechnology industry has been regionally concentrated in just a handful of geographic locations (see Audretsch, 2001: 4).
 21. As mentioned already, some scholars related to the industrial district approach in particular refer to strong cooperation between companies and support institutions as a key factor to explain the economic success in postwar Baden-Württemberg.

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8. Divergence among mature and rich industrial economies – the case of Sweden entering a New and Immediate Economy

Gunnar Eliasson

INTRODUCING THE PROBLEMS OF ENTERING A NEW ECONOMY

The industrial world is in the midst of a five-dimensional transition: (1) New technology is being rapidly introduced and changing the existing production organization. The competitive situation between incumbent firms and potential new entrants is being redefined. We may talk about an emerging New Economy. (2) The new technology is simultaneously supporting a rapid globalization of production, redefining the geographical distribution of production among industrial economies and creating new regional allocations of industrial excellence, often transcending national borders and undermining the economic base of national economies as autonomous (policy) decision makers (Eliasson, 2003a). This (3) geographical reallocation of resources gained momentum in the beginning of the sudden, unevenly distributed and disrupting industrial recession of 2001/2003.

Furthermore, (4) distorted asset prices coupled with financial investor incompetence created a situation where industrial players became overly cautious and myopic and raised the incidence of long-term investment mistakes (Eliasson, 2002b). Finally, (5) several large companies in mature markets, making up the backbone of Swedish industrial wealth, have been simultaneously in trouble or have been acquired and reorganized by foreign companies, releasing ('spilling') sophisticated technology and competent labor in the market. We observe, however, that this does not necessarily constitute a problem. The recession helped free resources when the cycle changed for the better in 2004. The basic presumption of our analysis, and of what we will later call the *Experimentally Organized Economy* (EOE, Eliasson, 1987a, 1996a), is that there always exist many better allocations of existing resources than the 'current' one. Resources locked up in the big

firms and the public sector can always be better employed elsewhere. The theory of the EOE to be presented in the next section predicts that the radical reorganization of production needed to capture those opportunities, however, requires the establishment of innovative new firms, the local promotion of winners to industrial scale production and the exit of failing large and small firms, releasing resources for expansion elsewhere. And this transformation of the market will not occur without the presence of competent local commercializing actors and the right supporting institutions.

The *Swedish policy model* was developed as a scheme to support an economically efficient and a politically acceptable symbiosis between private big business and a social democratic policy regime. It may initially have supported the reallocation of resources to the growing, now large firms, but *gradually developed into a structure preserving institution*, favoring big business and being a relative handicap to innovative new firm establishment and small firm growth. Hence, it became less and less supportive of the desired transformation of the production system. In order not to miss the boat to the New Economy, we conclude, *a wave of Schumpeterian creative destruction among the remaining institutions of*, and the mentality embodied in, *the Swedish policy model is as needed as it is among the not-performing business firms*. We realize that this analysis may overstate the case, but add that we are conducting a policy risk analysis. If we are right, the future of Swedish industrial wealth is at stake. If we are exaggerating or wrong no harm will be done in carrying out the policies suggested.

We also conclude that *lack of technology is not a Swedish problem but the limited capacity to commercialize new technology is*. New technology supplies, furthermore, will always be broader than the local receiver competencies in place to commercialize them. Hence a successful transformation of the old Swedish economy into new and more productive and competitive structures will not be initiated and led by the incumbent large firms. It will have to be based on innovative new firms but will also require a much greater presence of foreign investors than before.

For the regional economy that we will study empirically we find that there are normally no alternative allocations of the spilled technology outside the region in Sweden where it was originally developed, so if not reinvested locally the alternative investment will be abroad, or the opportunity will be lost.

On the basis of a micro firm-based macro analysis a case for *diversity of long-term growth* among nations and regions is presented. There is no guarantee, we find, that the successful industrial nations of the past will be the winners of the future. We should in fact ask whether a similar industrial transformation (the industrial revolution) is reoccurring to that which took

place some 200 years ago (Eliasson, 2002b; Chapter 2). Back then advanced technology was no guarantee for industrial success, and divergence among national economies characterized the world economy.

The oil crisis of the 1970s knocked the Swedish economy off its long-term fast growth trend established after the industrial revolution some 150 years ago (Figures 8.1 and 8.2). When we focus on the more recent developments in Figure 8.3, Swedish manufacturing output lagged behind that of the other industrialized countries even further around 1992–94. The output volume lost by 1992 amounted to some 20 percent when compared to the average OECD development pace. This prompted the IUI (see IUI, 1993) to look into the micro dynamics of what was happening in the Swedish economy using a Schumpeterian type micro (firm)-based macro analysis.

Making New and Small Businesses the Growth Engine of Sweden

We found then that the dominance of a small number of large international companies and (the mirror image) the absence of innovative small companies and entrepreneurial entry made Swedish manufacturing industry vulnerable, partly by being insufficiently diversified and partly by being less capable of innovative restructuring. This was partly because of the excellent past performance record of the large companies (also see Eliasson, 1993a). The argument was that within what we will below call an *Experimentally Organized Economy* (EOE) the excellent performance record of the large Swedish manufacturing companies during the 1980s was not anticipated, and it is not something that we could reasonably expect would repeat itself. Even though production in the domestic operations of the large Swedish companies had stagnated in the mid-1970s their foreign operations had been growing fast. Total Swedish and foreign output of the Swedish manufacturing companies, in fact, grew in pace with the OECD average at least until the beginning of the 1990s. Around 1990, however, Swedish domestic manufacturing production entered a new phase of stagnation or even decline. It was also observed in the IUI 1993 study as a worrying sign that the large companies had increasingly opted for global mass production and distribution of mature products, choosing rationalization of existing production lines rather than reorganization and moving up the value chain to focus on sophisticated technological competition from a domestic high cost base. Finally, a rigid labor market in combination with low economic incentives for education and personal competence development and low incentives to move to the job opportunities were identified as a reason for long-term worry, not least as a source of a continued widening of income differences.¹

A separate investigation of the institutional characteristics of the Swedish economy was also conducted within the same IUI study, particularly about the role of the dominant public sector. It was observed that economic incentives and competition, which stimulate innovative behavior and enforce change through competition from new firm establishment, had been prevented by regulation in at least 70 percent of the economy (Carlsson, 1993). Finally, the large and regulated public sector was observed to have established a gigantic destructive game between the citizens and the state, where citizens were competing for political favors from the large public budgets and simultaneously for incomes and private consumption in the markets (see IUI, 1985: Specialstudie VI). Since public goods and services were supplied at zero or very low prices this game had no stable solution ('equilibrium') and was rather destabilizing to the economy. Therefore, the public sector was labeled as the crisis sector of the Swedish economy.

Three different policy packages were suggested to take the economy out of its stagnation. *The first was to make the economy less political* by significantly reducing the resource transfers through public budgets to manageable proportions, focusing public services on what the market would not supply, for instance social and egalitarian services, and placing the rest in the market. Studies indicated that only around 10 up to a maximum of 20 percent of current public spending contributed to a redistribution of lifetime incomes between individuals. The rest of public spending involved reallocations (transfers) of income over the life cycles of individuals only, and might as well be removed from the public budgets and replaced by regular private saving and insurance. In addition the small part of public spending that contributed to a redistribution of lifetime income between individuals was now being touched first, when the public finances were being tightened up in the backwaters of economic stagnation. So the huge Swedish public sector was not needed for equalitarian policy purposes. Rather the opposite. By undermining the growth capacity of the economy it was slowly working for a more unequal income and wealth distribution in the long term (IUI, 1985: Ch. VII). The best way to correct this situation, and to remove (to be discussed below) the large tax wedges in the economy would be to introduce the option for citizens to accumulate (save) income before tax in so-called *citizens' accounts* to be used for particular personal income and employment-raising investment spending.

The second was to improve incentives for innovative new establishment by lowering taxes and changing the legal and regulatory system of the old Swedish policy model that for decades had been discriminating in favor of the big companies, making life and growth difficult for small firms and discouraging new firm establishment and growth.

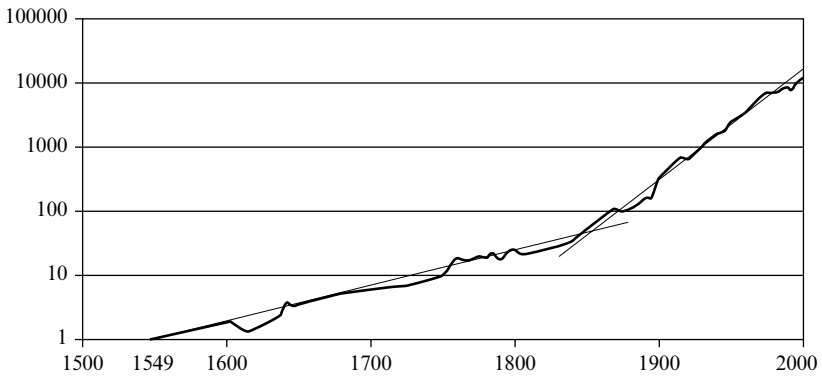
The third was to reorganize the large and resource-using educational system to make it more performance oriented as an infrastructure provider for production. Privatization, new forms of financing and a higher educational premium would support that reorientation.

In retrospect, by 2005 we observed that the stagnation in Swedish manufacturing production had not been broken, but also that very little of the policies suggested in the IUI study had been enacted in the previous ten years. Even though the relative decline in Swedish manufacturing output bottomed out around 1994 and output started to grow even faster than the OECD average for a while (Figure 8.3), the difference has been maintained. Even though Swedish manufacturing output has grown in pace with the OECD average since 1993, it would have been more than 20 percent larger if the same had been the case since 1974, or from 1950, implying that the Swedish policy model had been a millstone on economic growth from the beginning (Krantz, 2004).

The situation looks somewhat better if we compare GNP growth in different countries. Swedish GNP grew significantly faster than the GNP of E15, but slower than the US economy between 1993 and 2002. However, this comparison is biased in Sweden's favor by a slow deterioration in the terms of trade and the fact that 1994 was the first year of positive GNP growth after several years of negative or very low GNP growth (see Figure 8.5).

Whichever way we look at development among the industrialized economies *divergence* is the key characteristic. Sweden dropped from the fifth position in GNP per capita in 1970 to seventh in 1980, and then further down to 16th in 1993, and (perhaps) bottomed out at 17th in 2002. Sweden has been accompanied by France in that decline, and during the 1990s by Germany and Japan, while Denmark, Finland and Ireland have moved strongly in the opposite direction. This underscores the fact that the New Economy offers great economic opportunities for the competent national and regional actors, but also that the risks are large, not only to miss the opportunities, but also to become a loser in the transformation game, however great the past record.

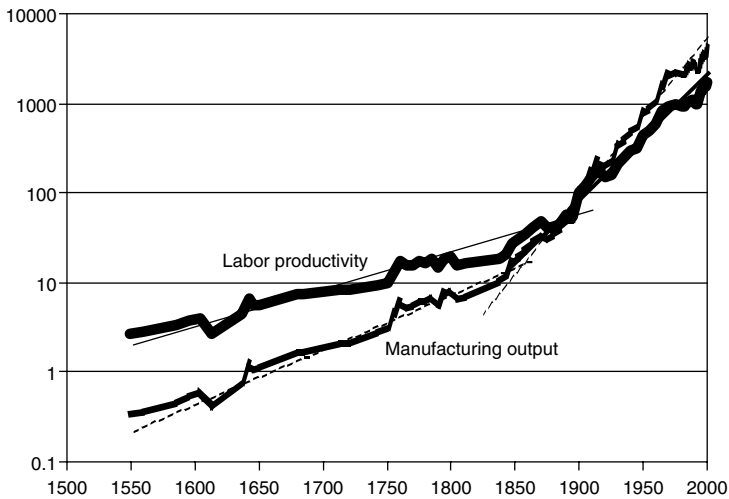
While 'taking the economy out of stagnation' was the policy problem of the 1993 IUI study, today the concern is the more acute one of also *successfully* entering the new type of economy that is emerging as a result of new technology and the globalization of production that is predominantly benefiting the already rich industrial economies and regions that are socially, culturally and politically capable of taking full advantage of the economic opportunities offered. Even though we can point to some major political factors as probable supporting causes behind this development, this is part of a complicated story that can only be understood by taking the analysis down to the micro firm and market level and by adopting a historical perspective.



Index: 1875 = 100

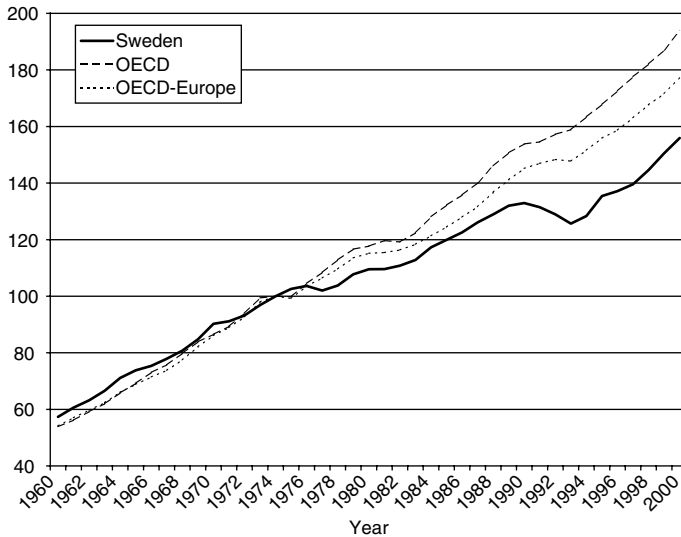
Source: Eliasson (1988: 158); recently updated by author.

Figure 8.1 Manufacturing production in Sweden 1549–2000



Source: Eliasson (1988: 158); recently updated by author.

Figure 8.2 Manufacturing production and productivity in Sweden 1549–2000



Index: 1974=100

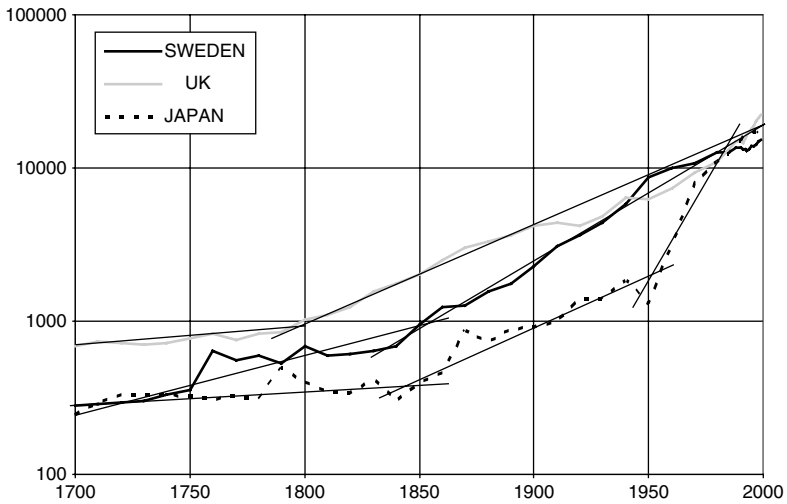
Note: Lind (2003) observes that productivity growth was significantly faster in 1991–2001 in Sweden than the OECD average, meaning reduced employment. In addition, almost all of the positive contributions to manufacturing productivity originated in the telecom industry, and disappeared if you used a different and more realistic set of input and output deflators (Edquist, 2004).

Source: Johansson (2001b: s. 164).

Figure 8.3 *Manufacturing production in Sweden and in the OECD 1960–2000*

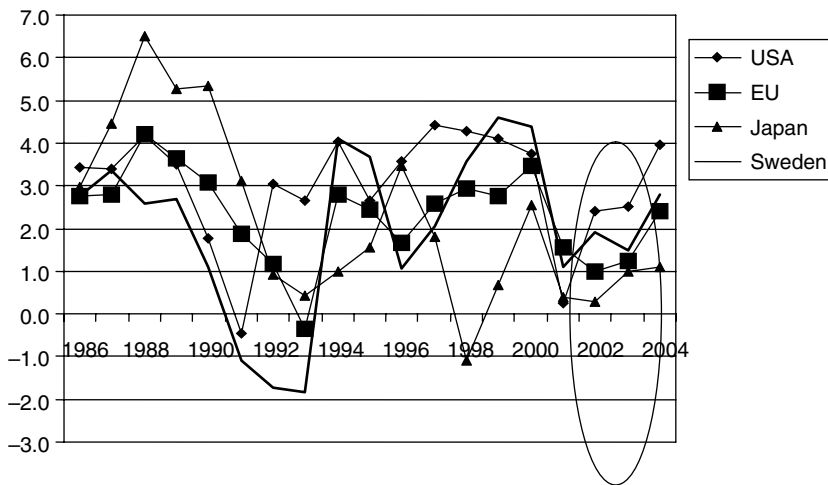
History Determines the Economic Geography

Sweden had a Silicon Valley experience during the 60-year period 1860–1920 (see Figure 8.1), during which a New Industrial Sweden was created and the Swedish economy settled on a significantly faster growth path than before. During that period 17 out of 32 of the largest Swedish manufacturing corporations of today were founded. This industrial revolution was distributed over large parts of Sweden. Foreign investors and immigrants contributing industrial competence were instrumental in making this transformation of the Swedish economy possible. The current regional districts of industrial competence were gradually formed as a few firms (the winners) of the thousands established during that period expanded, while most firms stagnated or disappeared (Jagren, 1988). Deregulation of the craft system that released previously shackled entrepreneurial activity initiated this successful phase in Swedish economic development. Apparently, an economic and political



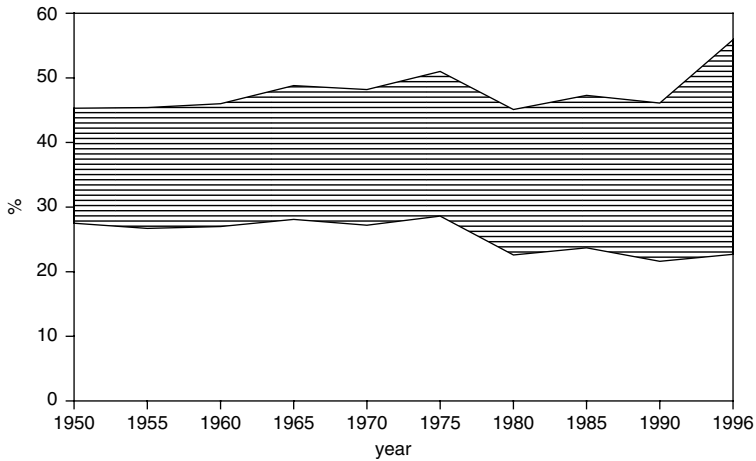
Source: Eliasson (1986a: 49); recently updated by the author.

Figure 8.4 GNP per capita in Sweden, the UK and Japan 1700–2000



Source: OECD, June 2003. Note that 2004 are forecasts.

Figure 8.5 GNP growth (percentages) in the US, the EU, Japan and Sweden 1986–2004



Source: Eliasson (1990b) and Eliasson and Johansson (1999: s. 205).

Note: Shaded area denotes manufacturing related services, not classified statistically as manufacturing production.

Figure 8.6 *The extended manufacturing industry 1950–1996 (percentage of GNP)*

climate congenial to innovative industrial development also contributed (Eliasson, 1991b). And immigrant investors and industrialists were happy to settle on a sustainable basis. Geographical distance did not prevent industrial development, and a strong engineering competence bloc developed on the basis of the new machine tool technology.

Today many old industrial districts are contracting, and many previously excellent firms are shrinking, outsourcing activities, or exiting. At the same time new technology is being introduced, notably through the entry of new firms, and the exits are needed to release competent resources for growth in the new firms. New *competence blocs* have to be established in these technologies. Computing and communications (C&C) is one technology associated with the New Economy, but we also have the more recent biotechnology that may revolutionize both the pharmaceutical industry and health care. But new technology, notably the generic C&C technology, is also being introduced in the old industry, particularly the engineering industry, to revolutionize product development there and to make great systemic productivity advance possible. The value chains of the new production organization tend to cross traditional statistical nomenclatures, notably into service production. Some of this development can be observed if the statistical nomenclature is reorganized to reflect the increasing share of manufacturing related produc-

tion that is statistically registered in other production sectors. Accounting for that the 'extended manufacturing industry' as a share of GNP, shown in Figure 8.6, has not shrunk, as in official statistics, but has stayed constant since 1950 and rather increased during the 1990s. During the previous radical industrial reorganization called the industrial revolution many economies, including those technologically most advanced, failed to get on the boat. It is even more likely during the ongoing creation of the new economy that entire nations will fail to get on the boat, and the risks are even larger for smaller regional economies to find themselves in the backwaters of industrial restructuring, releasing resources to be reallocated elsewhere.

