Margaret S. Archer *Editor*

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Chapter 1
Social Morphogenesis and the Prospects of Morphogenic Society

Margaret S. Archer

This book is about theorising a possible transition from the social order of late modernity. What we examine is the generative mechanism of 'social morphogenesis', held to account for the increasing rapidity of social change. In itself, rapid social change does not necessarily signal, much less constitute, a new type of social formation. What intrigues us is whether or not this increasingly important process could be responsible for generating a different kind of social formation—Morphogenic Society—albeit one with the potential for assuming a multiplicity of specific forms. None of us is committed to announcing the advent of the Morphogenic Society, but regard it as worth exploring. All of us are wary about the array of social forms that have hastily been advanced as superseding modernity. Thus, we do not precipitously announce a new 'Beyond'. Instead, the book deals with 'social morphogenesis' as a process rather than an end product. Clearly, this process does not necessarily generate macroscopic social transformation because it has been with us for centuries, although always, until now, in counterbalance with morphostatic mechanisms. Whilst we will certainly question the justifiability of thinking and theorising about Morphogenic Society, nevertheless, the question mark remains throughout.

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1.1 Part 1. Social Morphogenesis and Societal Transformation?

The ten contributors to this volume are working together in an unusual way: addressing this question mark collaboratively, exploring rather than proclaiming and voicing our own reservations, hesitations, objections and differences in interpretation and conviction. In other words, we reverse the usual sequence of 'publication' followed by critical review. No one has yet advanced or is married to a theory of the coming of Morphogenic Society. Instead, through auto-critique, we try to anticipate the criteria such a theory would have to meet; the objections and alternatives it would have to overcome. At most, explicit speculations are ventured about the possibility of this social formation. However, we still live in the crisis of late modernity, a formation that appears to be gasping without any guarantee that this is its last gasp. Rather, we concentrate on the process of 'social morphogenesis' because only if we can articulate a generative mechanism of social change is there any convincing basis for beginning to theorise about radical social transformation.

Our focus upon 'social morphogenesis' has two implications. First, in concentrating upon morphogenesis we have elected to deal with 'those processes which tend to elaborate or change a system's given form, structure, or state' in preference to morphostatic processes 'that tend to preserve or maintain a system's form, organization, or state' (Buckey 1967, 58). What accounts for this consensus, especially given that none of us would hold that morphostasis has yet been displaced? (As Wight properly maintains in Chap. 5, that which is unchanged is the benchmark for what has changed). Part of the answer lies in a shared conviction about the growing rapidity of social change over the last quarter of a century, although the proposition that change is speeding up is remarkably difficult to demonstrate empirically. Partly too, we are all—though not in the same way—in quest of a generative mechanism accounting for it. In other words, we agree that satisfactory explanation cannot be at the level of experience (the empirical level) or at the level of events (the actual level) but needs to identify a real mechanism whose exercise, even in the open system that is the social order, is responsible for the intensification of social change. In other words, we share a collective antipathy towards empiricist explanations and we hold that the vast literature on globalisation—an outcome broadly coterminous with the tendencies upon which we focus—has been incurably 'actualist'. These two points will be examined in turn. First, before examining whether or not such change and the mechanism generating it justify considering Morphogenic Society as a social formation *in statu nascendi,* it is necessary to probe the reasons for such rapidity of change.

The Rapidity of Social Change and Empiricism's Shortcomings

Most lay people in the developed world will agree that change has speeded up in their lifetimes, but what reasons do they give for their assertion? Technological innovations are favourite markers, especially for grandparents: flights for all, mobile phones, the Internet (their own parents probably favoured inventions: the car, the phone, the plane, television). Impressionistically, any marker will do and today's young people might cite the rise and fall of music groups, the arrival of social interaction sites or the rapid succession of new apps. Nobody is wrong, but everybody is exercising selective perception. The selectivity of folk wisdom is matched by academic approaches that are equally selective. This is the source of the conundrum—and it is rooted in empiricism.