The Three Industrial Competence Blocs of the Lake Mälär Economy

The emergence of a New Swedish Economy will be characterized in terms of three industrial competence blocs: 1. IT or computing and communications (C&C) industry; 2. biotech, pharmaceutical and health care; 3. engineering industry. C&C technology will be defined as a driving force behind new industry creation. Biotech, pharmaceutical and health care represent the upcoming science-based industry that may soon carry economic development on from the platform established by C&C industry. Engineering is a mature industry currently in the midst of a radical reorganization, being moved by the integration of the machine tool technology of the early 19th century with C&C technology. Both globalization and industrial reorganization are being pushed by a global financial services industry that was dramatically changed by the C&C technology in the 1990s. The local supply of industrially competent financial actors will be seen as a critical factor behind the industrial reorganization. Here Sweden had, but no longer has, a competence bloc of global excellence (Eliasson, 1997b).

The three industries or competence blocs are based on different interactive technologies and feature different technological spillover characteristics. They also have their own particular integration characteristics. In the following section, I will demonstrate theoretically and illustrate empirically how complete and horizontally varied competence blocs function as attractors for industrial investments and as a spillover source for a regional economy.

The Lake Mälär economic region features a broad-based excellence in the three industrial competence areas. This region, furthermore, currently carries, in each competence bloc, the interesting industrial dynamic associated with the presence of at least one large firm in crisis or a large firm being radically reorganized for other reasons, in our case because of international mergers. Schumpeterian creative destruction, therefore, characterizes the three industrial competence blocs in the Lake Mälär region with (1) the partial withdrawal of Pharmacia from the Uppsala region, (2) the crisis of

the Swedish–Swiss electrical giant ABB in the Västerås region, and (3) the near bankruptcy from which the mobile telecom systems giant Ericsson in Stockholm has now recovered. All three firms have released skilled people *en masse* and spun off a large number of activities in the market, making them available for new innovative establishment and to other firms. The key question is whether the necessary industrial *receiver competence* is present locally to recycle the resources released, that is the institutions needed to create the right economic incentives for new innovative establishment, and the competition needed to turn the Schumpeterian destruction process into a creative experience in the Lake Mälaren region. I will discuss this in terms of a positive and a negative ‘Shake Loose Hypothesis’. To assess which version will be operative a new dynamic theory is needed. To that end the theory of the Experimentally Organized Economy (EOE) is used to integrate case studies into a consistent macro analysis.

The Lake Mälaren region, including the cities of Stockholm, Södertälje, Uppsala and Västerås, is ideal for this analysis, being technologically advanced and the home of the most sophisticated financial services industry in Northern Europe. This is, however, not much to brag about by US standards, and the key question is whether this industrial region will be capable of capturing the New Economy, or – lacking the necessary receiver competence, notably venture capital competence – will miss the boat. Since the Lake Mälaren region is the most advanced part of the Swedish economy and since its manufacturing structure in a large part is the same as that of all Swedish manufacturing this question carries over to the entire Swedish economy. The analysis, therefore, is finally concluded by relating the Lake Mälaren economy to the national economy.

COMPETENCE BLOCS IN THE EXPERIMENTALLY ORGANIZED ECONOMY

Economic growth can be *described* at the macro level, but can only be *explained* at the micro firm and market level (Eliasson, 2001e, 2003a). The creation of a new industry capable of sustained and fast growth is always a matter of new firm formation and the commercialization capacity of the economy in identifying and carrying winners on to industrial scale production. Joseph Schumpeter discussed this creation in terms of what he called ‘creative destruction’. Growth requires that resources be released (through firm contraction and exit) and reallocated to better uses, and this reallocation often will not get started unless pushed by an economic crisis. I use the term the *Experimentally Organized Economy* (EOE) to emphasize that healthy and sustainable economic growth has to be based on a par-

ticular organization of the economy that also embodies the right type of institutions that define entrepreneurial incentives, orient competition and breed the right attitudes in the economy. More specifically, economic growth has to be based on a number of 'technical' prerequisites, but a well-functioning, open and growing economy cannot be embodied in any culture. The culture of the economy has to be entrepreneurial and driven by curiosity and a demand for novelty. The more we leave the economies of scale and mass production of standardized products of the past for a new type of *knowledge based economy* the more important this openness to change will be. I will go through the technical prerequisites for that change in this chapter, notably the creation of local (regional) attractors for investment (spillover sources), using *Competence Bloc Theory* (see Table 8.2), and discuss the *institutions* needed to provide the competence, incentives and competition needed to capture and build a business on the new technology. In the Experimentally Organized Economy industrial growth occurs through the Schumpeterian creative destruction process, or the four investment categories of Table 8.1, but only if incentives and competition are organized such that entering and incumbent firms opt for expansion rather than caution and contraction. The characteristics of local competence blocs and institutions are decisive for the resource allocation dynamics needed to transform an old industry into a New Economy.

Table 8.1 The four mechanisms of Schumpeterian creative destruction and economic growth

-
1. Innovative entry enforces (through competition)
 2. Reorganization
 3. Rationalization or
 4. Exit (shut down)
-

Sources: Eliasson (1993a, 1996a: 45).

Table 8.2 Actors in the competence bloc

-
1. Competent and active *customers*
 2. *Innovators* who integrate technologies in new ways
 3. *Entrepreneurs* who identify profitable innovations
 4. *Competent venture capitalists* who recognize and finance the entrepreneurs
 5. *Exit markets* that facilitate ownership change
 6. *Industrialists* who take successful innovations to industrial scale production
-

Source: Eliasson and Eliasson (1996).

Background of the Need for a Better and Dynamic Economic Theory

The Swedish economy created by the industrial revolution was increasingly based on the economies of scale and mass production of a number of, for a long time successful, firms. The increasing dominance of large manufacturing firms, so typical of Swedish industrial structure, was supported by a parallel development of institutions (see the Swedish policy model, p. 215 and pp. 242–4), which meant that new establishment was discouraged. A politically voiced importance of voiding the exit of ‘large’ players that develop in the 1970s further added to the dominance of large firms. The absence of the entry and exit process is also a deficiency of the mainstream economic model. The notion that old firms could be ‘renovated and rejuvenated from within’ to avoid undesired displacement of workers was a late development of the old Swedish policy model in the wake of the oil crisis years of the 1970s. The Japanese industrial policy machine was ‘the role model’. The Schumpeter (1942) model of the growth of such an economy based on routinized innovations in invincible firms that he did not like but believed to be unavoidable and the key role of central government embodied in the Keynesian demand economy had been expanded theoretically in the 1970s to also include a definition of ‘innovation’, formulated by Arrow (1962). The innovator was made compatible with the mainstream general equilibrium model and put into Schumpeterian (1942) clothing by Freeman (1974) and others and later stylized by neoclassical economists as mechanical R&D based innovation machines. This intellectual frame has been used long after the Schumpeterian (1942) routine innovation machine had ceased to work. It supported the illusion of the eternally superior technology of some leading firms in advanced Western nations. The invincible IBM was the role model until it failed in the late 1980s. To turn IBM into a new and competitive player required that almost half of its 450,000 staff be released in the market for other tasks. Also the Swedish industrial policy became victim of the Schumpeter 1942–Freeman 1974 model in the 1980s.

Today’s policy discussion is quite different. ‘Japan Number One’ (Vogel, 1979) is gone. The Swedish policy model is dead and an understanding has emerged that the great part of industrial restructuring needed will have to be realized through a recycling of human capital over functioning labor markets, or – more to the point (Eliasson, 1994c) – the *markets for competence*. For this to be a workable proposition, new forms of *social capital* embodied in individuals, groups of people and society at large will have to be developed and also, most probably, disembodied from the harness of the public sector (Eliasson, 2001a). The New Economy hype, however, overshadowed all such problems for a few years at the end of the 1990s. The argument was that the New Economy would solve all social and economic

problems with no effort. Were the statistical indicators of a resurgence of growth a false start (Gordon, 2000a, 2000b) – a common historical phenomenon if you look at the growth curves of industrial nations (Figures 8.1 to 8.5) – or are the advanced industrial nations really set for a new type of economy? Several directors of the Swedish Central Bank were optimistic. The New Economy had reached not only the US but also Sweden, they argued, and fast growth, possibly pushed on by increased public spending, could be achieved at low inflation (*Dagens Industri*, 25 February 2000).

My answer is yes, industrial nations are entering a radically new type of economy (Eliasson, 2002b), but with the caveat that *only* some of the advanced industrial nations, excluding some of the technologically most advanced, will get to the new growth trajectory (Eliasson *et al.*, 2004). The potential stumbling block will be the policy design. Since the policy design is responsible for the bad growth performance of some OECD countries, including Sweden, a changed policy regime will decide – such is the argument of this chapter – whether a successful entry into the new economy will occur or not (Andersson *et al.*, 1993: chap. 7; Eliasson 1993a, 1993b). The new growth trajectory, furthermore, will not be faster growth than the trends in Figures 8.1 to 8.5, but rather a matter of getting back to the old trends. *New technology* will not solve the political and social problems of the mature industrial economies, *only offer opportunities* for solving them, provided the right policies are enacted at the individual, the firm and the government levels. To get all the facts together into a coherent whole we need a theory in which live and behaving actors play a role in economic growth. The neoclassical model may therefore be useful as an econometric method to *measure* economic growth, but is of little use for *understanding* economic growth. It is rather misleading, so I will use the alternative theory of the *Experimentally Organized Economy* (EOE) and of *competence blocs*.

The Change in Basic Assumptions

The EOE comes in two versions. There is *the theory of the EOE* that outlines the principles of industrial dynamics, and there is a quantitative *model version of the EOE* in the form of the micro (firm)-based macro model MOSES of the Swedish economy. The model version of the EOE can be used to study the magnitudes involved in resource reallocation through simulation experiments, notably the differences between the non-linear dynamic MOSES model and its narrowed down special case, a computable general equilibrium model (Eliasson, 1984a, 1991a). As it happened the formulation of the theory of the EOE was inspired by simulation experiments on the MOSES model (Eliasson, 2003c).

The theory of the EOE is made up of five ‘modules’:

1. the *knowledge based information economy* that defines the nature of business opportunities, innovation and entrepreneurship and the necessary presence of business failure (*assumptions*)
2. the Schumpeterian *creative destruction* process that endogenizes economic growth through experimental selection (the *dynamics* of Table 8.1)
3. *competence bloc theory* that defines the local *receiver competence* in the economy and the concept of *dynamic efficiency* through *flexibility (allocation)*
4. *institutions* that orient *incentives*, direct *competition* and reduce *uncertainty* such that positive industrial development takes place, and introduce an opening for market compatible *policymaking*, and
5. *social capital* that provides protection for the individual from the unpredictability and arbitrariness of markets (*welfare*).

My departure from the mainstream neoclassical model into the alternative economic world of the theory of the EOE begins with some (seemingly) minor modifications of the assumptions of the neo-Walrasian model. The presentation of the *knowledge based information economy* (Eliasson, 1990b) documents these assumptions in the form of an immense and non-transparent state space that I call the *investment opportunities space*. Navigating in the knowledge based information economy draws large information and communications (transactions) costs. The neoclassical model implicitly *assumes* that space to be sufficiently small to make the assumption of no or negligible information and communications costs to achieve a full information equilibrium reasonable. The state space of the EOE is by realistic assumption impossible to survey more than fractionally by each agent from one point. Ignorance will therefore be a dominant characteristic of individual actors. Hence, actors are normally differently knowledgeable and informed, limiting the capacity of communication between them. This is sufficient to demonstrate the existence of tacit knowledge in the sense of limited communicability (Eliasson, 1990a).

We come up with a model economy in which *knowledge* (or firm and human embodied competence) *is the scarce resource*, not physical capital, *and development is determined by knowledge managing knowledge*. In this economy each actor is grossly ignorant about circumstances that will now and then be critical for its survival. There will always be more business opportunities than there is competence to commercialize them, and this is generally known. *And there will always be better allocations of the existing resources than the current one*. Hence, the normal situation of each actor in the EOE is to be constantly challenged by superior competitors that in turn are challenged by inferior actors trying to overcome them by innovating.

Each agent thus has to act innovatively in order not to be overrun. Some will and others will temporarily climb to the top. This Schumpeterian competitive process will create endogenous growth as shown in Table 8.1. The process cannot stop since agents will always be at risk of being overrun, and the dynamics of the competitive process will be reflected in a choppy sea of temporary innovation or monopoly rents that are constantly competed away by more innovative competitors.²

As entrepreneurial actors explore the wealth of opportunities through experimentation they subject the entire economy to a constant competitive pressure. This is the source of economic dynamics and it can only be reduced by artificially reducing entrepreneurial entry through regulation or through the formation of monopolies (Eliasson, 1991b).

Since ignorance is a universal characteristic of economic actors *business mistakes* become a normal phenomenon in the Experimentally Organized Economy that I have now introduced. Mathematically this situation arises (1) when large resources are used up in information processing and communication, so large that they *have to be factored in as a determinant of the focus of the economic process* (call it an equilibrium) and (2) when the technology of using information and communication is subject to unpredictable change. Information and communications costs then have to include the economic consequences of business mistakes, and this (Eliasson and Eliasson, 2003) turns a number of standard theoretical predictions on their head. But there is also a benefit. Actors exploring the same state space for investment opportunities will learn and in turn come up with new technological and commercial combinations that will in turn mean new opportunities for other explorers, new combinations, or data of the state space with so far undiscovered combinations. *The state space will be expanding from learning* and (the *information paradox*, Eliasson, 1990b: 46f.) it may even expand faster than actors are capable of learning, thus making everybody *increasingly ignorant about all that can be learnt*.³ This, for one thing, does not only mean that the economy will always be operating *far* below its production possibilities frontiers. The production possibilities frontiers and opportunity costs are not even determinable in the EOE. This is an implicit assumption in old Austrian economics, notably in Carl Menger (1871) and in the Joseph Schumpeter model I from 1911 (Schumpeter, 1934 [1911]).

The growth of the state space of the EOE from exploration and learning I have also called the *Särimmer effect* (Eliasson, 1987a: 29, 1991a, 1992a) from the pig in the Viking sagas that was eaten for supper, but returned again next evening to be eaten again. In *the Experimentally Organized Economy* (EOE) that we now enter, the pig even increases in size from being eaten. *We have formulated a rational foundation for the potential positive sum game* that is needed to formulate endogenous growth theory.

One could of course simply make the Särinner effect or the information paradox an assumption of the theory of the EOE and it would be an assumption far more realistic than the standard assumption of a narrow and transparent state space *assumed* for the mainstream neoclassical model. It is, however, not very difficult to formulate combined exploration and learning models that keep the state space expanding for ever and then the Särinner effect is converted into the empirical problem of determining whether it keeps expanding sufficiently fast to keep actors perpetually ignorant. Again, this borders on the deep philosophical question of the existence of a unique truth and/or the limits of learning (Eliasson, 1996a: chap. I). The purpose of this discourse has of course been more limited, namely to present *a theoretical argument against the full information economics of the mainstream equilibrium model, and a rational foundation for the theory of endogenous growth*, the theory of the EOE that we need for the analysis to come.

The remaining question now is *how* endogenous growth, or rather the potential positive sum game, is activated. The change in the definition of the state space introduces an explicit role for uncertainty, ignorance and economic mistakes. It also makes it necessary to introduce institutions to facilitate market processes, this time 'out of equilibrium' (Day, 1986).

The Explicit Role of Institutions

Institutions are often thought to determine the market regime by constraining market activities (rules of the game). Hence, they are distinct from *organizations* (for example firms) that execute economic activities within such rules of the game. There are, however, hundreds of definitions of institutions. To be operationally meaningful the definition has to relate to a context. What we need for this analysis is institutions that support the *allocation functions* of the EOE, and they should be defined accordingly. We have to recognize the institutions that define *incentives*, orient *competition* and reduce *uncertainty* (property rights) to make trade possible. Institutions that open up a slot for the policy maker are also created, and it should be observed that the theory of the EOE offers no other means for the policy maker to interact with the economy than through the creation and the intermediation of some well defined institutions. Hence, the institutions needed in the EOE can be derived from the functions they are supposed to support in the EOE. No other institutions are needed for our analysis. If the body of theory you are using lacks certain market functions that require institutional support you may also find no need (in your analysis) for well known institutions in the market economy.

Institutions thus have to be defined to be consistent with the market processes in, and the evolutionary character of the theory of, the EOE. They

are, therefore, regime determining in the sense that they define the market characteristics of the EOE including the mix between markets and hierarchies. This in turn means that institutions have to be functionally defined and represented by the parameters that regulate market processes. Hence, we come up with a dynamic version of Coase (1937). Institutions regulate the market functions that determine the intersection between the firm and the market and, hence, the size of the organization called a firm. This is Pelikan's (1986, 1988) or North's (1990) distinction between institutions and organizations, which may create confusion when we make the market information system an integral part of the production system of the economy. This is however unavoidable when we introduce the competence bloc. For the time being we recognize that institutional support is needed to define incentives, orient competition, reduce uncertainty (Eliasson, 1998a) and define explicit slots for the policy maker. Central to all these economic functions is the concept of property rights. This definition of institutions is, however, different from the linear definition of institutions in Nelson (2002) defined to be compatible with the properties of the Nelson–Winter (1982) model. It also departs from Pelikan's (2003) more general definition. Above all, my definition of institutions leaves only two slots for government intervention, namely explicitly through existing institutions, or 'through' changing the institutions. The policy maker could vary a given tax parameter that is already included in the decision model of all actors or he could introduce an entirely new tax system or change some basic principles of the earlier property rights legislation forcing all actors to reconsider their decision models. Using my definition it is no longer theoretically possible to enact guaranteed policy outcomes, that is one to one policy control of the economy. This also means that institutions defined in my way cannot be entered either into the mainstream neoclassical model or into the Nelson–Winter model.

All institutions listed above perform important market supporting functions of the creative destruction process and the competence bloc, notably in (incentives) encouraging new entry, enforcing exit (bankruptcy law) and facilitating trade in intangible knowledge assets in the competence bloc (property rights).

Live Actors Cause Theoretical Trouble

What we lose from abandoning the simplifying assumptions of neoclassical exogenous equilibrium is analytical simplicity. But this is good and healthy. As economic advisors we (the economists) then do not get fooled by the a priori assumptions of our theoretical tools into believing that we know more about the real economy than we really do. This insight is long overdue in view of the large, and sometimes disastrous, influence the

professional economists have had on policy making (Eliasson, 1998b, 2000a; Eliasson and Taymaz, 2000).

In the EOE room has been made for live firms that behave unpredictably on the basis of their particular competencies. In the EOE each agent sets up a business experiment that is tested in the market in a confrontation with all other agents. The experiment is frequently found to be a business mistake. These characteristics have consequences for the typical firm in the EOE (Eliasson, 1996a: 56; 1998c: 87). *First*, no actor, including government, can survey the entire business opportunities set from one point. It is not transparent and business mistakes will be made by all actors all the time. Such mistakes should be regarded as a normal cost for economic development. *Second*, some actors may hit upon the absolutely best solution by chance, but they will never know, and nobody else either. Hence, *third*, the economy will always be operating *far* below its production possibilities frontier, thus violating a standard assumption of neoclassical theory. *Fourth*, as a business actor you must always believe in your proposed business experiment. If not, you cannot act decisively and forcefully. *Fifth*, however, whatever you have invented you know one thing with almost certainty: there will be many potential solutions that are much better. Therefore, and *sixth*, you have to recognize that among your many competitors you cannot be alone with such a good idea as yours. You have to act prematurely, but still decisively on the basis of your competent judgment (*intuition*) before somebody else has acted successfully. Each new solution, therefore, has the character of a business experiment.

Macro Dynamics through Experimental Selection

When something radically new is introduced it almost always occurs through the launching of a new product, the establishment of a new division or the entry of a new firm. A new product may be a complement to existing products or a substitute, in the latter case subjecting existing producers to competition and forcing them to reorganize and/or rationalize, or die (exit). When a competitor introduces a radically new product a firm often cannot cope with the new situation through reorganization, because it is staffed with the wrong human capital. It then has to contract, lay off people or shut down, and possibly recruit new personnel to establish a new firm. The entry/exit process, hence, is critical for economic growth, pushing performance of the entire industry upward through the four creation and selection mechanisms or the *Schumpeterian creative destruction* process of Table 8.1.⁴ Dynamic efficiency is achieved when the creative forces dominate over the destructive forces. And growth occurs as winners are identified and carried on to industrial scale production and distribution forcing inferior firms out of business. *Competence bloc* theory explains how.

Competence Bloc Theory

Efficient selection (dynamic allocative efficiency) in the EOE is defined as the ‘minimizing’⁵ of the economic incidence of two types of errors, that of (1) keeping losers on for too long and (2) ‘losing the winners’. Centralizing knowledge to one point requires that it can be coded and interpreted as standard information and, hence, reduces the total knowledge that enters each decision to such codable knowledge, or communicable information. Distributing tacit knowledge (or human or team embodied competencies) over the market, on the other hand, is shown to ‘maximize’ the exposure of a project to a competent and varied evaluation. While the neoclassical model makes it superficially look as a cost minimizing organization of production to centralize, and internalize within large hierarchies (firms) or one large planning system all information processing and decision making (Malinvaud, 1967), the theory of the EOE tells the exact opposite story. The neoclassical model neglects the large implicit cost of losing winners, and, hence, comes out with dynamically inefficient solutions (Eliasson and Eliasson, 2005). The reason is that, while the neoclassical model regards all knowledge as codable information and assumes information costs to be zero or negligible, *the theory of the EOE recognizes* the fact that knowledge is largely tacit, and that costs of information processing and communication are large and dominant and hence also recognizes *the loss of winners as a transactions cost*. Since tacit knowledge cannot be brought together to one point for centralized analysis without great losses of content the auctioneer of the Walrasian model will not have the overview assumed. The now narrow selection criteria within a hierarchy will increase the probability of losing the winners.