In brief, there seem to be four intractable problems attaching to any empirical estimation of the rapidity of social change. First, what is included is *necessarily incomplete* because certain changes will have occurred without yet producing their full manifestations, especially given the lack of proportionality between cause and effect. In other words, that legendary butterfly may just have flapped its wings in Tokyo. That is the ontological problem. Epistemologically we may also be incapable of knowing it. As Karl Popper once remarked, we cannot even know all the implications of any single proposition. Second, what we do know about recent social change is a series of *incommensurables*, literally a list without common measure, preventing any comparison or weighting of the items listed. For example, in Europe, proportionately more people came online and less of them got married in the last quarter of the century. However, we can neither say that these two changes made equally important contributions to change in general, nor can we assert the opposite. Third, change often involves *displacement*. As the average hours spent watching television per capita have risen, those for listening to radio have fallen; as the sale of machine made knitted goods increased, those with the ability to knit has diminished. However, it cannot be concluded that a (hypothetical) *rate of displacement* would be a better measure of the rapidity of change. This is because we also know that 'displacement' is often artificial (planned obsolescence) and may involve no significant change at all (cosmetics). Finally and most importantly, what is deemed 'a change', that is an element contributing to the judgement that there has been 'rapid change' overall, is inescapably value-laden. It will be theory-laded too because to focus upon any kind of substantive change (economic, political, demographic, cultural etc.) would involve theoretical assumptions about its 'centrality'—alone or in some combination—that may be challenged as unjustified or unjustifiable. In sum, the rapidity or otherwise of social change remains an inherently contested concept in the empirical domain.

The point is not merely that everyone knows whatever they do know about social change from a particular perspective (their job, their gender, the various positions that they occupy). It is that if we accept that each perspective is 'news from somewhere', we must also agree that there is, indeed, no 'news from

nowhere'. Since reports are always expressed from a perspectival vantage point, this means that empirical and experiential access to the real state of affairs is necessarily incomplete. Were it possible to combine every existing perspective that would not be to combine every perspective possible. This is not a methodological problem about representativeness. It would remain if everyone in the world contributed their perspectives, because their composite would not be a readers' digest of unvarnished news but merely 'global perspectivism'.

'Global perspectivism' necessarily means that the same defects also dog the empirical indices or metrics, which are intended to capture indirectly that which cannot be obtained directly from the sense data people supply from different vantage points. The various metrics that are used in reporting the news and on whose basis national governments and supranational agencies take decisions—such as indicators of 'economic growth', 'unemployment', service delivery in health or education—suffer from the same empiricist defects of necessary incompleteness and consequent bias. These indices are simply crunched-up versions of observations, but they are nonetheless perspectival and this cannot be rectified by eliminating deliberate manipulation or distortion, despite their frequency in politics and economics.

This is one of the main reasons why we turn, instead, to examine generative mechanisms, rather than directly inducing them from manifest outcomes as is the empiricist practice. Although not all contributors would describe themselves as critical realists, we accept that the nature of social reality is such that its explanation requires the identification of the distinctive causal powers exercised at any given place or date. This is the case for those processes that account for its contours at any particular time, those that maintain a particular social configuration in being for some time, and those that transform its particular kind over time. The difference between these mechanisms and those found in the natural order derives from the nature of the fundamental constituents of these two orders of reality.

Their difference also explains why 'morphogenesis' means something very different in biology (Davies 2005)—being an entirely non-conscious process—than it does in social science. (The only thing they share is a common etymology). Social reality—any section of it—is intrinsically, inherently and ineluctably 'peopled'. Its ontological constitution is utterly activity-dependent, despite the fact that people's thoughts and actions give rise to factors that are 'not people'—the most important of these being culture and structure.

Because of this there seems to be general agreement that for any process to merit consideration as a generator of social change it must necessarily incorporate structured human relations (context-dependence), human actions (activity-dependence) and human ideas (concept-dependence). Necessarily, the three make social theorising non-naturalistic.