Competence bloc theory, hence, is an organizational solution to the efficient allocation of tacit, human embodied competencies on business problems. It, therefore, *explains both the supply of new technologies (innovations) and the commercialization of the same technologies*. A competence bloc lists the minimum number of actors that are needed to successfully generate, identify, select, expand and exploit new business ideas, that is to initiate and develop a new industry (Eliasson and Eliasson, 1996).

The fundamental understanding of Adam Smith (1776) was that specialization and distributed production give rise to large positive systems productivities in the use of scarce resources. He had a problem, however, with how to bound the economy above, and settled on the size of the market as the upper limit, a solution to this theoretical problem used by many after him, including Karl Marx and more ‘recently’ George Stigler (1951). This is the physical (materialist) interpretation of an economy leaving no room for intangible qualities. Allowing for intangible qualities changes the

picture radically. While there is an upper limit to the volumes of physical products ('steel') that an economy can absorb, *there is no limit to how much quality can be produced and consumed, except the competence of the customers to appreciate quality and the competence of firms to produce new qualities. Competence becomes the limiting factor in the knowledge based economy* (Eliasson, 1996a: 34), not physical resources. The perhaps most important quality demanded in an advanced market is product or quality *variation*. Only the customers can individually decide which variant they prefer.⁶ This places the customer at the core. One critical task of the competence bloc, hence, is to make sure that customers' preferences and competencies filter down to the actors in the competence bloc that create, select and commercialize innovations.

The role of competence bloc theory (Eliasson and Eliasson, 1996; Eliasson, 1997a, 1998b) is to explain these competitive creation and selection processes distributed over hierarchies and markets that generate growth in the Experimentally Organized Economy. When 'efficiently' designed the competence bloc organization minimizes the economic incidence of the two types of errors. In the theory of the EOE knowledge manages knowledge. *The competence bloc has now become an allocator of tacit competencies.*

The innovation and selection process in the competence bloc (through Table 8.2) is organized as follows. *First*, the customer occupies a premier (key) position in competence bloc analysis. The products created and chosen never get better than what *customers* are capable of appreciating and willing to pay for. The long-term direction of technical change, therefore, is always set by the customers. This is so even though the innovator, entrepreneur or industrialist takes the initiative. But quite often the customer takes the initiative. Technological development, therefore, requires a sophisticated customer base, capable of appreciating new products. The more advanced and radically new the product technologies are the more important customer quality becomes. The customers of the competence bloc contribute (commercial) competence in the technological choice process. They accept or reject products offered to them in the market, thereby signaling what they want. But they also actively look for products that they need, and they may be directly involved, contributing knowledge at different phases of the development of the product. This is normally the case when it comes to very advanced and complicated products such as military and commercial airplanes. Competent purchasing becomes a potent industrial policy instrument (Eliasson, 1995, 2001b). A rational strategy for a producer with sophisticated products who cannot find competent customers close by is to actively look for new and more sophisticated customers and a better market elsewhere, a strategy constantly forgotten in

standard textbooks on marketing. As already observed by Burenstam-Linder (1961) sophisticated customers contribute to the comparative advantages of the rich economies. In terms of competence bloc theory, local access to affluent and competent customers is a strong regional attractor for advanced firms.

Second, basic technology is internationally available, but the capacity to receive it and make a business of it requires local competence. Part of this receiver competence (Eliasson, 1986a, 1987b, 1990a, 1996a: 8, 14) is the ability to create new winning combinations of old and new technologies (*innovation*). A rich and varied supply of subcontractor (technology) services, therefore, is part and parcel of the innovation supply that enters the economic selection process of the competence bloc through that slot.⁷

Third, some actors or organizations are better than others when it comes to achieving intellectual order in a seemingly chaotic business situation. We call them *entrepreneurs*. The task of the entrepreneur is to identify commercial winners among the suppliers of innovations and to get his/her *technology choice* on a commercial footing. The understanding of the entrepreneurs may be of a long-run nature, or more temporary in the sense that they may have to reconfigure their thoughts soon, or make a business mistake. The main thing is that the entrepreneur acts on the perceived business opportunity. The innovator and the entrepreneur represent difficult agents in economic theory. Their behavior is by their nature unpredictable, which was also the notion of the young Joseph Schumpeter (1934 [1911]). Attempts have been made to work the innovator and the entrepreneur into mainstream theory, even though to my mind they are failed attempts, since they have succeeded only by removing the essential features of entrepreneurship. Baumol (1968) regarded the task as difficult, and impossible over a foreseeable future, and argued that for the time being we will have to be satisfied with less rigorous verbal theorizing. I would argue (Eliasson, 1992a) that the Austrian–Schumpeterian (1934 [1911]) entrepreneur defies mathematical representation in the mainstream neoclassical model. He should not be introduced as a stochastic actor, something Knight (1921) understood. Taking him in in the old Austrian sense would disrupt the static equilibrium properties of the model. Hence, the neoclassical economists have collapsed the entrepreneur and the innovator into one agent that is introduced in the economy through stochastic knowledge production functions. But they still call this predictable R&D-driven innovation machine Schumpeterian (see for instance Futia, 1980; Pakes and Griliches, 1983; Aghion and Howitt, 1998). Schumpeter (1942), unfortunately, himself contributed to that terminology.

The entrepreneur, however, rarely has resources of his own to move the project forward. He, therefore, (*fourth*) needs funding from an *industrially*

competent venture capitalist, that is a provider of risk capital, capable of understanding innovators of radically new technology and being able to identify business needs and provide context. The money is the least important thing. *What matters* (Eliasson and Eliasson, 1996; Eliasson, 1997b) is the competence to understand and identify winners and, hence, provide reasonably priced equity funding.⁸ The supply of such competent venture capital is extremely scarce. It is the critical part of the overall selection process and, if lacking in performance, is liable to result in the 'loss of winners'. An innovative and entrepreneurial economy thus needs industrially experienced (competent) financiers. Without a rich endowment of venture capital competence, you won't see many entrepreneurs. Hence, the venture capitalist and his escape (*exit market (fifth)*) are the most important incentive supporting actors. Without competent venture capitalists the price of new capital will be prohibitively high, or funding will not be available, and winners will be lost. Bad projects will get financing. With badly functioning exit markets the incentives for venture capitalists will be small and, hence, also for the entrepreneurs and the innovators. It should be noted that this competence includes the ability of the providers of capital to take a long-term view. Thus, access to competent finance is a strong determinant of regional economic growth.

Finally and *sixth*, when the selection process has run its course and winners have been selected a new type of industrial competence is needed to take the innovations on to industrial scale production and distribution. We cannot tell in advance what the formal role of the industrialist is (CEO, chairman of the board, an active owner and so on). He or she figures in the competence bloc on account of his or her capacity to contribute functional competence. Also at this stage winners can be lost to the local economy due to lack of industrial management competence. Part of the regional location factors at this level, we will find below, may relate to the supply of such industrial management competence, which in turn relates to the location of corporate headquarters (CHQ, see Eliasson, 2001c).

We conclude that *completeness* of the competence bloc is a necessary requirement for the viable incentive structures that guarantee increasing returns to a continued search of winners, that is for new industry formation. None of the actors of the competence bloc can be missing, or this complete incentive structure will fail to develop (Eliasson and Eliasson, 1996; Eliasson, 1998b). The venture capital markets in Europe have been generally lacking in the industrial competence needed to fund radically new industry, and even though the exit market situation has been improving, compared to the US, Europe is still an underdeveloped economy on both counts (Eliasson, 1997b, 2005: chap. IV). It is, hence, risky to be an innovator and entrepreneur in Sweden, since, when the two have exhausted their

own resources, there will be no one to turn to, except unperceptive bankers, big company executives or public sources, all more or less incompetent in dealing with radically new industrial ventures. The risk is high that winners will get lost. Obviously, the geographical distribution of actors in the competence bloc will influence the allocation of resources in the 'global' economy.

The extreme diversity of the business opportunities space of the EOE means that the competence needed to identify winners cannot be specified in advance. Hence, an efficient project identification and selection in the competence bloc requires that a large number of each type of actor in the competence bloc be present. Such *horizontal variety* is a necessary condition for maximum exposure of each project to a competent evaluation. Compared to the internal project evaluation in a large firm direct transaction costs may be higher, since the evaluation is done in a distributed fashion, involving many independent actors in the market. Narrowing down the evaluation to an internal procedure within a hierarchy, on the other hand, raises the risk of losing a winner which constitutes the really large transaction cost, and hence is likely to lower the efficiency of project selection. This, in fact, is not uncommon. Large firms, such as IBM, internalized most of the competence for a long time and almost went out of business in the late 1980s. Business history is full of near losses, the only ones that can be identified (Eliasson, 2001a).

The theory of the EOE and of competence blocs defines the dynamics of endogenous growth. Together the two explain how the technologies needed to build a new industry are created (*innovation*), identified (*recognition, discovery*), selected (*competition*), commercialized and diffused (*market support*) and competently introduced in production (*receiver competence*) such that the right (product) technology choices are made and the two types of errors are minimized, that is (1) to keep losers for too long and (2) to reject winners. The competence bloc defines the *receiver competence* (Eliasson, 1986a: 57, 95, 1990a) *of the economy*, an idea discussed by Abramowitz (1988). In a vertically complete and horizontally varied (read dynamically efficient) competence bloc *potential winners are exposed to a maximum of varied competencies such that they experience increasing returns to continued search for resources*. Completeness and variety are defined to include the ability of a sufficiently large number of agents to take long-term positions. For the empirical analysis to follow this means that, when the financial markets turn myopic during a recession, raising their risk premiums, long-term investors will soon find it profitable to step in and save projects that would otherwise be left without financing. Then sufficient critical mass has been reached and the competence bloc will function as an *attractor* such that new entry takes place in such a way that (1) the

competence bloc *benefits* from the new entrants, but also (because of competition) such that (2) only new entrants that *contribute* to the competence bloc will survive. The competence bloc then functions as a technological *spillover generator* and will begin to develop endogenously through its internal momentum (*critical mass*).

Critical Mass Creates a Local Spillover Source – The Advanced Firm as a Technical University

Efficient diffusion and commercialization of new technology requires effective market support, notably in the labor market (item 1 in Table 8.3) but also in the venture capital market and the markets for mergers and acquisitions (M&A). A complete and horizontally varied competence bloc functions as a technological spillover source. Firms spill new technology as they establish themselves in the competence bloc to benefit from the spillovers of the firms already established there. In that sense advanced firms function both as *technical universities* (technology creators) and as supporters of technology diffusion within competence blocs.

Advanced firms within efficient competence blocs are superior to technical universities in creating new technology. First, the technology created in firms is normally closer to application in production than what is created in technical universities. Second, it is more readily distributed (if not protected as proprietary) and not hampered by academic requirements of forms of scholarly presentation. Third, it is more creative, since corporate research is normally interdisciplinary and more multidimensional than academic research that is prepared for publishing and peer recognition rather than for being useful. Spillovers have to be identified as commercially viable and introduced in the production system. The principal role of the technical university is as a teaching institution with prestige to attract the best students to the region (Eliasson, 1994a, 1996b, 1996c). Efficient diffusion of spillovers requires local *receiver competence* (Eliasson, 1987b, 1990a) and the competence bloc represents such receiver competence at the regional level. One could also say that *the economic value of spillovers depends on the local ability to commercialize the spilled technology* (receiver competence). Together this means that the full fledged competence bloc turns the spillovers created by the research and industrial activities of advanced firms established there into both functionally operational technical universities and commercially viable ventures (*joint production*).

Advanced firms also compete with the established technical universities as educational institutions, providing on the job learning and experience development in a large area of production where standard educational institutions have little to offer and where classroom teaching is not a viable

educational method. So much said we have presented a case for the organization of the education and research functions conventionally associated with technical universities to be integrated organizationally with the production of advanced firms. Advanced firms have long been experimenting with such educational solutions. Some large international firms have even established their own internal university campuses for specialized engineering education and for management training for their career people (see Eliasson, 1996c). Some firms, such as Intel and IBM, also locate their corporate research laboratories close to the campuses of major research universities to facilitate joint research activities. An even more important reason, however, appears to be to have direct access to the talented students of the elite universities (Eliasson, 1996c). The universities, on the other hand, as a rule being established in a non-market environment, have been reluctant or unwilling to change their ways. As a result they have lost in attractiveness to outside competitors. Firms are reluctant to engage in activities that do not really belong to their core business. They, therefore, want to outsource separable (that is classroom) educational activities to the extent possible. The conclusion, however, is that with the growing importance of formal education and academic research the case for reorganizing and integrating research and education in companies and universities in ways that contribute more efficiently to industrial development is strong.

The Competence Bloc Disrupts the Assumed Linearity between Technology and Growth

Some may wonder whether there is now any role left for technology in the growth process. The direct linear path from technology to growth in the popular Schumpeter (1942) tradition and the (national) innovation systems stories of Lundvall (1992) and Nelson (1993) is gone in competence bloc theory. If the economic incentives supporting the commercialization of new technology are lacking there will be no growth, however advanced the technology. And reorganizing institutions and incentives in an economy can generate tremendous economic growth at no change in technology (Eliasson, 1981; Eliasson and Taymaz, 2000).

The technological systems approach of Carlsson (1995) views the innovation process from the technology supply side. The core technology may be manifested in a variety of products. Each new product is normally based on an innovative combination that draws on several technological systems. For example, biotechnology is applied in pharmaceuticals as well as in agriculture, the food industry and many other industries, including the forest industry. Each of these industries uses biotechnology as one among several technology inputs. But the pharmaceutical industry also uses technologies

originating in other knowledge areas, for example chemistry, chemical engineering, mechanical engineering and information technology, in addition to biotechnology. Thus there is no one-to-one correspondence between a technology and a particular product or product area. Indeed, the application of a technology may not at all be in the area originally envisioned by the innovator.

If we view the innovation process from the demand or product (competence bloc) side instead, we may find that the end product (say, delivery of health services) is made up of a whole range of technologies, each dependent on different supporting technological systems. Diagnostic instruments, pharmaceuticals and medical supplies are examples of such components in the delivery of health services (Eliasson and Eliasson, 2005).

While the technology system delivers the *capacity* to innovate, the competence bloc defines the *incentives* to innovate. The technological system and the competence bloc overlap in the *markets for innovation*. The technological system therefore becomes an input in the competence bloc under the innovation item 2 in Table 8.2. The efficiency of the competence bloc is defined by its capacity (1) to reflect customer preferences and (2) to translate those preferences into a competent evaluation at the different selection stages of the competence bloc. We should expect innovative technological supplies to be much broader in scope than the industrial capacities of the competence bloc to evaluate and commercialize the innovations. This capacity is built on experience which – under the assumption of the Austrian–Schumpeterian (1934 [1911]) model – will always be narrower than the total innovation supply. Hence, supporting the development of broadly based competence blocs must be a priority aim of industrial policy. The efficiency with which the competence bloc focuses on the right innovations determines the demand price for innovation and, hence, the incentives as perceived by the innovators in the technological system.

Institutions Define the Nature of Incentives, Competition and Tradability in Knowledge Assets and Offer a Role for the Policy Maker

A complete and horizontally varied competence bloc will both generate spillovers and improve the allocation and use of the existing competence mass. The spillovers will diffuse along many ways and both further reinforce the internal development of the bloc and contribute serendipitously to other related and unrelated industries (Eliasson, 1997a, 2001b). But growth doesn't automatically follow from technology creation and spillovers. Diffusion has to be supported by markets and markets have to be supported by institutions that define the right incentives, orient competition and reduce contractual uncertainties surrounding business decisions.

Table 8.3 *New technology is diffused*

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1. When people with competence move (labor market)
 2. Through new establishment by people who leave
 3. When subcontractors learn from systems coordinating firm, and vice versa (competent purchasing)
 4. When technology is acquired through strategic acquisitions of small R&D intensive firms (*strategic* acquisitions)
 5. When competitors learn from technological leaders (imitation)
 6. Through organic growth and learning in incumbent firms
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Source: Eliasson (1997a).

The property rights establishing tradability in intangible knowledge assets are particularly important for the efficient functioning of competence allocation over the competence bloc (Eliasson and Wihlborg, 2003). Only then will the potential systemic effects through resource reallocation be realized.

The Competence Bloc as a Resource Allocator

Institutional deficiencies mean that Schumpeterian creative destruction (see Table 8.1) will not necessarily lead to growth. If incentives are low or misdirected, for instance because of taxes, firms may choose not to invest or to invest abroad. If competition is overwhelming a majority of firms may contract operations and stagnation might follow. Uncertainty surrounding contractual rights to intangible knowledge assets may make firms internalize critical parts of the competence bloc, thus reducing its allocational efficiency by making the knowledge base of decisions more narrow and raising the risk of losing winners.⁹

The Role of Institutions

Institutions are there to facilitate a non-equilibrium market process (Day, 1986). Hence, some would argue, at least in the short term there is a non-market issue to be dealt with by the policy maker. This is, however, taking one step too far. Institutions in the above sense are always in demand and will develop endogenously in the market. Menger (1871, 1892) argued that the money system developed in the market, as did language, the perhaps most powerful market institution of all (Wärneryd, 1990). Many would even argue that the policy maker is often a negative factor in economic development. Lacking industrial competence and being directed by other objectives than supporting economic performance he modifies indigenous

institutions for the worse. Both are right. The important point is that *institutional formation is extremely competence demanding and not a government prerogative. Mistakes are often made. There are thus more or less well designed institutions in terms of their desired functions.* And it is rarely so that the best form of institutions should be the legal mandatory code preferred by the government (Wihlborg, 1998). In fact, when conventions and interpretations of legal code have developed through an experimental process in the market they have been constantly subjected to functional tests and revised. The same process is usually more hurried and ill advised when enacted politically as legal code. Political decision making, furthermore, is a ritual expected to be taken seriously. It carries the mark of eternity, and rarely is invoked with the understanding of being temporary, soon to be changed. If proven wrong, it is difficult to get rid of (Eliasson, 1990a, 1998a).

Institutions, furthermore, draw significant resources in performing their functions and, hence, are part of the production system of the economy. Hence, also, institutions have to be subjected to Schumpeterian creative destruction. The removal of the craft system in the mid-19th century released the tremendous entrepreneurial force called the industrial revolution (Eliasson, 1991b). Suggestions to break up and privatize the public sector and privileges enacted in law for temporary political majorities should be seen in that perspective.

Institutions, as we discussed them earlier, can be seen as the rules of the game. They may be explicit in the form of law, regulations and legal precedent. They can also be implicit in the form of agreements, culture and the morale of society that more or less influence actors' behavior. Institutions are, therefore, again difficult to destroy because they are part of the mindset of people and not tractable to analytical argument. You may have to wait for a new generation to see change. Understanding this it becomes easier to see that the media and entertainment industry can exercise such a heavy leverage on people and the economy compared to the academic 'institutions', and why politicians prefer to pull policy parameters in the media instead of calling in academics to analyze and explain (Eliasson, 2002b: chaps 5 and 7; also see Chapter 2 in this volume).

The Swedish Policy Model

New institutions develop in response to a demand for their services. The industrial/technological/market change around the mid-19th century called for different institutional and market services than the earlier self-supporting agrarian economy. Above all, many of the social services supplied in the earlier society that was now coming apart were not automatically replaced

Table 8.4 The Swedish policy model

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1. Investment and production decisions should be taken where the competence resides, in the firms
 2. New firm entry and the introduction of new technology should be free
 3. Solidaristic wage policy and an active labor market policy should force failing firms to exit and help released labor to new jobs
 4. Excess profits in well managed firms should be more fairly distributed through taxes and public sector growth
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Source: Eliasson and Ysander (1983).

by market based services, and the public sector slowly stepped in to develop, during the post-WWII period, the institution that has come to be called the Swedish policy model.

In the beginning, this model developed in the market. Eventually, and unfortunately, it was largely transformed into semi-legal code during the 1980s and became difficult to change. The old Swedish policy model can be said to embody the four institutional elements of Table 8.4. It was understood that production decisions would be taken where the competence resides, that is by firm management. Both innovative new firm formation and the introduction of new technology should be free and only governed by economic principles. ‘Solidaristic’ wage policy and an active labor market policy should force failing firms to exit and help released labor to move to new jobs. Finally, the excess profits created in the surviving firms had to be ‘fairly’ distributed through taxes and public sector growth (Eliasson and Ysander, 1983). One could say that the Swedish policy model both put competitive pressure on firms and acted as a social insurance arrangement and a labor market scheme. The Swedish policy model was, however, increasingly modified to suit the large and successful firms and a centralized labor union movement that took the opportunity to exercise more and more influence through the political system, notably through encouraging excessive public sector growth and taxation, and in the end to break the principle of non-engagement (item 1 in Table 8.4) by interfering with the business decisions.