A more familiar way of putting the above is that every theory about the social order necessarily has to incorporate SAC: structure, agency and culture. The problem in hand will govern which of the three is accorded most attention and the acronym SAC is thus *not* a rank ordering of priority between the three elements.

This is a logical point; if some things are deemed indispensable to something else, it makes no sense to ask if one is more indispensable than the other(s).

If all are indispensable then they have to be recognised as playing some role in every social theory. As has often been noted (under other descriptions), the basic defect of empiricism is its inability to give a causal account of the associations found. In the social sciences, the goal of establishing *empirical connections* in the social order means that these can be SAC-free. There is no reason why any or all elements of SAC should appear in the putative explanations put forward on the basis of correlations, let alone that their interrelations be examined.

Indispensability means that social life comes in a SAC—always and everywhere. What does this have to do with rapid social change and its theorisation? It links directly with the earlier statement that theoretical approaches to 'globalization' have been 'actualist' in the main. This does not mean that technically they have based their accounts on the use of the correlation coefficient in its various statistical guises, though these are plentiful. Rather, it highlights the fact that the bulk of the literature on globalisation is founded on the detection of *empirical patterns*. The detection of such patternings is always perspectival, as was argued earlier. The point here is not simply that the pattern depends upon the perspective, given that patterns do not announce themselves. It is that if the procedure is to detect a pattern, no reference need be made to all the elements of SAC and their interrelations. Even more seriously, it follows that there is nothing to assure the theory advanced is one that *works in terms of SAC*, however, the constituents and relations between them may be conceived and conceptualised.

Instead, what dominates this actualist literature is associations, whether or not these are subject to metrification. Its authors have been 'struck' by some radical change in S or A or C and have then established (or noted) that this is empirically connected with other changes making a pattern. If big and bold enough the new pattern is usually said to have announced social transformation. It makes no difference if the pattern that 'strikes' researchers derives from their prior theoretical commitments or is so 'striking' that it leads to their revision (see Rossi 2007). It makes very little difference to the generic procedure of actualism whether the focal point is S(tructuralist), A(ctionist) or C(ulturalist)—the nature of the leading part that is designated as responsible for the empirical patterning does not alter the mode of explanation.

One way in which such empiricism announces itself in the literature on 'globalization' is in the over-hasty proclamation of new 'Ages': the Global Age itself (Albrow 1997), the Information, Knowledge, Network, Risk, Liquid, etc., societies.[1] Significantly, each of these adjectives highlights a characteristic that is held to be distinctive of a 'new' social ordering and justifies differentiating it from the preceding social formation. But what is the nature of the characteristics singled out? Are they descriptive or explanatory? Mostly, these seem to begin as the

[1] Another way is the ubiquitous use of the word 'post'. Perhaps the most popular is the ubiquitous 'Beyond-ism', which is non-committal because everything is 'beyond' something else.

former but then pretend to the latter, as is generically the case with empiricism. Their format is very similar. Each basically starts from an empirical observation that there has been a sharp rise in some factor—S, A, C in kind, as the case may be. The observation is itself dependent on prior empirical observations. For example, the 'knowledge' which eventually prefixes 'Knowledge Society', is observed to have grown ('strikingly') by virtue of the scientific innovations reported, the growing numbers of professional scientists, the proliferation of specialisms, journals and conferences and applications of science to economic activities. Such empirical indicators basically show that science has grown: it has more practitioners, doing and saying new things. The next step is to move from 'growth' per se to the very different assertion that scientific knowledge has 'grown in importance'. This is again achieved empirically by reference to the applications of this knowledge, particularly in economic life, since how society earns its keep is not confined to neo-marxists alone. The step after that (or alongside that) is collating a wide ranging set of further empirical observations showing that parallel, analogous, isomorphic associations can also be detected in the broadest array of institutions, organisations and activities—from politics to pop-music. Yet, growth per se is not social morphogenesis.