New technologies, the changing industrial structures and market competition are again calling for new and different institutional support, but existing institutions embodying the collective mentality of society are difficult to change. Globalization of production, notably of financial services, means that dynamically competitive markets are permeating economic life everywhere and pushing for change where competitive performance is lacking. Since the latter is typical of the previously protected

public sector and since globalization is undermining the national tax base, privatization of the public sector is being gradually enforced in the market. The market has in fact for a long time been at work breaking up the previously protected political economic system (IUI, 1985; Eliasson, 1986b). But the process is slow and lagging when it comes to cutting down the size of the public budget and its generous transfer system. Too many vested interests block change.

The IUI study (1993) dated the turn for the worse in Swedish relative growth performance to the oil crises of the 1970s and was prepared to acknowledge a positive growth contribution from the Swedish policy model in the early post-WWII period. Krantz (2004), however, disagrees with that and dates the turn for the worse to around 1950. He also compares Sweden with Finland, which had a similar institutional development, but with significantly less political and union influence on the institutional design, and more leverage on the part of business interest groups (Krantz, 2003; Lindmark and Vikström, 2003). Finland has not experienced the same negative development as Sweden has throughout most of the post-WWII period.

Social Capital Overcomes Political Resistance to Structural Change and Opens a Slot for Rational and Market Compatible Policy Interference in the Economy

While firms *have to* cope with the consequences of competition people *do not happily accept* the consequences of business failure, for instance in the form of involuntary unemployment. Political resistance, therefore, sets an upper limit to the performance of the Experimentally Organized Economy. There is a demand in the ballots for politicians offering to turn the experimentally organized market economy into a planned, predictable and politically controlled system where people can vote politically for peace of mind, and ‘short-term politicians’ accede and postpone the costs in terms of lost growth for later generations of politicians to take responsibility for. I define *social capital* as a market compatible substitute for the same publicly provided social service. The Swedish policy model embodied some of these features designed for the old economy. Can it be redefined for the new economy to make people willing and able to cope with, and accept the unpredictability and arbitrariness of the EOE (Eliasson 1983, 1992b, 2001a)?

Knowledge, Health and Social Insurance

As with institutions, the literature on social capital (beginning with Coleman, 1988) goes far beyond that limiting definition. The church, the football team and the sewing circle could all be argued to be important

elements of the social capital of society (Putnam, 2000). The church was a big economic player in the past, an institution that forbade the charging of a positive interest and a social capital provider that locked individuals into a particular moral value system. It was no coincidence that Adam Smith was professor of moral philosophy and devoted more attention to that theme than to what he was good at, economics.

But I only need a narrow definition of social capital to get my theoretical act together, that is the theory of the EOE. To cope successfully with the environment of the EOE the individual actor needs social capital backing in three areas: (1) knowledge or competence, (2) health and (3) (social) insurance (Eliasson 1992b, 1994b, 2001a). The first two categories are innate or individual and the third group determined, political or collective.

Knowledge is primarily a production asset, but knowledge also reduces income risks by enhancing the labor market value and flexibility of the individual. Health is a limiting factor to individual economic performance, largely outside the control of the individual. Social insurance is the most obvious form of social capital. It can be defined in monetary terms, in terms of group security (the sewing circle or the church) or, overlapping with the first item, as an innate ability. Wolfe and Haveman (2001) present an interesting analysis of education as a proxy for social capital. They find that education links directly to positive health and superior labor market performance and argue that there is a causal relationship involved.

Summing Up on Institutions, Social Capital, Transactions Costs and Policy

Firm turnover, while contributing to growth through a positive creative destruction process, also limits it from above by disturbing the market information system (Eliasson, 2005: chap. VI). At some level the coordinating market price mechanisms become disturbed by too fast firm turnover and structural change, creating misallocations of resources rather than a more innovative and growing economy.

Institutions open a slot for market compatible *policy* interference in the economic system. These possibilities relate to the design of institutions such that *incentives* promote socially positive growth behavior among agents, and *competition* prevents socially negative monopoly formation, distorted price signaling in markets and the loss of long-term winners in markets (competition policy). The most important market facilitating policy intervention is the establishment of an efficient property rights legislation, the most intriguing problem of the formerly planned and the developing economies (Eliasson, 1993a, 1998a; Eliasson and Wihlborg, 2003; de Soto, 2000). Taxes can, however, eliminate or distort profit expectations, and – together with regulation – turn markets requiring long-term commitments on the part of

investors into myopic trading bazaars. Making new competitive entry easy and profitable is probably a better competition policy than enforcing corporate break-ups when the monopolies have already been formed (Baumol, 1982; Audretsch *et al.*, 2001).

Transactions costs are the costs of running the economic system. Transactions costs economics, therefore (Williamson, 1986: 174), 'adopts a contractual approach to the study of economic organization'. It maintains (Williamson, 1985: 29) that all agreements cannot occur at the 'ex ante contracting stage'. Uncertainty is too great and agreements will partly have to be sorted out ex post through legal interpretation and precedent formation through litigation. Institutions are what make this possible and improved institutions reduce transactions costs. Hence, the functional definition of institutions includes their role of bridging the ex ante and ex post information gap through appropriately contracted ex ante and ex post enforcement arrangements. It will then also become natural to let the policy maker in through appropriate institutional designs.

The EOE is dynamically coordinated by the markets, and the competence bloc defines the actors with competence needed to allocate assets efficiently, including competence itself. Markets have to be supported by institutions, notably property rights, an understanding that Commons (1893, 1934), North and Thomas (1973) and later de Soto (2000) were instrumental in bringing to the attention of the economics profession. The conclusion from our analysis of the properties of the EOE thus is that a viable competence bloc in the EOE increases the selection menu (spillovers, entry), releases resources for the growing firms through exits and contributes to an efficient choice process (identification, capture, resource allocation) through the actors of the competence bloc. This resource allocation occurs within firms and across markets. To the extent that it takes place within firms, management competence and access to relevant information matter critically. When moved across markets there is a new requirement, namely tradability of intellectual resources (assets) that is all a matter of well defined property rights (Eliasson and Wihlborg, 2003). In that respect the competence bloc can be seen as a hybrid of the hierarchy and the market, a loosely structured 'firm' that distributes production over sub-contractors that is becoming more and more typical of the New Economy (Eliasson and Eliasson, 2005). Intellectual assets are traded in financial markets, notably the markets for strategic acquisitions. The better defined intellectual property rights the more (dynamically) efficient the distributed firm hierarchies, but also the more geographically mobile assets.

The EOE endogenizes both the *time dimension* of the innovation, selection and growth processes and the *geographical dimension*. From that perspective we find that the nation state as a rule is not the optimal innovation

area, but smaller regions and the global economy (Eliasson, 2003a). The nation state, however, has the prerogative to shape the institutions that determine the (transactions) costs for running the economy within its borders, a prerogative that may to some extent overcome the above mentioned disadvantages. The theory of the EOE, however, demonstrates that the institutions regulating incentives and competition, if differently fashioned, can generate large differences in long-term macroeconomic growth, implying also large differences in social change.

The Magnitudes Involved – Generalizing from Case Studies to Macro

The theory of the EOE outlines the principles of economic dynamics. The Swedish micro (firm)-to-macro model MOSES is a quantitative model version of that theory. It can be used to generalize from case studies to a consistent macro analysis (Albrecht *et al.*, 1989, 1992; Eliasson, 1977, 1978, 1985, 1991a; Ballot and Taymaz, 1998; Eliasson *et al.*, 2001, 2004; Taymaz, 1989). The magnitudes involved in dynamic resource reallocations can thus be studied through simulation experiments on MOSES. These allocational effects cannot be understood and quantified without a consistent micro-to-macro simulation model exhibiting dynamics across markets and over a long time span. The medium through which such changes are achieved is reorganization of economic structures.

We have demonstrated through case studies of firms and simulation studies on the micro-to-macro model that very large systemic productivity gains can be achieved at the macro (industrial) level when both firms and the production system at large are successfully reorganized and when a long gestation period has been allowed for (see in particular Eliasson and Taymaz, 2000; Eliasson *et al.*, 2004). Incentives for firms to capture those gains are thus large. It is, however, very demanding on organizational competence to achieve those large effects and firms often fail. Furthermore, no central policy authority in the EOE has the overview needed to achieve the same results at the industry and economy wide levels. Attempts to do it therefore involve large risks for major policy failure. The improvement process is always experimental. It has to be guided by the appropriate market institutions and there will always be a significant transactions cost element in the form of business failure (for a survey see Eliasson, 2002b: chap. 9, 2002c, 2002d). The point made here is that the potential for systemic improvements is large and that actors in the economy are aware of it and attempt through entrepreneurship and business experiments to explore the opportunities, thereby subjecting the entire economic system to positive competitive pressure. Hence, efficient policy should primarily be directed at improving the institutions.

The Shake-Loose Hypothesis

The theory of the EOE predicts that more efficient allocations of resources exist than the current one. The realization of these better allocations is, however, conditional on the existence of sufficient local organizational competence as embodied in the local competence bloc and willingness on the part of the participants of the system to absorb the social adjustment costs and make the effort needed to succeed (social capital). Given that, a crisis among the incumbent mature firms can be viewed as an opportunity (rather than a crisis) since technology resources will now be shaken loose from existing structures to become available for more efficient allocations elsewhere.

Normally such reallocations are taking place continuously through the turnover of projects and firms (entry, exit), a crisis that only pushes the process ahead. Four empirical facts should be emphasized in this context. During the 1990s (1) *distributed production* has become a global phenomenon. Globally distributed production has become a viable industrial (organizational) technology thanks to the emerging C&C technology. It is based on standardization, modularization and commoditization of components which are integrated by systems coordinating firms. We are not only discussing the distribution of physical manufacturing (outsourcing) which has been increasing for decades (Eliasson, 1986a, 1996b, 2002, 2005) but the combined systems productivity effects from distributed and flexible manufacturing and the product quality improvements achievable through integrated product development. With great opportunities and incentives for firms with the requisite organizational competence something is bound to happen.

We can therefore observe that (2) the current recession and crisis in some industries is pushing for a faster change than would otherwise be called for (ABB, Ericsson). Such reorganization also releases resources to be reallocated to new uses. Again, (3) the distorted asset prices associated with the current crisis may also lead to misallocations of resources. The (4) new allocation will not necessarily be in the original neighborhood and rarely in other places in Sweden. It often occurs abroad and the more so the more sophisticated the assets. If sufficient local receiver competence does not exist, localization abroad is a better alternative than the complete close-down of an innovative project.

It is, however, not good for a region if outward investment occurs by mistake because of distorted asset prices and/or insufficient competence to receive (capture) the resources released in the market. The fallout of the resource shake-out, hence, could be very different depending on the circumstances. The theory presented will, therefore, be used to empirically

assess the outcome of the resource shake-out in the Lake Mälär regional economy and to identify a positive role for the policy maker. As a by-product, this analysis of the Lake Mälär regional economy also comes out as a perfect illustration of the complex and unpredictable dynamics of an EOE.

THE LAKE MÄLAR ECONOMY¹⁰ – A CRISIS AND OPPORTUNITY ANALYSIS OF REGIONAL INDUSTRIAL RESTRUCTURING

Sustainable economic development has to be founded on a broad industrial competence base that supports innovative new technology creation and introduction, and facilitates the capturing of the technological spillovers that characterize regional agglomerations of industrial excellence. Competence bloc theory explains and guides policy makers on how to support that commercialization of new technologies. The receiver competence embodied in the industrial competence blocs is particularly important during periods of regional and global recession. A recession often means that a delayed restructuring is initiated and that a different allocation of resources will be the outcome than would be the case, for instance, during an economic upswing. This time the possible emergence of a new economy calls for more dramatic cyclically moved restructuring than normal.

The Lake Mälär region around Stockholm has been the industrial heartland of Sweden for centuries, beginning with the Viking age and the Hansa period. An interesting question is if the economy around the Baltic will again form the lively trade relations that once integrated the whole area economically (Eliasson, 2000c). The Lake Mälär regional economy is the most advanced and industrially diversified regional economy in Sweden. It features three competence blocs from the old as well as the new industry. Some large firms in those competence blocs are emerging from a deep crisis or are undergoing radical structural reorganization as a consequence of a foreign merger, releasing advanced technology and human capital in the market. The question is: is this a great opportunity for industrial transformation or a source of great concern? Will the new bio/pharma/health and C&C industries develop and the engineering industry be successfully transformed? Will the Lake Mälär region make it into the New Economy, or will the resources shaken loose be reallocated to a different (regional) economy? Competence bloc analysis will suggest answers. I go through the role of technological asset markets and deficient competence blocs in industrial restructuring. I then present the four competence blocs of the region and discuss the role of the dominant large firms and their headquarter

locations. Finally, I report on a special study on the restructuring of the Uppsala biotech/pharmaceutical/health industry competence bloc after the merger of Swedish Pharmacia with US UpJohn.

Distressed Markets, Distorted Asset Prices and Long-Term Resource Misallocations

Periods of crisis are usually also periods of economic reorganization. Firms in distress are pushed to do something. Large potential systemic productivity effects, furthermore, offer incentives for firms to move on the opportunities. Development is currently polarized in the direction of both a *global distribution* and a *local concentration* of production to regions with superior competence blocs of industrial excellence (Eliasson, 2003a). The globalization of financial markets has contributed to this development by facilitating reallocations of resources towards more profitable locations. The local supply of competent labor appears to be one of the strongest attractors of advanced investments. During the radical transformation of the Lake Mälaren region that we envision the financial services industry will, however, play a particularly important role. Stockholm features the most advanced financial services competence bloc in Northern Europe, but it is still inferior to the US in exactly those financial competence features that will matter critically for the potentially radical transformation through a recession, that is the capacity to evaluate projects economically from a long-term industrial perspective and make the corresponding long-term commitments.

While *horizontal arbitrage* over firms and markets and across national borders has become increasingly efficient and immediate, this is not the case for *arbitrage over time*. Competence or incentives to form rational long-term expectations and to carry on arbitrage accordingly appear to be generally lacking among actors in financial markets, and this is especially the case during the extreme phases of the business cycle. Markets will, therefore, be characterized by large short-term departures from long-term prices because investors cannot assess the cyclical business situation.¹¹ As a consequence project selection through the competence bloc is likely to be dominated by myopic and unnecessary wealth redistributions and inefficient allocations of resources. The standard view that the market is always right, therefore, is a nonsense view if intermediate actors in the asset markets are ruled by incompetence or myopic views or if they cheat.

However, *complete and horizontally varied competence blocs*, by definition, mean that if the majority of holders of assets are too depressed by myopia *there will always be competent long-term investors who find it profitable to enter the market*. A complete and horizontally varied competence bloc,

therefore, has to include a sufficiently large number of long-term investors who will be sufficiently competent to capture the longer-term winners during a cyclically depressed situation at a profit, and before they are lost at the bottom of a recession. During a deep recession business mistakes are, therefore, committed because of distorted asset prices. Excessively low asset prices may induce sloppy acquisitions, because mistakes are not so costly. Foreigners may acquire Swedish high-tech firms cheaply. This, however, is not necessarily bad for Sweden. The foreign investor may stay with the investment in Sweden. Even if he picks up the technology and leaves, this is better than to lose the value of the winner altogether. The argument is that a small technology-rich economy cannot hold the entire range of receiver competencies needed to capture all winners. As long as a positive local environment for all investments (Swedish and foreign¹²) is maintained the outcome for Sweden will be positive.

The 1970s saw Swedish manufacturing as a highly ranked technology store, very close to the leading industrial nations of the US, Germany and Japan, and well ahead of other industrial nations in exhibiting a very diversified technology base, notably in engineering (Pavitt and Soete, 1981). That base has since then narrowed down dangerously for Sweden at large, but the diversified production structure has been maintained and been further developed in Sweden's supreme industrial region surrounding Lake Mälaren and including the cities of Stockholm, Södertälje, Uppsala and Västerås with a total population of more than 2.5 million. Above all, the *Lake Mälaren competence blocs of industrial excellence* rank ahead of other Northern European regions, exhibiting a strong presence of both an advanced and mature engineering industry and innovative new industry formation, notably in computing and communications (C&C) and in the biotech, biomedical, pharmaceutical and health industries. To this we add the financial services industry, probably the most advanced financial services industry in Northern Europe but not featuring any players of global excellence. The closest competing region exhibiting the same range of industrial technology would be southern Germany: Bavaria and Baden-Württemberg including the cities of Augsburg, Munich and Stuttgart.¹³

The integration of mature industrial technologies with new technologies occurring today, for instance bio and engineering technology with computing and communications, is creating new industrial entities. A parallel surge in the creation of new industries through new firm establishment can be witnessed, both in the C&C and in the biomedical markets. This is the technology and innovation side of the Lake Mälaren *competence blocs* featuring excellence in the computing and communications, biomedical and health and engineering markets. The presence of an advanced

customer base, several universities and Sweden's most prestigious technical university, as well as a broad and varied base of subcontractors serving all industrial competence blocs, allows for an increasingly flexible and distributed organization of both development work and production.

Industrial Diversity – The Three Competence Blocs

The region hosts three competence blocs: the health industry, computing and communications, and engineering.

The health industry

First, on the technology side, the entire *health industry* is well represented, including several leading academic hospitals. Hence, a very competent customer base exists for the biotech and pharmaceutical firms in the region. Swedish academic hospitals have been especially successful in capturing contracts from the global pharmaceutical players in clinical testing of new substances. In addition, Stockholm and Uppsala offer a strong university base in biomedical and biotech research. Several biomedical (Biotage, KaroBio, Marma-Medical, Medivir, Q-Med, Åmic and so on) and medical devices and equipment firms (Electa, Gambro and so on) populate the region with especially strong centers in Uppsala and Stockholm. The main R&D center of *Astra Zeneca* is located in Södertälje. Even though the internal reorganization of this now British/Swedish firm may mean sudden change in its global allocation of activities, the firm has pledged large investments in and a future concentration of R&D to Södertälje. *KaroBio* at the Huddinge academic hospital specializes in nuclear (hormone) receptors. *Pharmacia* has now been divided into a General Electric (2004) and a Pfizer (2002) part and a host of new start-ups, many of which are based on competences developed in Pharmacia, all of them, except Pfizer, with a considerable presence in Uppsala (Eliasson and Eliasson, 2004).

The last ten years or so also highlight the entrepreneurial transformation of the biomedical industry in the Uppsala region in the wake of the partial Pharmacia withdrawal from the city. This positive development has occurred despite a local competence bloc deficient in industrial venture capital competence (more on this below). Using competence bloc analysis the net effect on the Uppsala region of the release of industrially experienced entrepreneurial people and research into new firms is, however, shown to be positive in the long run and preliminary econometric research does not reject that hypothesis (see further below). Innovative technology, two large universities and the very advanced customer base in the large hospitals suggest that the region has the technological potential to become the home of Europe's leading health industry.

Technology is offering the possibility of a great step forward in preventive medicine and life quality improvement and the global industry is facing the technological challenge of redefining its product range from life length extension to life quality enhancement. Realizing that industrial potential involves both opportunities and large risks, the transformation of a publicly regulated sector into an internationally competitive industry requires considerable political rethinking on regulation, active university entrepreneurship and the development of the requisite commercial and venture capital competencies. The technology potential is there, but commercialization competence is not up to exploiting those opportunities in full. Government policy, furthermore, has to be competently enacted with a focus on a long-term healthy economic development (Eliasson, 1997c, 2002a; ISA, 1997).

It has been concluded (Eliasson, 2005; ISA, 2003) that the full exploitation of the Swedish technology base in the health sector, most of it located in the Lake Mälaren region and in the southwest of Sweden (Gothenburg and Lund), requires a more broadly defined competence bloc than Sweden currently has and that this widening and diversifying of commercial competence services, notably industrially competent financing, can only be achieved through foreign investments and/or the immigration of industrially competent individuals. The industry is currently in a flux of experimental reorientation, the outcome still being up in the air. The political/ideological resistance to for-profit care, however, is a serious roadblock in the industrialization of this important collective service.

Gothenburg based *Capio* was allowed to acquire and run the St Göran emergency hospital in Stockholm during the bourgeois regime, a situation the social democratic administration tried to reverse. The new bourgeois administration (since Autumn 2006), however, looks more favourably on private healthcare. *Capio* has also been using its experience from operating the St Göran hospital to expand in foreign health care markets. *Pyrosequencing* merged with *Personal Chemistry* in 2004 (both in Uppsala) and acquired US *Biotage* to build a stronger platform for expansion. The new company (now called *Biotage*) is looking for an additional acquisition, probably in the US, to complement *Pyrosequencing's* old product line. This is an example of a Swedish firm attempting to build a global company from a base in Sweden.