The social theorists proclaiming New Ages vary considerably in their reliance upon actual empirical findings, though all make some use of them. What they share is the logic of empiricism, a search for patterns of associations, whether metrified or not. This entails a 'flat ontology' of observable or indirectly detectable events. At that level, the associations recorded unavoidably mix contingent with necessary relations and have no way of distinguishing between the two since the strands from which the pattern is woven are simply happenings.

Yet, such events may be matters of complete contingency. Or they may be produced by the exercise of countervailing causal powers or be the combined effect of various causal powers working simultaneously and in conjunction with contingency. Within empiricist theorising there is simply no way of telling and the theory is usually adjusted to meet the current state of affairs.

Such a relationship between theory and empirical evidence can be seen in the monumental work of Castells (1996), Stalder (2006), in which he is open about the grounding of his 'Information Age' in the empirical domain and also theoretically reflexive about it. My point is illustrative rather than critical because the synergy on which his analysis pivots does indeed seem crucial to many of the changes taking place, although it is not articulated as a generative mechanism.

More radically, during the same quarter of a century in question, the ranks of SAC deniers have swollen dramatically. As Porpora maintains (Chap. 2), the meta-theoretical stance of denial rests upon conflation (Archer 1988, Fig. 1.1, p. 290; Fig. 1.2, p. 304). Instead of distinctive properties and powers pertaining to structure, culture and agency, any pair is conflated with one another, thus ruling out examination of the (changing) interplay between them and its theorisation. The guiding metaphor is of 'flows' or 'liquidity'—and it depends upon a prior dissolution of all three components of SAC. Thus, the leading trope of 'liquid modernity' explicitly depends on an eclectic combination of denials of 'structure'

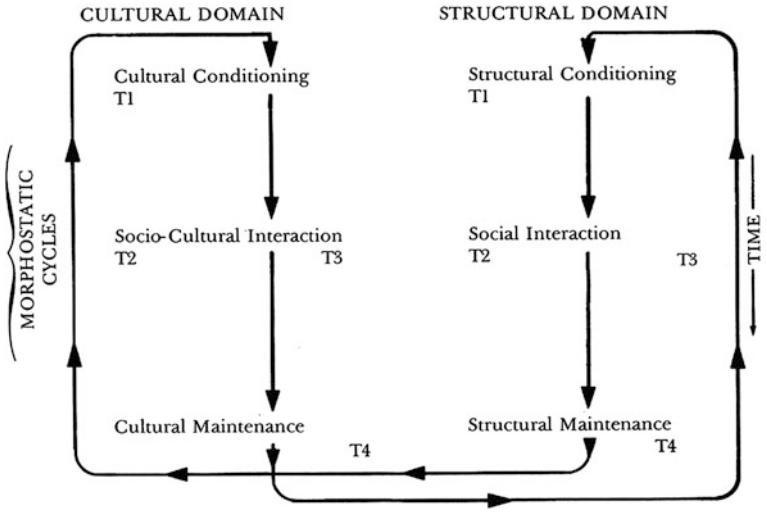

Fig. 1.1 Societal morphostasis

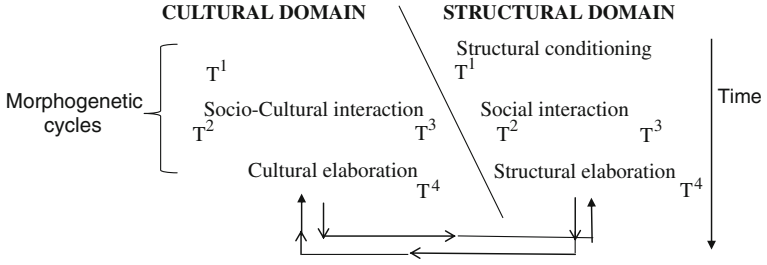

Fig. 1.2 Societal morphogenesis

[replaced, for example, by theoretical assertions about 'destructuration' in the work of Beck and Beck-Gernsheim (2002)], denials of 'culture' as anything more than what people carry in their heads, surprisingly endorsed by Elder-Vass (Archer and Elder-Vass 2012) and susceptible of kaleidoscopic permutations, and of 'agency', rendered fluid by notions of serial self-invention, thus severing ties with personal and group 'identity', 'interests' and 'commitments' (if anti-humanism does not make such notions irrelevant by reducing agents and actors to 'actants'). In consequence, the picture of the social order being shaped and reshaped by groups seeking to advance their material interests, their ideal interests and who they are is obliterated by the imagery of fluidity. In turn, the liquid society cuts loose from 'self-government' and from struggles for domination and control (societal or sectional) because it becomes literally ungovernable and uncontrollable, as conveyed by the images of the 'runaway', 'juggernaut' or 'risk' society.

What this version of social theory has done is to throw up its hands with respect to seeking any generative mechanism accounting for the tendential development of the social order. Moreover, having given up on 'self-government', there is no serious attempt by the liquidity theorists to move over and take 'self-organization' seriously. This is what distinguishes our collaborative effort in this book. We have not given up on explanations, we have not turned into SAC deniers and we are still in search of generative mechanisms, rather than handing the future over to contingency. Thus, we are willing to explore the process of 'social morphogenesis'. Whether or not this will entail endorsement of the 'Morphogenic Society' is not a foregone conclusion.

Social Morphogenesis: From Toolkit to Theory

As the following chapters show in some detail, our discussion of 'social morphogenesis' has nothing to do with 'biological morphogenesis', a valid subject-specific enterprise but a very different one because the appropriate referents in the biotic domain are not those of SAC. Equally, it is not continuous with cybernetic systems theory, despite being informed by the helpful precision the latter has added to the concepts of negative and positive feedback in relation to morphostasis and morphogenesis. Not only are these systems theories relatively indifferent to the relations between the elements of SAC, but there is also a specific lack of concern for agency that permeates such theorising in general, reaching its climacteric in Luhmann's work. Furthermore, given this tendency for systems theory approaches to derogate the human agent and the promotive and defensive activities of social groups seeking to advance their ends, this usually involves jettisoning human thriving or the common good as the crucial yardsticks by which to assess what changes in a social system may be deemed 'adaptive'.

In the social order, feedback, whether positive or negative, cannot be 'automatic' but is necessarily mediated by human reflexivity, be it individual or collective. It can only be 'mechanical' in machines (the thermostat). For instance, even simple social feedback such as 'You have passed/failed your driving test' does not work mechanically: if someone fails, they can determine to re-take the test; if they pass, they can nevertheless reflexively decide that they will not drive. Given human self-consciousness, feedback is never 'automatic'.

Take the example given by Maruyama (2003) about how a settlement develops somewhere on an otherwise undifferentiated plain. When the first cabin is built because the settler's horse died there, the feedback to the next rider passing by does not mechanically determine that he automatically stops and builds a house next door; he will deliberate (e.g., on the advantages of having a neighbour vs. say, his preference for being closer to a water source).

All social feedback is reflexively reviewed by human subjects, exercising the reflexive properties and powers of all normal subjects (Archer 2007a, b, p. 4);

either as particular persons or shared with others (collective or relational reflexivity). Those who join an association to promote X (one believed by them to reflect their concerns and values) and then receive negative feedback in terms of what the association does, can simply determine to leave—with or without any external dialogue. They do not have to leave, they may internally reflect on possibilities of reforming the association—they have options—but which are taken will be determined by their reflexive internal conversations, which may or may not be externalised in shared conversational deliberations. In any case, human reflexivity is a necessary mediatory process for responding to feedback and reflexivity is becoming more and more imperative as opportunities increase (Archer 2012).