Pharmacia Biotech, which merged with British Amersham in 1997 and changed its name to Amersham Biosciences, was acquired in late 2003 by General Electric. General Electric, with a strong presence in medical technologies (instruments) and enormous resources, is planning to expand its medical businesses using Uppsala as a base. This is an example of a foreign investor with large resources establishing a sustainable presence in Sweden

on the basis of the local technology supplies and the availability of educated and industrially experienced labor.

A third example is *NobelBiocare*, which was founded in 1981 on the basis of a technique to fasten titanium in bone. After a very long gestation period, slowed by inappreciative dentists ('incompetent' customers)¹⁴ and a badly equipped Swedish medical competence bloc, the entrepreneurial new dental technology venture began to reach industrial scale production in the late 1990s. NobelBiocare opted for a strategy of internal development and growth which took longer than a more daring acquisitions strategy. As a consequence, a Swiss competitor has been able to circumvent the patents and catch up. During the last recession NobelBiocare's shares were valued very low. The company was acquired cheaply in 2001 by a Swiss company and the legal site was moved to Switzerland. The corporate headquarters, however, so far remains in Sweden (Gothenburg) where the technology and the competence resides (*Dagens Industri*, 24 October 2001, 10 April, 18 May 2002, 26 May 2004; *Svenska Dagbladet*, 17 September 2003) and a specialized dental competence bloc seems to be emerging in the area, including *Biora* in Malmö (also Swiss owned) and *Astra Tech* in Gothenburg (Sv.D., 30 September 2003).

Perbio Science is again an entirely different story. During the 1990s the Swedish chemical group Perstorp acquired the two US companies Pierce Chemical (from Pharmacia) and Athos Medical, both in cell culture. The Perbio division in Perstorp attempted to buy Pharmacia Biotech from Pharmacia. The strategy was to build a platform for global expansion in cell culture, and to sell off the much larger instrument business of Pharmacia Biotech, that Pharmacia got with its acquisition of LKB Products. An interested American buyer had already been lined up. Pharmacia Biotech, however, backed off to be acquired by UK based Amersham in 1997. With the opportunity for a Swedish based platform for growth gone (there were no other Swedish companies in the field) Perbio Science instead allowed itself to be acquired by US Fischer Scientific (*Dagens Industri*, 27 June, 28 August 2003).

The health industry competence bloc in the Lake Mälaren region is an excellent illustration of how one advanced company (Pharmacia) can serve the region and the world as an advanced technical university (Eliasson and Eliasson, 2004). The Pharmacia case is also the 'social science experiment' that allows us to test for the positive version of the shake-loose hypothesis.

Computing and communications (C&C)

Second, the Lake Mälaren region already features the world's most advanced agglomeration of *mobile telecommunications* technology with *Ericsson* in Stockholm and *Nokia* just across the Baltic, both firms rapidly moving into

the *broadband* and *mobile Internet* market. Nokia also has a strong presence in the Stockholm area. In addition, Stockholm is the home of the major telecommunications operators, including Telia, which has merged with Finnish *Sonera*, and most of the related software and programming competence. This competence bloc has already reached a critical mass, the stakes are high and, despite the severe 2002/2003 recession, most international firms in the technology have a presence in the area. Technological spillovers are abundant leading to the creation of many new industries. To give an interesting special example, the area has one of the largest representations in the world in on-line game design and the entertainment industry, notably popular music, which is driven by the expected emergence of broadband mobile Internet and the possibility of serving the rapidly growing market for on-line multiplayer games.

The deep 2002/2003 crisis of the global telecom industry, however, has dramatically cooled its activity level and placed Ericsson, as well as its entire industrial support structure, on crisis alert for some years. Both Ericsson and TeliaSonera released human capital in the market during the 1990s and notably during the crisis years of 2001 to 2003, and a number of new firms in specialized technologies have been established in the Stockholm area. All large LCD and most plasma screens in the world, for instance, use technology developed by *Micronic* founded in 1989. In fact, all growth in employment in the industry over the last ten years has taken place in small firms, notably very small and newly established firms (Johansson, 2001a). Many of these new players, for instance antennae manufacturer LGPAllgon, have been acquired by foreign firms, and large parts of production outsourced from Ericsson and TeliaSonera have been picked up by US Flextronics. One challenge to the Ericsson and Nokia mobile telephone dominance and the entire Scandinavian telecom industry, furthermore, is the emerging computer technology-based Internet telephony with its technology centre in the US (see further Eliasson 2002b, c).

Engineering

Third, some of the most advanced Swedish *engineering firms* are located in the Lake Mälaren area, several of them with their headquarters. They represent the whole range from heavy engineering to fine mechanical technology and are supported by a strong network of advanced subcontractors. ABB, one of the world's leading electrical equipment manufacturers, has a strong presence around Lake Mälaren, notably in Västerås. It has, however, been through a period of very serious trouble and is reorganizing itself to maintain its position as the world leader in the more focused markets of electricity distribution and industrial automation.

Electrolux is the world's largest whiteware appliance manufacturer, headquartered in Stockholm, as is *Atlas Copco*, the world leader in the air compression business and in pneumatic, hydraulic and electric tools.

Besides the research center of *Astra Zeneca*, Södertälje is also the home of *Scania*, one of the world's three largest and the most profitable of the heavy truck manufacturers. *Volvo Construction Equipment* (VCE) in Eskilstuna has developed into the third largest construction equipment company in the world after Caterpillar and Komatsu. And *Bacho* (in Enköping) is still making its world famous adjustable wrenches, albeit under foreign ownership. *Alfa Laval*, the world's leading manufacturer of industrial heat exchangers and separation equipment, has been reintroduced in part on the Stockholm Stock Exchange after having been part of the Tetra Pak group for many years. AGA, once a global Swedish flagship in inert gas technologies, has virtually disappeared under German ownership after a series of failed attempts to diversify into new markets. *AssaAbloy* has, however, emerged, after some 100 acquisitions as the world's No. 1 manufacturer of security locks, with its base in Stockholm. The firms mentioned are (or have been) international and big and are engaged in the emerging industrial competence of *distributed production* that increasingly characterizes the engineering firms of advanced economies, featuring the systems integration competence of globally coordinating development work and manufacturing and distribution over networks of specialized subcontractors. Only a few industrial countries, among them Sweden, have developed that competence. Where this organizational competence has been developed firms function as spillover sources of that technology, which makes their location attractive for other firms. The range of specializations of this industry, however, has narrowed considerably over the last decade. Several firms have outsourced large parts of their production to subcontractors and with a few exceptions new firm formation in new areas is absent.

Specialist Subcontractor Supplies

The local availability of specialist subcontractors has been consistently mentioned together with skilled labor as the locally attractive features by the large firms in all three industries. An advanced specialist subcontractor industry holds a significant part of the local technology supply. The resource shake-out from some of the large players affects this situation in several ways. *First*, the demand for specialist subcontractor services is reduced because of the diminished activity level. At the same time the supply of subcontractor services increases, since the released resources often re-establish themselves as subcontractors. In the ABB case a large

part of the resource release has been in the form of outsourcing where ABB has remained the main, and very competent, customer. The increase in subcontractor supply, because of the shake-out, furthermore, has become a critical resource for some firms to establish a platform for growth by distributing their production over subcontractors. A rich supply of specialized subcontractor services lowers entry barriers in industries previously dominated by large firms and makes economies of scale possible for small players through competently distributed and integrated production (Eliasson, 1996b, 2002b).

A Unique Concentration of Corporate Headquarters

Competence bloc theory emphasizes the role of 'competent financing', notably industrially competent venture capital provision. Financial services are a fourth and large industry in the Lake Mälaren region. It is very much oriented towards the servicing of the large companies. It features the largest stock exchange in Northern Europe, now (since 1998) run by an innovative new player in the global derivatives market (OM) and the corporate headquarters (CHQs) of a number of large firms, including Atlas Copco, Electrolux, Ericsson and Scania, and, as well, the headquarters of the large Swedish banks and insurance companies.

Large economies of scale and fast reactions to only small differences in trading charges have been forcing stock exchanges to cooperate or merge. OM in fact made an unsuccessful bid in 2000 to acquire the London Stock Exchange. In 2002 the London Stock Exchange was in turn courting OM, offering to buy it or cooperate with it, and establishing a Stockholm office to attract promising Swedish growth companies, but eventually giving up its ambitions (*Dagens Industri*, 2 September 2004). After Deutsche Börse had also unsuccessfully courted the London Stock Exchange, as had Euronext and Nyse in 2005, new rumours resurfaced in late 2005 linking OMX and the London Stock Exchange. OM had acquired the Finnish stock exchange HEX in 2003. The new OMX purchased the Copenhagen Stock Exchange in 2004 and the Swedish government was selling its shares in OMX in order not to slow the process. Since OMX already owned the Baltic stock exchanges in Tallinn, Riga and Vilnius and presented a 'Nordic List' in September 2005, Oslo is also growing interested in joining despite the fact that half of the new Nordic stock market will be composed of Swedish firms (*Dagens Industri*, 1 and 2 October 2004, 30 September, 25 October, 29 and 30 November, 5 December 2005; 23 May 2006; *Dagens Nyheter*, 28 July 2005; *Financial Times*, 11 March 2005; *Svenska Dagbladet*, 21 September 2004). If all this comes to a successful close OMX will eventually be running all the Baltic stock exchanges including Tallinn, Riga and

Vilnius. In May 2006 Nyse acquired Euronext, and left new opportunities for OMX, the London Stock Exchange and Deutsche Börse to come up with new combinations (*Dagens Industri*, 15 August 2005; *Dagens Nyheter*, 5 October 2005; *Svenska Dagbladet*, 3 June, 16 November 2006).

In any case a financial bridge between jointly operated Baltic stock exchanges and London would introduce a new dimension to industrial life in the Lake Mälaren/Baltic region. The effects could go both ways in terms of attracting foreign investments to the region. But we are still talking about corporate banking and the large firms. There would probably be no, or very small, effects on the local transformation of the Lake Mälaren economy, where industrially competent venture capital will be decisive for the establishment and growth of new firms in radically new technologies. Competence in that area leaves a lot to be desired in all Nordic economies, even though there seems to be a general agreement that the new and small firms in the Lake Mälaren economy, nevertheless, draw a competitive advantage compared to Southern Sweden and the Copenhagen area from the local presence of the largest financial concentration in Northern Europe (Eliasson, 2005; chaps IV and V).

The corporate headquarter factor is still important, being largely financial, concerned with strategic acquisitions, company valuation, relations to financial markets and the global allocation of resources. That function requires interaction with a sophisticated financial community with competent and industrially experienced financial analysts (Eliasson and Eliasson, 1996; Eliasson, 1997b). This is a dimension where the Lake Mälaren region compares well with Northern Europe at large, but not with London and the US and, hence, has to be further developed to remain a strong attractor of industrial competence in the future. The clustering of CHQs is important because the CHQ is often the ultimate end of a successful career in a large firm. A large number of CHQs in a region, therefore, is a strong attractor of talented, knowledgeable and entrepreneurial and also interesting people (Eliasson, 2001c), and this role of the region is at risk because of the troubled large firms. In fact a rapidly increasing number of people in the Lake Mälaren region are working in foreign companies with CHQs abroad (*Svenska Dagbladet*, 7 July 2004).

Several Dominant Large Firms in Trouble, and New Firm Formation Much Too Low

The large international firms of the Lake Mälaren region represent current and (at least) former excellence in their field. One large firm in each of the three first industrial competence blocs has recently gone through a deep crisis (ABB and Ericsson) or radical reorganization, partly withdrawing

from Sweden (Pharmacia). The first observation to be made is that the Lake Mälär economic region exhibits an impressive example of industrial excellence to host such a large number of large international players, considering its total population of just above 2.5 million. It should be no surprise that some of these firms occasionally run into serious trouble. The new thing is that this is the first time, at least since the depression of the 1930s, that several very large Swedish multinationals have simultaneously gone through a period of deep trouble and restructuring. The first research question is whether this should be regarded as a serious concern for the economic future of the region. The answer is no, provided the policy makers play their cards right. In fact, the extreme dominance in each industry of very large firms should be as much a cause for concern (IUI, 1993; Eliasson, 1993a; Glete, 1998). The theoretical argument presented here (the shake-loose hypothesis) is that technologies locked into these big corporations could be more efficiently employed elsewhere, in smaller and more innovative firms, provided the competence to commercialize them over the market is locally available.

The very fact that such a concentration of excellence has existed in this region means that a significant infrastructure of skilled workers and scientifically trained people and specialist subcontractors serving these industries should also be in place. This infrastructure should be a locational advantage for new start-ups of people with competence who are leaving the firms in crisis and for foreign investors. This is so even though deficient competence blocs, notably deficient in industrially competent venture capitalists, subject new high-tech establishments to often prohibitive risks. Compared to the rest of Sweden, Stockholm under all circumstances features the most competent financial services infrastructure which puts the Lake Mälär region at an advantage compared to the Malmö/Lund/Copenhagen and Gothenburg/Trollhättan/Uddevalla regions, the former representing a growing biotech competence bloc and the latter an engineering competence bloc with a touch of innovative biotech and pharmaceutical activity.¹⁵

One can argue (Eliasson, 1993a) that Swedish policy makers should have expected long ago that their large international companies, one after the other, should run into trouble. Now it is suddenly happening, and no one should complain. Key to a successful transformation, however, will be to recapture value and to grow new firms. And existing small firms will have to pick up released resources and start to grow. This situation is new to Sweden, and circumstances are not entirely favorable. The 'Global Entrepreneurship Monitor 2002' (GEM) study on new firm establishment places Sweden close to bottom among the industrialized economies when it comes to entrepreneurial qualities, new firm establishment and the propensity to grow among small firms. The industrial transformation of the

Lake Mälars economy, therefore, is balancing on a sharp edge. There is an abundant and broad based supply of sophisticated new industrial technology, but a lack of a similarly broad based receiver competence or competence to commercialize it (as embodied in the competence bloc), such that the industrial pick-up among new and small firms in the Lake Mälars region might stall. The pick-up of the released technologies, furthermore, will not take place in Sweden outside the Lake Mälars region. If not in the Lake Mälars region there might be no pick-up at all, or it will occur in another country. In fact, to succeed Swedish policy makers will have to be on the alert and stand ready with the right policy dependent infrastructure to stimulate new firm establishment.

Some positive signs can be noted. Johansson (2001a) observes that employment growth in the C&C industry in Sweden during the last ten years has all been carried by the new and very small firms. The large firms, and notably Ericsson and TeliaSonera, have significantly reduced their employment. Eliasson and Eliasson (2002), furthermore, observed that the Swedish health care sector is superbly positioned technologically to become a European industrial leader in the field, if only the health care competence bloc could be made complete and sufficiently varied, and policy makers made willing to let the actors in the sector behave and compete as in other advanced industries. Some positive results can also be reported from the Uppsala studies on what has happened in the wake of the Pharmacia withdrawal (see further in later section on Pharmacia and Uppsala).

Finally, with ABB at last out of trouble and with Atlas Copco, Electrolux and Scania and a number of other players in the engineering industry in good shape, even large firms should be able to pick up the slack in the region. The big problem of ABB has been its hangover from the excessive acquisitions spree in the past, the large asbestos damages from its subsidiary (Combustion Engineering acquired in 1989) in the US, and the German and Swiss operations. Just for balance, it should, however, be mentioned that the turbine division that ABB sold to French Alstom in 1999 and 2000 has generated losses in that company of some \$6 billion, or more than the estimated legal asbestos damages ABB may have to pay (*Business Week*, 2 June 2003; 4 July 2005; *Dagens Nyheter*, 'Ekonomi', 2 November 2003; *Svenska Dagbladet*, 10 January 2004, 22 March 2005; Eliasson, 2005).

The long-term success of the transformation of the three industries in the Lake Mälars region will be determined not only by the entrepreneurial capacity of its new and small firms but also by foreign investors that decide to locate in the region for the long term to capitalize on an abundant technology supply and an educated labor force. And the existence of complete and horizontally varied competence blocs serving all industries will be critical, a conclusion already drawn in the previous theoretical analysis.

Is the Unique Capacity of Swedish International Firms to Serve as Sophisticated Management Schools in Jeopardy?

Innovative management experience from large firms (item 6 in the competence bloc in Table 8.2) has been critical in taking winners to industrial scale production and distribution. Such competence breeds on experience from successful careers in large and growing firms. Are the difficulties of large and international Swedish corporations and the foreign acquisitions and relocations of CHQs out of Sweden the consequence of a deteriorating large firm leadership competence in Sweden?

An interesting aspect of the Western educational system is the belief in a large number of elite educational institutions staffed with professors with little or no experience in management, leadership and entrepreneurship that teach management, leadership and entrepreneurship. The other side of the same coin is the common belief among industry people that the best management education available is a varied career in an advanced international firm (Eliasson, 1984b, 1993c, 1994a, 1996c). The quality of that education is to a large extent decided by the choices and the efforts of the career candidate him- or herself. For example, Electrolux had the reputation of being 'the best management school' in Sweden during the reign of its entrepreneurial CEO Hans Werthén. This rosy picture has, however, changed considerably during the 1990s. The large Swedish international giants are no longer as successful, several have been acquired by foreign firms and the question is if the managers of today are as excellent as those of the past and, therefore, if the firms still operate the dual functions of being both excellent firms and excellent management schools.

There are several possible explanations for the possibly deteriorating large firm leadership competence in Sweden. *First*, Sweden has been extremely lucky to be able to build that competence on a broad base a long time ago and 'retool it intellectually' and innovatively several times over the postwar period. A repeat of this should not be expected in the future and should not have been expected the last time after the oil crisis years. *Second*, the management task has been repetitive and learnable until now and/or the large firms in mature industries have been favored in many ways by the Swedish policy model, at the expense of the small firms and new firm formation (see Eliasson and Ysander, 1983). Hence, the success story of the large Swedish firms has been more a matter of government support than of true management competence. *Third*, this has now become a handicap, as the tougher demands on management in an emerging New Economy make themselves felt. Since management is not up to the task the firms' performance is suffering. The *fourth* possibility is more intriguing. The in-house, career management school is being disorganized and/or global demand for

Swedish management talent is increasing. Large firms are fragmenting and distributing their production. Foreign firms are acquiring large Swedish firms and CHQs are being moved abroad. Together, the systematic career monitoring and selection are no longer functioning as well and the peaking of a career increasingly occurs abroad, not necessarily in a Swedish firm.

All four factors certainly are sufficient to explain the less than excellent performance of an increasing number of large Swedish firms over the last decade or so, together with the dismal performance of new firm establishment and small firm growth in Sweden. The management school of the real world should not be expected to work as well under the transition from an old to a new economy. The new engineering industry with distributed production will not offer the repetitive management experience of the old engineering industry, and applying an excellent CEO management experience from the old international engineering giants to a biotech or a C&C research intensive firm easily becomes a disaster. There will be no reliable guidance from the academic community which is largely unaware of what is going on at the micro industry level.

The large firms are contracting or pulling out. They won't pull the region out of its recession. A successful weathering of the transition, therefore, has to be experimental and supported by vertically complete and horizontally varied competence blocs in turn supporting the establishment and growth of innovative new and small firms. There is also the complementary possibility of calling in industrially sophisticated foreign investors and making it attractive for them to establish on a sustainable basis. In some areas this will be necessary. And this is not a bad alternative. The industrialization of Sweden some 200 years ago was based on foreign investors and immigrant technology. But it won't occur without a prior Schumpeterian creative destruction of the institutional structures that define incentives and orient competition and of the political mentality of Sweden.

The Pharmacia Withdrawal from Uppsala

Pharmacia, which dominated the biotech and pharmaceutical industry in Uppsala, merged with US UpJohn in 1995 and has since withdrawn from and spun off a large part of its earlier presence in the Uppsala region. The CHQ was moved to Peapack in New Jersey in 1995, and significant personnel resources with a scientific background and industrial experience have been released in the Uppsala market. PharmaciaUpjohn soon got into trouble. Pharmacia Biotech merged with UK Amersham in 1997. A new CEO reversed the course, acquired US Monsanto to get access to a particular technology, soon sold the rest of Monsanto back to the market, changed the name back to Pharmacia Corporation and sold what was left

to US Pfizer in 2002, which has more or less wound up its Uppsala activity. In 2003 Amersham Pharmacia (now Amersham Biosciences) was acquired by General Electric's medical business which appears inclined to locate in Uppsala for the long run to exploit the rich supply of biotechnology and scientifically trained and industrially experienced labor. The ABB situation in Västerås and all around Lake Mälaren and the Ericsson crisis in Stockholm have been similar but more recent cases of a shake-out of technologies and human capital from a large hierarchy. The Pharmacia case, however, offers a local social science experiment on a large scale that makes it possible to test our previous predictions from the theory of the EOE (the shake-loose hypothesis) that more efficient allocations of resources than the current one exist and can be realized if the requisite local receiver competence (vertically complete and horizontally varied competence blocs) is in place.