The first four chapters are concerned to distinguish consideration of the 'Morphogenic Society' from the Morphogenetic Approach (M/M), which I have been using and developing since 1979. This is wholly appropriate because the M/M approach is an explanatory programme—providing guidelines for other investigators about how to investigate what they seek to explain—it is not a theory and thus it explains and purports to explain nothing. Porpora (Chap. 2) makes this extremely clear, as well as providing a concise outline of how the morphogenetic approach works and its respect for SAC. However, since misunderstandings abound, it seems useful to distinguish clearly between the M/M approach, which can be used for examining any given time, place or level of problem, and the 'theory' about the *increasing import* of 'social morphogenesis' in recent decades. The concept of 'Morphogenic Society' is obviously theoretical because it involves an extension of 'social morphogenesis' that is not entailed by the latter.

Perhaps it is helpful to delineate the structure of social theory as follows (Archer 1995, 20–6):

SO → → → →	EP → → → →	PST
Social Ontology	Explanatory programme	Practical Social Theory

All theories have a social ontology, whether implicit or explicit, which effectively defines the constituents of the social world. Therefore, the SO performs a role of conceptual regulation because it governs those concepts that are deemed admissible in description as in explanation—just as an atheist cannot attribute his well-being to divine providence. In itself, a social ontology explains nothing, although it may exclude certain explanations, cast in 'improper' terms. In itself, an SO tells no one how to go about explaining anything. For this an explanatory programme is needed. That is what the Morphogenetic Approach is; the methodological complement of Critical Realism, which is its meta-theoretical social ontology. The basic M/M diagram, reproduced by Porpora (Chap. 2) and discussed by Maccarini (Chap. 3) supplies guidelines about how analytically to break up the material in hand to form the three temporal phases making up a single morphogenetic cycle, which ends in either change or stasis and represents the start of the next cycle. It is the investigator who contributes the material and problem to be explained and, if successful, produces what I have called a Practical Social Theory. The EP will have assisted in

marshalling the SAC components to account for the 'who', 'when', 'why' and 'what' of change, but it is the PST that does the explaining.

In the first work to use the Morphogenetic Approach (Archer 1979), I played both roles—developing the EP and then using two morphogenetic cycles to advance a PST about the social origins of State educational systems and their effects—which perhaps served to confuse. The results of this first study were twofold: first an account of how, in nonlinear fashion, a novel social institution (State education) came about in four different countries through collective interactions that were differently conditioned. However, it was equally important to be able to explain why some of these new systems were 'centralized' and others 'decentralized' and with what consequences. This represents an extended illustration in support of Lawson's argument (Chap. 4) of the need to distinguish between the 'totality' (State educational system) as an emergent 'entity' that can only exert a synchronic causal impact *through* its component parts, unlike the impact of the 'relational organizing structure' (centralised or decentralised), which can exert downward causation on its components. What his argument demonstrates is the need to continue refining the EP in the light of the SO, for in his chapter, Lawson, too, attempts to explain nothing.

This excursion was not meant to be didactic, but has a point to underline that is both crucial and quite ironic. When beginning to speculate about 'Morphogenic Society' this is no longer to remain at the EP level but, given much further development, it would (potentially) be to advance a theory and thus to move from the explanatory programme of the M/M approach to put forward a PST.

Three Levels of Social Morphogenesis

The Morphogenetic Approach delineated three orders of emergent properties (1995, 213–8) that condition social action and outcomes at different levels of scope (there is nothing sacrosanct about the number; levels can be added whenever emergence can be sustained). In fact, the 'basic diagram' refers to all three levels, although most commentators have restricted their attention to first-order emergent properties, namely, those structural and cultural features that resulted from past actions but now contextualise and condition current action (for example, the structural form and cultural contents of education at any given time). They do so through shaping frustrating or rewarding situations in relation to agents' interests and concerns, then leading to interaction whose outcome is the effective cause of either morphostasis or morphogenesis.