Almost ten years have passed since the shake-out and if the hypothesis is correct at least some of the immediate reduction in employment in the industry should have been absorbed in other related industries and/or in new companies. There are two caveats. First, while the negative employment effects from Pharmacia's withdrawal are immediate, the positive effects take a long time to emerge. Hence, the period is still too short to test for this long-run hypothesis. Second, some, perhaps significant, resources have spilled outside the region.

Fridh (2002) has tested for the shake-out resource reallocation hypothesis in Uppsala econometrically, using statistical material covering all biotech, medical instrument and pharmaceutical companies in Sweden. She has performed two tests. The first was carried out on firm (establishment) data. Individual establishment growth (in employment) has been related to a number of firm explanatory variables such as establishment age, size, ownership and so on and an Uppsala dummy representing the exit of Pharmacia. The other test is regional using the same age, size and ownership variables and in addition regional firm turnover variables. Since firm turnover has been higher than normal in the Uppsala region (because of the Pharmacia withdrawal) this is an indirect test of the Pharmacia shake-loose hypothesis. The first test gave no significant result on the Pharmacia shake-loose hypothesis, even though all the coefficients had the correct signs. The turnover test, however, turned out strongly significant. It was not possible to reject the null hypothesis that the Pharmacia withdrawal had had a positive or zero effect on biotech employment in the Uppsala region. In other words, for the time being we conclude that the Pharmacia shake-out has not had a negative impact on local biotech employment.

Given the caveats, I thus feel confident to stay with the positive version of the shake-loose hypothesis to be tested further when more years have

passed and more data has become available. This conclusion has, however, to be accompanied by the following amplification. A straightforward competence bloc analysis of the Pharmacia/Uppsala case would have concluded that the local competence bloc was neither sufficiently complete nor horizontally varied, notably when it came to industrial venture capital competence. Local Swedish new firm formation would not have been sufficient to turn the shake-loose hypothesis positive. *The positive outcome depends to a significant extent on foreign investor competence that decided to stay for the long run.* The increasing foreign investor presence is typical of Sweden at large and is reflected in an increasing foreign ownership share on the Stockholm Stock Exchange (*Dagens Industri*, 18 November 2006).

Prospects for Positive Change

Since the industrial revolution the Lake Mälaren region has developed into an impressive concentration of industrial competence, notably in the areas represented by the three industrial competence blocs. The population base for this concentration of industrial competence is small, 2.5 million, and in recent years the broad industrial base has been maintained through the outsourcing of simple production, notably production workers, to other areas of the country and abroad. During the second half of the 1990s, however, several dominant firms and previous excellent players have met increasing problems and have been shrinking and releasing both technology and competent labor. This situation is pronounced for the Lake Mälaren region but also typical for the rest of Sweden, and the mirror image of stagnating and even failing large firms is the stagnation at the macro level in the last decades shown in Figures 8.1 to 8.5.

Summing up, we conclude (*first*) that the large international firms – the characteristic of Swedish industry – have been experiencing serious problems. This (*second*), however, was a prediction already made in the IUI 1993 study and derived from our theoretical analysis. It should be no surprise and no cause for concern, since, (*third*) there are better alternative allocations of the resources released in the market than keeping them locked into the big firms. These better allocations, however, will have to be realized through new firms (winners) rapidly picking up resources and growing (item 1, Table 8.1) and this will not occur locally on the scale needed unless policies vis-à-vis new entrepreneurs and small firms are radically changed for the better.

Institutional improvement, however, has to be market compatible and introduced through institutions that raise incentives for entrepreneurship and competition, something that would require a difficult reorientation of the ideologically based Swedish policy tradition. The mentality of that

tradition persists and affects new firm formation negatively, and even though some improvement has occurred, notably the removal of inheritance taxes, it generally proceeds at a much slower rate than the change in circumstances calling for legal and institutional change. Another critical concern relates to the population base. Is a population of 2.5 million people sufficiently large to return the region to sustainable fast growth in all three industrial areas?

Finally, most resources released from contracting firms in the Lake Mälär region are too sophisticated to be reinvested elsewhere in Sweden. The alternative allocation of winners will be abroad, or they will be lost. The successful transformation of the Lake Mälär economy will, therefore, require that the competence blocs in the three non-financial industries be made complete and horizontally varied. A full scale expansion in all industries, including also the financial industry, in line with the industrial potential, furthermore, would draw considerable human capital that to a great extent would have to be supplied from outside the region.

Looked at from the point of view of all Sweden we apparently have a case of increasing regional diversity coming up, that is if the Lake Mälär region goes through a successful transformation, sophisticated human capital will have to be attracted from other parts of the country, most probably from the established university cities with existing industrial neighborhoods, and from abroad. Here the Lake Mälär regional economy will be facing competition from other attractive regions with a considerable competing supply of human capital, but in almost all cases with a more attractive tax environment and in most cases also a more pleasant climate. In fact, a return to fast growth in the Lake Mälär economy and in the Swedish economy at large has to be based on immigrant competence. The obstacles (pushed by unions) that prevent already immigrated competent labor from becoming gainfully employed, therefore, will have to be removed. This, however, will hardly be a viable option under the current Swedish tax and labor union regimes (ISA, 2003).

In addition, the physical infrastructure in the Lake Mälär region is not up to standard and, as it is, will not support an increase in the local population. Four-lane motorways have not been built to match a sophisticated industrial economy and housing is scarce, to a considerable extent because of rent regulation. In the longer run, however, this could be attended to. Land is not scarce and if a high capacity motorway and commuter system could be completed with some speed to tie the Lake Mälär cities together all production would not have to be concentrated on Stockholm and daily commuting through the entire region would be a possibility. Here, the Lake Mälär region compares unfavorably with the more densely populated Bavaria/Baden-Württemberg region in South Germany (Eliasson, 2005;

Chapter 7 this volume). The long planned and not completed Lake Mälaren railway (with double tracks) cannot compensate for the lack of motorways that make flexible communication in all directions possible. It is interesting to note here that, when the business community emphasizes the need to solve traffic and access problems, local and central government politicians (who have monopoly control of these decisions) place priority on easing up urban planning and building permits, that is on relaxing regulation that has earlier prevented the solving of the same problems (*Svenska Dagbladet* 'Näringsliv', 11 October 2003). It is, therefore, unlikely that such an infrastructure and the needed amenities would develop as a result of political decisions. Since so much is politically regulated there is considerable risk that a slow and noisy political process will delay the successful economic development of the region, which very easily becomes synonymous with blocking not only the regional development but the development of the entire Swedish economy.¹⁶

Outsourcing of simple manufacturing is a path to resolving part of the problem. This solution has been in progress endogenously for a long time and little low skill physical manufacturing remains in the Stockholm area. Similarly, in cities such as Västerås where skilled workers dominated manufacturing employment some 10 to 15 years ago, engineers are now the typical employees of firms like ABB. Increasing housing costs help intermediate the change, making city life too expensive for people holding simple, low income jobs. Similarly, the outsourcing of government bureaucracies makes room for the higher-level functions of private industry. Since government bureaucracy plays a limited positive role for private industry development this is a positive change. But the outsourcing of simple jobs will not be sufficient to compensate for too small a population base.

I have paid considerable attention to the local presence of complete and horizontally varied competence blocs, the actors of which would support the commercialization of spillovers from contracting big, and often high technology, firms. Excessive optimism is not the appropriate term to describe the situation. But neither is excessive pessimism. It is easy to weigh in the negative factors too heavily and, who knows, a change in policy may come about suddenly. Perhaps the most difficult policy problem is the conflicting demand for resources between expanding regions and the rest of Sweden.

THE CASE OF ALL SWEDEN

History shaped the current industrial geography of Sweden some 150 years ago. The introduction opened with the question as to whether a new industrial revolution was now in the making, creating new potential allocations

of resources that are far better than and different from the existing ones, some of them outside the country. The answer from this analysis is: Yes, probably, and, even if such an outcome is regarded as less likely, no responsible policy maker should risk the economy on a prediction that it won't occur. While the industrial technology bases of the Lake Mälaren and Southwest Sweden regional economies appear first class, the local competence to commercialize the abundant supply of technology leaves a lot to be desired. The underlying logic of my analysis has been that if both of the two regions are not successfully transformed into a new industrial organization the entire Swedish economy will be at risk. A successful recovery of the Lake Mälaren region in particular, however, would drain resources from the country at large and require an immigration of human capital from abroad, making the diversity of regional development even more pronounced than before. The perhaps most difficult national policy dilemma, therefore, concerns the more pronounced regional diversity that would come with a successful transformation of Swedish industry into a new economy and the consequent intensified competition for scarce human capital.

The empirical method of this study has been to investigate industrial macro performance in terms of the underlying firm and market dynamics, using competence bloc analysis. I argued in the first section that technology may be moving the global economy onto a radically new production organization and that the policy risks were large not to recognize this as a possibility. In the next section the theory of the EOE and of competence blocs was introduced to study the micro dynamics of this possible transition. It was concluded that lack of industrial technology was not a Swedish problem, and above all that local development of first-class technology is not sufficient to create a new economy. With a too narrow commercialization (or receiver) competence even the technologically most advanced economies will fail to get on the boat to the New Economy, very much as happened for most economies of the world during the last major industrial transformation more than a century ago. Supporting simulation studies (notably Eliasson *et al.*, 2004; for an overview also see Eliasson, 2002b) have also demonstrated that the potential for systemic productivity improvements at the macroeconomic level is great, provided other economic and institutional circumstances are right and the requisite receiver competence exists locally among incumbent firms and potential new entrants. Lacking the same commercialization capacity could easily mean missing the boat, that is a major allocational failure.

The case studies of the Lake Mälaren regional economy in this chapter underscored the theoretical analysis. A break-up of industrial structures has been in progress. Advanced technologies have been generously released from

large firms breaking up to be picked up in the markets by local and foreign investors. The local investors are normally not capable of commercializing the rich technology supplies alone, and the conclusion was that sustainable support of foreign investment and immigrant competence are needed to return the Lake Mälars economy to former industrial glory, meaning a willingness of foreign investors to continue with Sweden as their base. This, however, does not mean that local Swedish abilities should be disregarded. A particularly strong signal of political incompetence is the current (Autumn 2006) tax regime that handicaps Swedish investors when competing for local investments with foreign investors. A first policy priority therefore must be to create better and fairer economic institutions for Swedes.

The regional/national conflict looming over the ongoing regional transition has similar political overtones. Even though both production and development work can be distributed geographically, the clustering of activities and people in urban areas knitted together by an efficient commuting and housing infrastructure still carries a strong competitive edge, and there are limits to how many such urban areas a limited population can support. For Sweden, I doubt there are more than two of any significance: the Lake Mälars region and Southwest Sweden with a population base each of some 2.5–3 million people or some two-thirds of the total population. And a successful industrial reorganization of these regions will require more concentration into single connected commuting areas and more people, notably the most educated and able, who can only be attracted from the rest of Sweden and from abroad. This will clash with regional policy ambitions and if the regional promoters get the upper hand, for instance in the form of under-investment in government monopolized infrastructure in the two critical regions, the whole transition may be at risk, without benefiting the peripheries in any positive way.

Swedish manufacturing had been found already in the 1993 IUI analysis to be in a good technological position to take advantage of what was happening, with the caveat that the dominance of large firms in mature industries made the innovative capacity of Swedish manufacturing industry look broader and more impressive than it really was. More than ten years after the IUI 1993 study the public sector can still be labeled a troubled sector. Now, however, several of the previously excellent manufacturing companies also belong to the same category and, even though there may be many entrepreneurial opportunities, the institutional, economic and policy support needed to turn them into fast growing companies is not complete and not politically wholehearted.

We can therefore observe that the misgivings of the 1993 IUI analysis have come true. Many large firms have not made it through the last ten years, too little of the needed institutional and policy change then suggested has

been enacted, and the entrepreneurial potential of the Swedish economy is not supported by the complete competence blocs needed to turn new technology into commercial winners and forceful positive industrial change.

There are, however, at least three positive observations to make. *First*, academic analysis, and all academic theorizing, is stylized. Analysis will never have the resolution needed to pick up all the important factors at work in a dynamic economy. We may have missed some factors, even some positive ones. But this analysis has been framed as a risk assessment: what to do if a bad, but not unlikely, scenario develops. If it doesn't our policy suggestions will cause no harm. Development will only be better, and for future generations in particular. *Second*, the transformation of the local Uppsala economy, studied separately, appears to be turning out better than our theoretical logic suggests. The reason is that the lack of local Swedish commercialization competence has been compensated for by foreign investors, many of which, so far, have opted to stay for the longer term to exploit the ample local supply of reasonably priced technologies and well-educated and skilled labor, to the benefit of Swedish industrial development. *Third*, Europe at large appears to be suffering in varying degrees from the same problems as those diagnosed for Sweden, differing in particular between the national and regional levels. Together, this means that the underlying new technologies seem to carry the industrial potential for a New Economy creation and that Sweden, thanks to foreign investors, seems to have fared relatively well in a continental European comparison.

NOTES

1. A prediction underscored already in the IUI 1985 long-term survey *Att Rätt Värdera 90-talet* (see Chapter VII and Bilaga VI in particular).
2. See Eliasson (1992a). Eliasson (1996a: 3ff.) demonstrates (in terms of a generalized Salter curve analysis) how this competition process generates endogenous growth in the Swedish micro-to-macro model. On pages 112ff. the mathematics relating (temporary) monopoly profits to total factor productivity growth is demonstrated.
3. This point can be brought home more forcefully by adding the second and third information paradoxes in Eliasson (1990b, pp. 16 and 34 respectively). The *second information paradox* has to do with the difficulties of measuring quality and states 'that we are becoming less and less informed about what is becoming more and more important', namely the quality components of inputs and outputs. The *third information paradox* is the old one in Hayek (1937) on complexity, increasing the demand for 'infomediaries' that choose and edit the information in different, more or less informed and biased ways, hence increasing the risk of actors misunderstanding the economic situations. Perhaps we are moving from a knowledge based towards a misinformation society. This is a dangerous situation when it comes to policy and the 'mature' Lange illustrates the danger, or policy hazard, when he (1967) brushes away Hayek's argument of complexity by saying (p. 158) 'what is the trouble? Let us put the simultaneous equations on an electronic computer and we shall obtain the solution in less than a second.'

4. The reasoning can be nicely illustrated using a Salter (1960) curve. See Eliasson (1996a: 44f.). This is also the way growth occurs in the Swedish micro-to-macro model (Eliasson, 1977, 1985a, 1991a) referred to on page 247. Innovative entry subjects incumbent firms to competition and forces them to respond. Their response in the form of reorganization and rationalization may mean both expansion and contraction depending upon incentives embedded in the institutions of the economy and the competence of firms.
5. Strict mathematical minimizing cannot be achieved since this requires that the entire state space be completely searched, which we have just assumed to be impossible. Minimization can, however, be approximated in the micro-to-macro model, and we will then probably find (we have not done it yet) that a significant reduction in the economic costs of mistakes can be achieved through a better organization of 'search', but that when sufficiently close to a possible minimum many possible such, and almost equally good, situations will be found and the price signaling system of a market economy will not be capable of guiding the economy to one of the almost equally good solutions. The economic system will be destabilized. See further Eliasson 1983, 1984a and 2002c.
6. Product variation is a form of product quality. If the demand for variation is sufficiently large information paradox two applies. See note 3 above.
7. Carlsson (1995, 1997) has modeled that innovation supply under the name *technological systems*.
8. A venture capitalist in the competence bloc is *defined* as a provider of finance embodied with such industrial competence. The venture capitalists so defined also contribute managerial, financing and marketing competence through their network, but this comes after the 'understanding'. Such services are normally available in the market and, consequently, are less critical (see Eliasson and Eliasson, 1996).
9. Dan Johansson (2001a) has expanded on Table 8.1 to establish a link to economic growth by way of the competence bloc. On the basis of the principles governing the EOE and certain general competence characteristics of firms he derives a set of selection criteria for the organization of the competence bloc. He then derives certain general characteristics of firms that should be more typical of winners than of losers, and subjects those characteristics to econometric tests against their growth performance. He found, for instance, that old and large firms in the computer and communications industry and firms that were part of a government owned firm grew significantly more slowly (everything else being the same) than other firms.
10. A short version of this industrial analysis of the Lake Mälaren region (authored together with my daughter Åsa) was published in 2002 under the title 'The northern corridor of industrial excellence' in *New Northern Knowledge*, Hagbart Publishing, Bollschweil, pp. 56–7. A detailed analysis is available in Eliasson (2002d: chap. VIII).
11. An alternative explanation would be that financial experts play games with less knowledgeable players. The consequences will be the same, but the first explanation is the most credible one. See further Eliasson (2002d).
12. The Swedish tax system favors foreign investors in Sweden compared to Swedish owners/investors in the sense that foreign investors can have lower before tax rate of return requirements and still obtain the same after tax return (Henrekson and Jakobsson, 2003). This also means that foreign investors, everything else being the same, can outbid Swedish investors when competing for an acquisition.
13. Also Bavaria and Baden-Württemberg (B/B-W) with some 21 million inhabitants have the same three industrial competence blocs in engineering, computing and communications, and biotech and pharmaceuticals. It is, however, an open question whether the region has its own financial services competence bloc. Corporate banking is located in Frankfurt, but Munich is often referred to as the venture capital center of Germany (Gill *et al.*, 2003). The German financial services industry has also been in trouble, rather than successful, during the last decade or so. In B/B-W the world's foremost luxury automobile producers Audi, BMW, Mercedes and Porsche are located almost within commuting distance with the advanced component manufacturer Bosch in the center in Stuttgart. The electromechanical and electronics giant Siemens is headquartered in Munich, and Heidelberg is a center for biotechnology research and

- industry. See further Eliasson (2002d, 2003d) and Gerd Schienstock's Chapter 7 in this volume.
14. Cf. Fridh, 2002, who compares the progress of NobelBiocare's business with the introduction of a similar technology in the US. There medical doctors were the customers and the health industry competence bloc was both complete and horizontally varied. Instead of more than 15 years for the Swedish Brånemark method to reach industrial scale production, it was now reached in less than five years. Also see McClarence (2003). The development of the Brånemark method was anything but straightforward. Very early Brånemark was denied continued support from the Swedish Medical Science Foundation because he wanted money to study both tissue integrating prostheses and blood circulation problems, instead of focusing on one research problem. The members of the Swedish Medical Research Board did not understand that an integrated approach was needed, but the US National Institutes of Health did and supported the project generously. As it turned out, dental prostheses were the best first application. But here Brånemark, a medical doctor, stepped into the territory of another profession and was systematically opposed by that profession (Klinge, 2004). Brånemark is currently attempting to finance a new venture using titanium to replace bone joints destroyed for instance by rheumatism. Brånemark wants a Swedish financial solution, but if not forthcoming there is willing foreign money (*Dagens Nyheter*, 5 June 2004).
 15. In fact, the South Swedish (Lund) and West Swedish (Gothenburg) biotech/pharmaceutical industry together is of the same size as that in the Lake Mälars region and leads in having generated winners, notably Astra Zeneca's Hässle laboratory where Losec was developed. Also see note 14.
 16. A similar situation is blocking the economic development of the Öresund economic region. Political unwillingness to standardize and simplify the legal rules, notably personal income taxation, on both sides of the Öresund is making it difficult or impossible to enjoy the allocational benefits of the new bridge.

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9. Social innovation and institutional change in Ireland in the late 20th century: From ‘the poorest of the rich’ to ‘Europe’s shining light’?

Julia S. O’Connor

INTRODUCTION

Small countries and economies like Ireland do not often feature as the cover page of publications such as *The Economist* – Ireland did so twice over a decade. The first time was in the late 1980s when it was characterized as ‘The Poorest of the Rich’ over a photograph of a woman and child begging in the centre of Dublin; a decade later in 1997 it was portrayed as ‘Europe’s Shining Light’. Was *The Economist* right in its characterizations? If so, how did this transformation come about?

Ireland, a small open economy operating in the context of increasing globalization, has achieved considerable economic success over the past decade. Competitiveness in internationally traded sectors has been a crucial element of this achievement. This has been underpinned by appropriate policy choices which were facilitated by significant innovation in the policy formation process. The Irish growth experience is not simply a story of globalization, of reducing the role of the state in the economy and the liberalization of markets. The state has been central to the entire process and the current success, reflected in exceptionally high growth rates from 1994, is the fruit not only of recent policy choices but of some dating back to the 1960s. In particular, policy choices made in relation to education in the 1960s and policies relating to the opening up of the economy, which also started in the 1960s, have been crucial to Ireland’s economic success. The social partnership arrangements between the government, employers, trade unions and farmers that have characterized Ireland since 1987, and that have involved the representatives of the community and voluntary sector since 1997, have been an important enabling factor. The state has been central to these arrangements. It has been an active player in effecting the changes necessary for the economic success,

particularly in attracting foreign direct investment and enhancing the performance of indigenous industry. It is noteworthy that this has been coupled with adherence to a liberal welfare state regime. Economic convergence to EU levels has been paralleled by the persistence of traditional patterns of income inequality.

Key among the changes necessary for economic success was change in the collective frame of reference within which economic issues, problems and solutions were analyzed. The opening up of the economy in the 1960s, EU membership and the renewal of social partnership in the mid-1980s could not have been achieved without it. There has not been a smooth and uninterrupted path to success. Some of the key contributions to the present success were responses to adversity and policy failure. The opening up of the economy in the 1960s was a response to the failure of a policy of self-sufficiency pursued up to then. Fiscal mistakes in the 1970s led to huge problems in the 1980s and delayed the path to convergence of Irish living standards with those in the EU. The social partnership arrangements, between employers, trade unions, farmers and government, entered into in the late 1980s were a response to this situation of extreme adversity – exemplified by a high debt to GDP ratio, high unemployment and high emigration. By forging a consensus amongst key actors on key economic and fiscal challenges, these partnership arrangements contributed enormously to the achievement of fiscal and economic stability. The transformation of the Irish economy demonstrates well a process of qualitative evolutionary change, not a smooth and continuous process but one in which ‘creative routines’ were typically responses to adversity.

In the following section key changes in Ireland’s location within the European Union since its accession in 1973 are briefly outlined and key aspects of Ireland’s recent economic transformation are summarized. This is followed by a brief outline of the demographic and educational dividends that contributed to a favorable environment for this transformation. There is then a discussion of ‘social partnership’ in Irish economic and social development over the past two decades. The role of the state in this transformation is then considered and its activist developmental role is outlined. Ireland’s economic transformation is then linked to its flexible developmental state. This is contrasted with its distributional role and the consequences of these differences for current tensions between economic and social development are pointed out. This section also points to the importance of appreciating the simultaneous processes of economic convergence and the maintenance of traditional social policy patterns in analyzing socio-economic change in the Irish context. The conclusions point to the value of an analytical framework focusing on the deliberate adaptation of institutional structures for analyzing economic transformation.

IRELAND'S LOCATION WITHIN THE EUROPEAN UNION AND TRANSFORMATION OF THE IRISH ECONOMY

Ireland's accession to the European Economic Community in 1973 reflected a strategic policy choice for further integration into the world economy. It facilitated the industrial development policy already in place and the structural transformation of the economy. Location within the EU has been of enormous benefit to Ireland in attracting FDI and in enhancing the restructuring of the indigenous sector.

In contrast to Denmark and the United Kingdom, the other two countries that joined the EEC in 1973, Ireland's GDP per capita was considerably below the Community average (Table 9.1). Until the accession of Greece in 1981 Ireland retained its status as the poorest country in the Community. With the accessions of Spain and Portugal in 1986, Ireland became the third poorest country in the Community after Portugal and

Table 9.1 GDP per capita in purchasing power standards,¹ EU 15 = 100, 1960–2000

Country ²	1960	1973	1986	2000
EU15	100.0	100.0	100.0	100.0
Belgium	98.6	104.0	103.7	111.0
France	106.2	110.9	110.4	101.3
Germany ³	121.1	113.0	115.3	106.4
Italy	87.3	93.6	102.1	98.9
Luxembourg	176.7	159.5	144.7	180.0
Netherlands	115.7	110.1	105.2	113.4
Denmark (1973)	119.2	113.3	116.8	116.8
Ireland (1973)	62.6	60.3	65.3	114.3
United Kingdom (1973)	121.6	102.8	101.2	102.3
Greece (1981)	43.6	70.8	62.6	67.1
Portugal (1986)	40.1	57.9	54.4	75.7
Spain (1986)	59.1	77.0	71.8	82.1
Austria (1995)	95.8	99.2	106.4	110.8
Finland (1995)	88.2	94.2	101.3	101.9
Sweden (1995)	126.0	117.5	115.0	102.8

Source: European Commission (2000), Table 9.

1. 'Purchasing power standards' allow direct, real-term comparisons between countries.
2. Accession year in brackets for all members other than original six.
3. 1960–86: West Germany.

Greece as reflected in GDP per capita and in the percentage of the population living in poverty. Spain was slightly better than Ireland on both measures but was similar in its high unemployment. These four countries formed an identifiable poorer cluster within the European Union on several dimensions up to the early 1990s at which stage economic progress in Ireland accelerated. By the end of the 1990s Ireland had substantially altered its status in terms of GDP per capita, employment growth and unemployment reduction but not in terms of relative income poverty and social protection effort.

In 1973 Irish GDP per capita was 60.3 percent of the average GDP in the 'purchasing power standard' (PPS)¹ of the EU15 (Table 9.1). By 1986 it had reached only 65.3 percent. Despite the relatively slow progress between 1973 and 1990, Ireland reached the EU average GDP per capita in PPS in 1997, the average in terms of GDP at market prices in 1998 and average GNP per capita in 2001. Because of the size of the foreign direct investment (FDI) in Ireland and the associated repatriation of profits there is a significant difference between GNP and GDP in Ireland. Consequently GNP is a more realistic measure of available resources in Ireland. No EU country and only one OECD country – New Zealand – approximates the magnitude of the Irish difference between GNP and GDP. This is recognized by the OECD in its economic surveys. The level of GNP was over 12 percent less than GDP in 1995 and 16 percent less than GDP in 2000 (OECD, 1997: 18; Central Statistics Office, 2001: Tables 5 and 6).

Amongst the European Community countries in the 1971–80 period average unemployment was highest in Ireland at almost 8 percent compared to the EU15 average of 4 percent; in the 1981–90 period when EU15 unemployment was just under 9 percent, Irish unemployment was almost 15 percent and was exceeded only by Spain at 18 percent. Irish unemployment was still above the EU average from 1990 to 1998 although it declined consistently from its peak of almost 16 percent in 1993 to under 8 percent in 1998. Irish unemployment continued to decline and was 4.4 percent in 2002 with long-term unemployment at 1.3 percent of the labor force (Table 9.2). This reduction in unemployment occurred at a time of substantial employment growth – an average annual 4.7 percent per annum from 1993 to 2000 when the growth in population was 1 percent per annum. A key factor contributing to this was the increase in the employment population ratio. From second lowest in the EU15 and far below the average in 1990, Ireland's employment–population ratio had moved to seventh lowest in 2002 and had almost reached the EU15 average (Table 9.2).

The change in the Irish economy over the past decade is most clearly reflected in the consistent above average GDP growth relative to EU and OECD countries over the past several years (Table 9.3). GDP increased by

Table 9.2 Employment–population ratios, standardized unemployment rates and incidence of long-term unemployment in EU countries, 1990–2002

Country	Employment rate (% 15–64)		Unemployment rates (Eurostat definition)		Long-term unemployment rate (12 months and over)	
	1990	2002	1991–2000	2002	1990	2002
EU15	61.6	65.9	9.9	6.5	3.5	2.4
Belgium	54.4	59.9	8.9	7.3	4.8	3.6
France	59.9	63.0	11.4	8.7	3.6	2.7
Germany	64.1	65.3	8.2	8.6	2.3	4.0
Italy	53.9	55.5	10.8	9.0	7.3*	5.3
Luxembourg	59.1	63.7	2.5	2.8	0.5	0.8
Netherlands	61.1	74.4	5.3	2.7	3.3	0.7
Denmark	75.4	75.9	7.1	4.5	2.9	0.9
Ireland	52.3	65.3	11.2	4.4	9.8	1.3
UK	72.4	71.7	8.1	5.1	2.3	1.1
Greece	54.8	56.7	9.2	10.0	3.4	5.1
Portugal	67.5	68.2	5.6	5.1	2.0	1.8
Spain	51.1	58.4	19.6	11.3	8.2	3.9
Austria	68.4*	69.3	3.9	4.3	1.0*	0.8
Finland	74.1	68.1	12.5	9.1	1.2	2.3
Sweden	83.1	73.6	7.7	4.9	0.1	1.0

Note: * Figures are for 1995.

Sources: OECD (2002); European Commission (2000); European Commission (2003).

less than 2 percent per annum in 1979–87, by almost 4 percent in 1987–93 and by over 9 percent per annum in 1993–2000 driven largely by export growth of over 16 percent per annum (NESC, 2003: 8–9). While Ireland had above EU average growth over the past four decades, the southern peripheral countries – Greece, Portugal and Spain – had equal or higher growth during the 1970s and each had higher growth during the 1980s. Greece had higher average growth over the 1991–2000 period but its highest growth was in the first part of the decade while Ireland’s exceptionally high growth dates from 1995. In tandem with this growth, Ireland’s debt–GDP ratio decreased from 107 percent in the 1987–90 period to 33 percent in 2003 compared to an EU15 average of 64 percent.

To understand the Irish transformation and its pattern of policy development it is important to acknowledge the extreme openness of the Irish

Table 9.3 Percentage change in GDP at current market prices

Country	1961–70	1971–80	1981–90	1991–2000	2000
EU15	9.5	14.2	9.2	4.9	5.1
Belgium	8.5	10.8	6.4	4.1	4.7
France	10.2	13.5	8.5	3.4	4.7
Germany ¹	8.4	8.1	5.1	4.1	3.6
Italy	10.5	19.1	13.1	5.4	4.7
Luxembourg	7.7	9.2	9.0	7.5	6.8
Netherlands	10.6	10.8	4.2	5.0	6.9
Denmark	11.2	12.2	8.0	4.4	4.7
Ireland	9.9	19.2	10.8	10.1	11.7
UK	7.2	16.2	9.2	5.5	6.1
Greece	11.7	19.9	20.3	11.8	6.6
Portugal	9.5	21.6	21.2	8.2	5.8
Spain	14.3	19.2	12.7	6.6	6.5
Austria	8.7	10.2	6.0	4.2	3.8
Finland	10.9	15.3	10.4	3.8	6.1
Sweden	9.1	11.8	9.9	4.0	5.9

Source: European Commission (2000).

1. West Germany up to 1991.

economy and the profound implications of globalization for small open economies such as Ireland. Since Ireland moved from a policy of self-sufficiency in the 1960s, its economy has become progressively more open. The percentage of GDP accounted for by exports increased from 30 percent in 1960 to 89 percent in 2000. Imports of goods and services accounted for 79 percent of GDP in 2000 compared to 36 percent in 1960. Luxembourg is the only EU country that is now more economically open than Ireland but the Irish economy did not exceed the openness of the Belgian and Dutch economies until the 1990s (Table 9.4).

In contrast to these improvements in GDP/GNP and employment statistics and convergence to average EU incomes, the percentage of the population living below the EU low income thresholds has fluctuated at relatively high levels over the past two decades. In 1999, 18 percent of the Irish population was below 60 percent of national median income measured after social transfer payments compared to an EU average of 15 percent (Eurostat, 2003). Irrespective of the threshold used – 40, 50 or 60 percent of median income – Ireland, the UK, the southern European peripheral countries and Italy have the highest income poverty rates, although there are differences in their ranking depending on the measure considered.

Table 9.4 Imports and exports of goods and services: percentage of GDP at current market prices

Country	1971–80		1981–90		1991–2000		2000	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
EU15	25.4	25.3	28.1	28.7	28.4	29.6	32.3	33.4
Belgium	57.1	56.7	69.5	70.2	68.1	71.8	74.8	79.0
France	18.9	18.1	22.4	21.2	21.9	23.5	24.7	26.9
Germany ¹	22.0	24.2	26.5	30.3	26.7	26.4	30.1	31.3
Italy	20.9	20.5	21.1	20.9	21.5	24.2	25.3	27.1
Luxembourg	92.0	102.2	106.1	111.3	96.7	110.2	95.7	115.3
Netherlands	50.5	50.9	56.6	59.8	53.4	58.5	57.9	62.7
Denmark	32.4	29.8	34.1	35.5	31.4	36.2	32.8	37.4
Ireland	50.3	40.3	53.1	52.6	64.2	74.1	78.9	89.1
UK	26.6	26.1	26.5	25.9	27.2	26.3	27.5	25.6
Greece	27.7	13.8	27.1	21.8	25.7	18.0	26.6	18.6
Portugal	30.6	21.1	38.1	29.9	37.9	29.4	42.9	31.1
Spain	15.4	13.7	19.3	18.5	23.7	23.0	30.9	29.5
Austria	32.2	31.4	36.8	37.0	41.4	41.0	49.7	48.7
Finland	18.9	26.6	22.4	27.6	21.9	34.5	24.7	38.8
Sweden	n.a.	27.8	31.8	33.1	33.0	38.0	39.2	44.8

Source: European Commission (2000).

1. West Germany up to 1991.

Ireland fares relatively better at the lower end of the income spectrum, that is, below 40 percent of median income. In contrast to the relative income poverty measure, the indicator of 'consistent poverty' used in the Irish National Anti-Poverty Strategy shows a decrease over the 1987 to 2000 period (Table 9.5). The percentage of the population experiencing consistent poverty based on the dual criterion of enforced deprivation of a basic necessity and income below 50 percent median income decreased from 5.5 percent to just over 3 percent and fell from almost 13 percent to over 4 percent when the deprivation measure was combined with income below 60 percent median income (Nolan *et al.*, 2002). There are no comparable figures for consistent poverty in other EU countries.

It can legitimately be argued that in a period of rapid economic growth primary income inequality would be expected to increase. But if we consider those countries that were at the average EU income level in 1993, that is where Ireland is now, we find that the rates of final income inequality as measured by 50 percent of the median cut-off are substantially greater in Ireland now than in these countries in 1993. The differences reflect, at least

Table 9.5 Percentage of persons below median relative income thresholds and consistent poverty in Ireland 1987–2000¹

	1987	1994	1997	2000
Relative income threshold				
50% of median income	9.1	6.0	8.6	13.8
60% of median income	19.7	15.6	18.2	22.1
70% of median income	28.8	26.7	29.0	28.2
'Consistent poverty'				
50% of median income and experiencing basic deprivation	5.5	3.5	5.2	3.1
60% of median income and experiencing basic deprivation	12.7	8.3	7.8	4.4
70% of median income and experiencing basic deprivation	17.8	14.5	10.7	5.5

Sources: National Anti-Poverty Strategy (1997); Callan *et al.* (1996); Layte *et al.* (2001); Nolan *et al.* (2002).

1. Equivalence scale: 1/0.66/0.33.

in part, differences in the extent of redistributive measures whether these are taxes or social protection measures. The difference in performance on key economic indicators relative to distributional issues matches well the difference in the developmental and distributional roles of the Irish state. Before discussing the policy choices and the role of the state and social partnerships in these choices it is relevant to consider briefly Ireland's demographic dividend and, associated with this, educational policy decisions initiated in the 1960s.

DEMOGRAPHIC AND EDUCATIONAL DIVIDENDS

Ireland's recent economic and social transformation is the result not only of policy choices and institutional changes over the past two decades. It has been enabled by favorable demographic change and educational policy decisions dating from the 1960s.

Ireland's Demographic Dividend

The young dependency ratio in Ireland at 32.1 was the highest in the European Union in 2000 where the average was 26.3. Yet this reflects a highly

Table 9.6 Age dependency ratios: EU15 countries 1980 and 2000

Country	Young age dependency (0–14)		Old age dependency (65 and over)		Total age dependency	
	1980	2000	1980	2000	1980	2000
EU15	34.5	26.3	20.7	23.5	55.2	49.8
Belgium	30.5	26.3	21.9	25.9	52.4	52.2
France	34.9	28.7	21.9	24.5	56.8	53.2
Germany	28.0	22.8	23.7	24.1	51.7	46.9
Italy	34.5	21.1	20.4	26.7	54.9	47.8
Luxembourg	28.2	27.9	20.0	21.5	48.2	49.4
Netherlands	33.7	26.9	17.4	20.1	51.1	47.0
Denmark	32.2	27.4	22.3	22.5	54.5	49.9
Ireland	52.2	32.1	18.3	16.9	70.5	49.0
UK	32.6	29.1	23.5	24.1	56.1	53.2
Greece	35.6	22.4	20.5	26.0	56.1	48.4
Portugal	40.8	24.7	16.4	23.1	57.2	47.8
Spain	42.4	21.5	17.0	24.8	59.4	46.3
Austria	31.8	24.5	24.0	22.9	55.8	47.4
Finland	30.0	26.9	17.7	22.3	47.7	49.2
Sweden	30.6	28.3	25.4	27.1	56.0	55.4

Source: United Nations (2001).

significant reduction from 1980 when Ireland's young dependency was 52.2, that is one and a half times greater than the EU average (Table 9.6).

From fourth lowest in the EU in 1980, Ireland's old age dependency at 16.9 was the lowest in the European Union in 2000 – the EU15 average was 23.5. Ireland was the only country with an old age dependency ratio less than 20 in the EU in 2000. These changes in young and old dependency ratios resulted in a total dependency ratio in Ireland slightly below the EU average in 2000. More significantly these trends resulted in the youngest population in the European Union in the 1990s and 2000s. When this is combined with favorable educational policy choices dating from the 1960s it results in a significant positive contribution to the development of a propitious environment for Ireland's economic policies in the past couple of decades.

Educational Policy and the Development of Human Capital

The consequences of the introduction of free second-level education for all in the 1960s have been crucial to Ireland's current economic success.

The results of this decision have progressively increased participation in third-level education with the result that by the late 1990s 25 percent of those employed had third-level education compared to less than 12 percent in 1980. This rise in educational attainment has greatly increased skill levels and boosted labor productivity (Durkan *et al.*, 1999; O'Leary, 2000). A well-educated population has been an essential enabling factor in attracting foreign direct investment and in facilitating the development of indigenous high-skilled manufacturing and services. In addition to formal education the development of occupationally linked training has been enormously important in up-skilling the labor force. This has been facilitated to a large extent by the emphasis on human capital development in EU social and labor market policies.

Without other policy choices resulting in the opening up of the Irish economy and change in the institutional structures for collective bargaining and for agreement on key economic strategies the favorable demographic and educational dividends would not have been adequate for economic transformation.

SOCIAL PARTNERSHIP AND THE FORGING OF CONSENSUS ON ECONOMIC AND SOCIAL OBJECTIVES

'Social partnership' in the Irish context refers to a wide range of arrangements involving participation by 'the social partners', that is the trade unions, employers, farmers and recently representatives of the community and voluntary sector, in consultative processes with government at the national and local level. At the national level the key institution is the National Economic and Social Council which was established in 1973 and includes five members from each of the social partners, five independent members and the Secretaries-General of five key government departments, including Finance, and is chaired by the Secretary-General to the Government.² Its role is to advise the government on economic and social policy issues. Since 1986 the Council has been crucial in the development of a shared analysis of key economic mechanisms and relationships. It has published six strategy reports on economic and social policy issues that have identified interrelated policy measures (NESC, 1986, 1990, 1993, 1996, 1999, 2003). These reports, which take a three-year time frame, present an overview and analysis of economic and social developments and provide the economic, fiscal and social parameters for the negotiation of the national agreements on pay and social and economic objectives between government and social partners since 1987.

There were several attempts at centralized bargaining and even tripartite national agreements prior to 1987 but even when agreement was reached it was characterized by a low level of adherence to the commitments made and widespread failure to achieve the agreed objectives. Bargaining was decentralized between 1981 and 1986. Participation by employers, trade unions and farmers in the 1987 negotiation was a response to economic adversity – a high debt–GDP ratio, high unemployment, high emigration and low employment growth. As outlined above, the 1979 to 1987 period was one of very poor economic performance on almost all counts: it was characterized by slow growth, rapidly deteriorating public finances, stagnation of per capita disposable income, huge balance of payments deficits and bad industrial relations. The government debt to GNP ratio had risen from 85.7 percent in 1979 to 125 in 1987. Unemployment in the 1979 to 1987 period in Ireland averaged 13 percent of the labor force compared to 9.2 percent for the 12 EC countries (NESC, 1996). In addition, net emigration resumed in the 1979–81 period after a decade of slight population growth. The situation deteriorated in the 1981–86 period when emigration was 4.1 per thousand of the population (Courtney, 1995). This economic and social crisis was the context within which stable centralized bargaining and the associated institutional structures were developed.

The adoption of centralized wage bargaining occurred ‘in the context of a political initiative from the top’ (Hardiman, 2002: 6). A newly elected minority government convened the tripartite talks in 1987. Within the context of taking action on the national debt along the lines proposed in the 1986 NESC strategy document and involving sharp public spending cuts it proposed a package of wage moderation and income tax relief. This was accepted by employers and trade unions who had already been party to the shared analysis of the situation reflected in the NESC strategy document.³ This shared analysis was based on the acceptance that Ireland as a small open economy had to ensure international competitiveness. The strategy outlined was aimed at developing a modern competitive economy characterized by sound fiscal management that would qualify Ireland for European Monetary Union membership, sustainable economic and employment growth and equitable distribution of the benefits of that growth (NESC, 1986). The objective of qualifying for EMU meant that meeting the Maastricht criteria imposed a set of external and non-negotiable constraints to which all of the partners could give adherence.

Niamh Hardiman categorizes the Irish ‘social partnership’ pattern of collective bargaining as a form of ‘competitive corporatism’; she categorizes the Netherlands and Finland as strong variants of ‘competitive corporatism’ and Spain and Italy with their weaker union movements as having ‘some degree’ of competitive corporatism (Hardiman, 2002: 4).

Competitive corporatism is characterized by the recognition of the need to ensure economic competitiveness and labor market flexibility and movement towards an employment-friendly welfare state.

The success of the first national agreement was bolstered by an upturn in the international economy and a decrease in inflation which turned modest pay increases and tax cuts into real increases in disposable income. Continued participation in the national agreements was ensured because of the benefits to participants, particularly employers and trade unions. The associated industrial peace and moderate pay settlements coupled with tax reductions improved competitiveness and in conjunction with favorable external economic developments played a crucial role in converting strong economic growth into significant employment growth. In turn, higher levels of employment contributed to sharply falling unemployment and to higher levels of social inclusion.

Stages in the Development of Irish Social Partnership

The core of social partnership bargaining in all countries encompasses pay, taxation and social security and in some instances social services. In other words it addresses the traditional social demands of the traditional social partners (employers and trade unions). The evolution of partnership in Ireland reflects continuous adaptation to change and provides an example of the broadening of social partnership both in participation and in the scope of the issues addressed. The broadening of the focus can be seen as a three-staged process with each of the subsequent stages building on the former:

- Stage I: the forging of consensus on economic and social objectives
- Stage II: recognition of the links between social inclusion, employment and competitiveness
- Stage III: broadening the focus to a recognition of the importance of economic, social and environmental sustainability.

In Stage I (the forging of consensus on economic and social objectives) the first three multi-year national agreements, covering the period 1987 to 1995, were negotiated by government and the traditional social partners (trade unions, employers and farmer representatives). These agreements reflected recognition that the continued growth and development of the Irish economy were dependent on the achievement and maintenance of competitiveness, and on agreement on the public finances and their management in accordance with the Maastricht criteria and the EU stability and growth pact.

In Stage II (recognition of the links between social inclusion, employment and competitiveness) it was increasingly recognized that the achievement of these objectives and the continued effectiveness of social partnership were dependent on the maintenance of social cohesion which was in turn dependent on a commitment to social solidarity and inclusion. This recognition was reflected not only in a broadening of the scope of the fourth national agreement, covering the 1997–99 period, but also in a broadening of the sectors involved in the negotiations. In addition to the traditional social partners, representatives of the community and voluntary sector (CVS) were involved in the negotiation.

In Stage III (broadening the focus to recognition of the importance of economic, social and environmental sustainability) the 2000–02 agreement reflected a further broadening of the focus of partnership, that is recognition of the importance of economic, social and environmental sustainability. The broad direction of the changed focus to meet these challenges is reflected in the commitment to give greater priority to the issues affecting people's well-being and quality of life, including very significant infrastructural investment combined with spatial planning and a commitment to lifelong learning and to measures to achieve a better balance between work and family responsibilities through equality policies, childcare, parental leave and family-friendly employment policies. However, it must be emphasized that these commitments are far from being fulfilled. Despite Ireland's convergence to EU15 levels in key economic dimensions its relative position in income inequality and social protection expenditure has deteriorated (O'Connor, 2003).

In summary, social partnership in Ireland has evolved from dialogue amongst the traditional social partners and between these partners and government to a broader framework that incorporates the community and voluntary sector not only at the national level but extensively at the local level (OECD, 1996; O'Connor, 1997, 2002). The content of the agreements has also evolved from a concern with pressing economic and monetary issues to address the challenges of changing economic and social demands in a sustainable way.

THE IRISH STATE'S DEVELOPMENTAL ROLE

Ireland has been the recipient of considerable acclaim for its economic performance over the past decade – the 'Celtic Tiger' label has been widely used. Those who question its use argue that the current boom is best seen as a belated catching up. But the more rigorous amongst them point out this is not an argument for inexorable convergence (Nolan *et al.*, 2000: 1).

Policy choices and consistency in key strategies have been crucial in Ireland's transformation to a high skill, high growth economy. Policy choices made in relation to the opening up of the economy in the 1960s culminating in accession to the European Economic Community in 1973 and changes in policy relating to education also dating from the 1960s have been crucial in laying the foundation for the success. The social partnership arrangements that have characterized Ireland since 1987 have been an important enabling factor as has the favorable change in the demographic structure. But what of the role of the state?

Recognition of the failure of the policy of self-sufficiency, which characterized Ireland up to the 1950s, led to a new strategy based on the recognition of the increasing importance of the international economic environment and the opportunities and constraints associated with this. The key policy choices in the opening up of the Irish economy were:

- the attraction of foreign direct investment
- the accession to the EEC
- the restructuring of indigenous industry.

Attracting Foreign Direct Investment

The dynamic role played by FDI in the Irish economy has received considerable attention. After a slow start in the 1960s such investment grew rapidly throughout the 1980s and 1990s and by the late 1990s accounted for over two-thirds of gross manufacturing output (Barry and Bradley, 1997). FDI did not go into the traditional sectors in which the economy had a comparative advantage (for example, food processing, clothing, footwear) mainly because they serve mostly the small domestic market. The high technology FDI did not depend on local comparative advantage. Initially the processes of clustering and regional concentration were impeded by the branch plant nature of the investment and national policy encouraging dispersal. However, by the end of the 1990s, Ireland had attracted sufficient firms in the computer, instrument engineering, pharmaceutical and chemical sectors to warrant talk of sectoral agglomerations or clusters (Bradley, 2000).

The role of state agencies, in particular the Industrial Development Authority, has been crucial in attracting foreign direct investment. Initially there was considerable focus on grant-aiding industry in a wide range of sectors and there were some costly failures. In the 1980s and 1990s the strategy was changed to a focus on attracting high-technology, high-skill firms with export growth potential. Several factors contributed to the success of this strategy. The most important are Ireland's English-speaking

labor force, its ability to adapt to changing circumstances through appropriate policy choices, including the development of an infrastructure adapted to the knowledge-based economy, its commitment to international competitiveness including its competitive corporate tax rates (National Competitiveness Council, various years) and membership of the European Union.

Ireland's Membership of the European Union

Ireland's accession to the EEC in 1973 facilitated the industrial development policy already in place and the structural transformation of the economy. Location within the EU has been of enormous benefit to Ireland in attracting FDI and in restructuring the indigenous sector. The opening up of the goods and capital markets are part of the long-term process of EU integration.

The key elements of EU membership that have been crucial to Ireland's transformation have been the Common Agricultural Policy (CAP); Regional Policy and the Structural Funds; and the Single Market. Of these three the Single Market is by far the most important in terms of its long-term consequences but adapting to this has been greatly facilitated by the EU regional policy. EU regional policy has been an important factor in Ireland's economic development. 'Adaptation to the competitive rigors of the Single Market and efficient use of Structural Funds underpin the dramatic convergence of Ireland that coincided with the implementation of the new EU regional policies' (Bradley, 2000: 22).

EU membership brought a range of other significant changes to Irish society, not just economic and social changes but also administrative changes in the policy process (Fitz Gerald, 2000). The latter are reflected particularly in the increasing emphasis on planning, evaluation and monitoring of the outcome arising out of the policy learning associated with the administration of the Structural Funds. It is noteworthy that the National Development Plan for the period 2000–06 which was financed largely through Irish funds as opposed to Structural Funds was subjected to the same rigorous planning, evaluation and monitoring of outcomes that characterized the previous plan (Government of Ireland, 1999).

Restructuring Irish Owned Enterprise

While emphasizing the importance of FDI in Ireland's economic development it is also important to recognize the contribution of the domestic sector in manufacturing and services. The opening up of the Irish economy, following EEC membership in 1973, led to the closure or restructuring of

significant sections of Irish owned industry operating largely in traditional, low-technology sectors serving the domestic and UK markets. This process was accelerated by the high-inflation, high-interest rate, high-taxation, high-nominal wage increase and high-public expenditure economy that operated in Ireland from the 1970s to the mid-1980s. The restructuring had the positive effect that by the early 1990s a significant part of Irish owned industry could successfully compete in the international economy. The software and electronics sectors are good examples. In addition, the development of an increasingly efficient Irish owned sector in manufacturing and services facilitated the attraction of FDI to Ireland – the two sectors are increasingly linked in a way that strengthens the development of each in Ireland (Travers, 1998: 148). Throughout the 1970s and 1980s there was considerable criticism of Irish industrial policy for its failure to ensure that the foreign firms were involved in backward linkages, through sourcing raw materials and other inputs in Ireland, or forward linkages into the domestic distribution system. Agglomeration economies were virtually absent. Following a major analysis which highlighted these problems, a deliberate policy of fostering sub-supply linkages has been adopted since the early 1990s. The success of this approach is reflected in the fact that the ‘volume of spending on locally-sourced raw materials rose at an annual average rate of 21% between 1990 and 1998, while the rate of increase in respect of locally-sourced service inputs was just under 20%’ (O’Leary, 2000: 10). O’Leary concluded ‘that the existence of a network of specialist input providers has become an important source of agglomeration economies and an important facet of firms’ decisions to locate in Ireland’ (ibid.).

These developments illustrate the interconnected web of elements in Ireland’s economic transformation and the central role of its flexible developmental state (O’Riain, 2000).

IRELAND’S FLEXIBLE DEVELOPMENTAL STATE AND LIBERAL WELFARE STATE

The flexible developmental state is defined

by its ability to nurture post-Fordist networks of production and innovation, to attract international investment, and to link these local and global technology and business networks together in ways that promote development. This ability is sustained by the multiple embeddedness of the state in professional-led networks of innovation and in international capital, and by the state’s flexible organizational structure that enables the effective management of this multiplicity. (O’Riain, 2000: 158)

In contrast to explanations centered exclusively on the local or the global, O'Riain proposes the flexible developmental state as an alternative theoretical approach to understanding Ireland's integration into the global economy.

Some analysts argue that the success of the Irish economy is more apparent than real and have argued that it is merely FDI led development (O'Hearn, 1998). While capturing some of the contradictions and inequalities associated with Ireland's economic development these accounts do not capture the complexity of the embeddedness of economic development over the past two decades including the transformation of parts of Irish indigenous industry as demonstrated by O'Riain (2000).

Paul Krugman also puts FDI central but presents a more positive interpretation of Ireland's recent economic success:

[In 1987] Ireland, despite its debt and unemployment problems, had some strong points: a well-educated population, enough social cohesion to introduce an effective incomes policy that kept wages low compared with continental Europe, and the fact that its work force speaks English. An opportunity was then presented as a result of changes in the underlying geography of the world economy: as trade became less influenced by transportation costs but more critically dependent on communication, a location within Europe became necessary but one in the centre of Europe less important. Thanks in part to luck, in part to policies (including investment in telecommunications), Ireland got a head start over other European locations in attracting what became a surge of inward foreign direct investment; the early investment both generated a cascade through information effects and, eventually, created external economies that further reinforce Ireland's advantages. (Krugman, 1997: 51)

Others have stressed the effectiveness of Irish firms' adaptation to decentralized post-Fordist production and the social innovation evident in local partnership activity (OECD, 1996). But neither the local nor the global dimension is an adequate explanation of Ireland's development.

O'Riain's analysis of the Irish software industry suggests three interacting but distinct modes of integration into the global economy, combining local and global networks. 'The first is based on attracting foreign investment and attempting to embed it in the local economy, the second and more recent model is based on the growth of indigenous Irish-owned firms that compete internationally and are increasingly closely integrated into international technology and networks' (O'Riain, 2000: 160). The third is the social partnership agreements since 1987 which have created a stable macroeconomic environment that has underpinned the industrial transformation, 'while mediating the relationship of unionized workers and welfare recipients to the global economy' (op. cit.: 184). These three elements provide a strong framework within which to understand Irish economic transformation over the past two decades.

But 'the tension arising from uneven internationalization of society and growing inequality' (op. cit.: 159) may threaten continued progress. This points to the differing roles of the Irish state: its activism in its developmental role and its adherence to a traditional liberal welfare regime orientation in its distributional role (O'Connor, 2003). The high levels of relative income inequality in Ireland have been outlined on pages 285–8. It is also evident in Ireland's relatively low levels of social protection effort whether considered at a gross or a net level despite real increases measured in purchasing power parities over the 1990s (O'Connor, 2003; Adema, 2001). The maintenance of the value of social protection payments was one of the commitments entered into by the government in the negotiations leading up to the 1987 and subsequent national agreements with the social partners. Despite this, welfare effort as reflected in the percentage of national resources devoted to social protection decreased in Ireland after 1987. In contrast, such effort was increased slightly or maintained in most other EU countries.⁴ The result was that Irish social protection expenditure had converged towards that of the US and considerably below the EU average by the end of the 1990s (OECD, 2000a: Tables 6.2 and 6.3). Yet the real increase in Irish social protection is reflected in the purchasing power standards measures for the EU. These indicate that the Irish position has improved over the 1990 to 2001 period and as with Spain and Portugal was about 60 percent of the EU15 average in 2001 whereas social protection as a percentage of GDP was 53 percent of the EU average (Table 9.7).⁵ It is of course important to acknowledge that Ireland had a significantly higher GDP and GNP per capita than either Spain or Portugal in 2001.

Despite its significant economic changes over the past decade Ireland remains firmly within the liberal welfare state regime cluster in terms of welfare effort and the division of responsibility between the state, the market and the family in service provision although it does have 'a selective activist orientation' in its social policy framework (O'Connor, 2003). This is in labor market policy over the past decade.

Active labor market policy has been a core part of the overall social and economic inclusion strategy adopted in Ireland since the early 1990s. At that stage, it was recognized that despite evidence of improvement in living standards and in several economic and monetary indicators, including the debt/GDP ratio and employment growth, there was still high general and long-term unemployment. This gave rise to the most innovative aspect of Irish social partnership arrangements, that is, action at the local level in what was identified in the 1991–93 national agreement as an Area-based Response to Long-Term Unemployment (Government of Ireland, 1991: 75–8; OECD, 1996). This approach was based on the proposition that a community response in particular local areas was

Table 9.7 *European Union countries: Social protection expenditure as a percentage of GDP 1980–2001¹ and per head of the population in PPS 1990 and 2001²*

Country	1980	1990	2001	1990 (PPS)	2001 (PPS)
EU12 or EU15	24.3 (12)	25.4	27.5	–	6405
Belgium	28.0	26.4	27.4	4032	6888
France	25.4	27.6	30.0	4374	7266
Germany ³	29.4	25.4	29.8	4294	7329
Italy	19.4	24.3	25.6	3686	6186
Luxembourg	26.5	22.6	21.2	5157	10 559
Netherlands	30.8	32.4	27.6	4804	7392
Denmark	28.7	28.7	29.5	4320	7805
Ireland % GDP	20.6	18.7	14.6	1999	3875
% GNP	20.7	21.0	16.3		–
UK	21.5	22.9	27.2	3422	6181
Greece ¹	(9.7)	23.2	27.2	–	3971
Portugal ¹	(12.8)	15.8	23.9	1392	3644
Spain ¹	(18.1)	20.5	20.1	2155	3867
Austria ¹		(26.7)	28.4		7464
Finland ¹		(25.1)	25.8		5622
Sweden ¹		(33.1)	31.3		7085

Sources: Eurostat (1998, 1999), Tables B1.1, B1.4; Eurostat (2004).

1. Figures in brackets indicate countries that were not members of the EU in that year.
2. PPS refers to 'purchasing power standards' that allow direct, real-term comparisons between countries.
3. West Germany in 1980.

essential if long-term unemployment was to be lessened. This reflected the 1990 EC resolution on action to assist the long-term unemployed. The EU discourse on social inclusion and from 1998 the requirement for an annual Employment Action Plan provided a frame of reference for Irish labor market policy.⁶ Social inclusion was widely identified as a public policy objective in Ireland throughout the late 1980s and 1990s and employment was identified as the key mechanism for its achievement. Active labor market policy was seen as central to the regeneration of the economy. It met with the strong approval of all of the social partners and has been a core element of the social partnership agreements since the early 1990s. Reflecting this, Ireland has substantially increased spending on active labor market policies throughout the 1990s as have several other EU countries, for example, Denmark, the Netherlands and Portugal (Ferrera *et al.*, 2004).

Ireland has explicitly targeted the opening up of the economy as the overarching strand in its economic development. As a small and progressively more open economy in a globalized trading situation it is competing not only for export markets but for foreign direct investment. This has led to the achievement and maintenance of competitiveness becoming the primary orientation of public policy (National Competitiveness Council, 1998, 1999, 2000). While the objective is employment growth, the means include the targeting of social protection improvements towards children and older people and the fine-tuning of other elements to make the welfare state more labor market friendly. It also includes a strong emphasis on the reduction of tax rates – on capital, corporate profits and personal incomes – which has resulted in Ireland going from a country with relatively high taxes in the 1980s to having the lowest tax revenues as a percentage of GDP within the European Union (OECD, 2000b: Table IIA).

The lessons from Ireland as a late developing open economy and liberal welfare state within the European Union are that convergence may be actively pursued in its economic dimensions and the state's pursuit of a flexible and innovative developmental approach may be paralleled by maintenance of a traditional welfare regime, in particular its distributive approach.⁷ In contrast to earlier work on economic openness, where it was associated with enhanced welfare state development as a protection against international shocks, this analysis suggests that openness in the current context of globalization may be associated with state activity focused primarily on enhancing competitiveness, productivity and market deregulation. This orientation fits well with that of a liberal welfare state particularly its market orientation. This analysis points to the importance of examining the role of the state in a range of areas and recognizing that its actions may have quite different consequences in the areas of economic and social development, in particular those aspects of social development that are dependent on significant changes in the distribution and redistribution of resources – an innovative and flexible developmental state is compatible with a liberal welfare state.

CONCLUSIONS

The patterns identified in this chapter demonstrate that the transformation of the Irish economy since the 1970s but particularly in the last two decades involved a process of qualitative evolutionary change, not a smooth and continuous process but one in which 'creative routines' were typically responses to adversity. The state has been an active and innovative player – a 'flexible developmental state' (O'Riain, 2000) – in effecting the changes

necessary for the economic success, particularly in attracting foreign direct investment and enhancing the performance of indigenous industry. This strategy was facilitated, particularly by the single market, but not ensured by EU membership. Success was dependent on a number of factors, some of them fortuitous, such as the increasingly favorable demographic profile throughout the 1990s, and a favorable international economic environment; some were the result of earlier policy choices, in particular education policy choices initiated in the 1960s. But the key factor in the mid-1980s was the particular response to economic adversity, that is the institutional change identified as 'social partnership'. This involved the forging of an agreed analysis of key challenges between employers, trade unions, farmers and the government and subsequently the agreement of a centralized multi-year collective agreement. This involved a change in the collective frame of reference not only of the leaders of key organizations in the society but of their members without whose adherence the agreement reached would not be adhered to. The success of the initial agreement ensured continued participation as did the evolution of the institutional structures of social partnership not only at the national level but also at the local level.

By 2000 it was increasingly recognized that the strategy of linking modest pay increases with tax reductions, which had characterized the earlier agreements, was at an end. By this time Ireland had gone from one of the highest taxed countries in the OECD to the lowest. The system has come under pressure from employers and trade unions; the former point to variation in cost conditions and the unions have exerted pressure for variation in collective bargaining to take advantage of particularly profitable enterprises. Whether or not these pressures will result in a modification of the present centralized system to facilitate an element of decentralization or will result in a fully decentralized system is not clear at present. The social partnership era has resulted in a network of institutional structures through which employers, trade unions and government interact, particularly at the national level. It is probable that these will continue to facilitate the development of consensus on key economic and social challenges, which has been the key benefit of the partnership arrangements, although the pay bargaining strategy may be adapted to meet new challenges.

NOTES

1. Purchasing power parities (PPP) convert every national monetary unit into a common reference unit, the 'purchasing power standard' (PPS), of which every unit can buy the same amount of goods and services across the countries in a specific year. Converting these amounts, which are received in a national currency, into amounts expressed in PPS allows income comparisons between EU countries.

2. The number of representatives has changed over time but the Council membership is usually about 30.
3. Hardiman's analysis indicates that there was little choice for the trade unions: 'The unions were given to understand that they could be, in the words of a senior trade union leader, "either part of the solution or part of the problem"'. Mindful of the disasters befalling their counterparts in Britain at the time, the trade union movement opted for the former' (Hardiman, 2002: 9).
4. There was a significant reduction in social transfer expenditure in the Netherlands in the 1994–95 period.
5. See note 1 re purchasing power parities.
6. National Employment Action Plans were replaced by three-year National Reform Programmes in 2005. These also describe how the agreed guidelines of the European Employment Strategy are put into practice nationally.
7. A similar pattern or maintenance of overarching welfare regime characteristics despite significant economic changes, particularly labor force changes, is evident in the Netherlands where like Ireland social partnership arrangements contributed significantly to the 'employment miracle' (Visser and Hemerijck, 1997).

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