Since at any time innumerable M/M cycles will be simultaneously underway throughout the social order, shaping and reshaping it non-isomorphically, there will constantly be second-order properties, emergent from the 'results of the results' of (that is, the relations of the relations between) earlier cycles and their relational outcomes in different substantive areas. For example, a new State educational system will have equally new relations with whatever form of economy, polity,

organised religion, family, etc., with which it has just come to co-exist. Specifically, at this meso-institutional level, these will be relations of structural or cultural complementarity or incompatibility, which constitute new emergent properties and are influential because the various institutions not only have to co-exist, but relations of indifference become rare once functional differentiation becomes pronounced. As a result of the results of prior interaction, there is no *a priori* reason why emergence and equilibration should coincide.[2]

These influences impinge upon those who are institutionally involved in the same way that first-order conditioning does, by shaping the circumstances in which each institution operates and thus impacting—positively or negatively—upon its members' material and ideal interests. However, in now discussing the meso-level, larger tracts of the population are involved and, in late modernity, all of it.

These second-order relationships may themselves be necessarily and internally related to one another (as with the polity and the command economy), but they can also help or hinder one another's operations even if they are only contingently related. This yields a two-by-two table of four kinds of second-order institutional relationships. Associated with each is a particular 'situation logic of action' whose guidance consists in supplying good reason for particular courses of action by attaching premiums and penalties to following or ignoring them. These operate through their positive or negative effects (feedback) upon institutional interests, material or ideal. In this way, situational logics provide directional guidance and in turn produce some regularity (see Maccarini Chap. 3), though well short of deterministic patterns being associated with the forms of interaction found in the four cells. (The type of situational logic generated by 'Necessary complementarities' is 'Protection', of 'Necessary incompatibilities' it is 'Compromise', and of 'Contingent Incompatibilities' it is 'Elimination') (see Archer 1988, Fig. 1.1, p. 290; Fig. 1.2, p. 304).

The fourth possibility is that of 'Contingent Compatibilities' which, unlike the others, has rarely, if ever, been encountered systemically at the second-order level. Nevertheless, it is held to be the most important in the new millennium and to be the second-order institutional complex that conditions social interaction in a potential or nascent Morphogenic Society through its situational 'logic of Opportunity'. This is particularly difficult to discern and to delineate fully for the simple reason that it has not yet predominated in any social formation and empirically is still now mixed with the institutional contradictions of late modernity and competitive situational logic of globalised capitalism and its resulting compromises. At present, response to the situational logic of opportunity is obscured by the defensive manoeuvres of corporate agents under multinational finance capitalism (for example, the further 'compromises' sought and granted on both sides by management and unions or the compromise lib/lab 'centricism'

[2] As Peter Blau recognised (1964): 'In complex social structures with many interdependent, and often interpenetrating substructures, particularly, every movement towards equilibrium precipitates disturbances and disequilibria and thus new dynamic processes' P. 314.

characteristic of the compromising political parties in Western democracy and their indistinguishable policies).

However, it should be stressed that such second-order analysis pertains to both the structural and cultural domains, precisely because of their relative autonomy. In turn, structure and culture are not necessarily in synchrony with one another, meaning that *their congruity or incongruity represents a third-level emergent* property. These relations impinge on the entirety of the population (now, the one global social system). Their relationship and conditional influence upon social interaction is ultimately responsible for conditioning whether the subsequent social trajectory is morphostatic or morphogenetic.[3]

Transformations of the Third-Order

The morphostatic and morphogenetic diagrams are useful in restating the issue. To do so invites a new way of asking 'Where are we going?' It introduces the question, can one talk about a morphogenic society? Basically, that means entertaining a social order governed increasingly by positive feedback, where change accelerates exponentially and whose distinctive process is for 'variety to stimulate more variety'. However, there can be multiple forms of morphogenic society since processes amplifying change may result in different types of relational organisation (Donati Chap. 11).

For pre-modern societies, the morphostatic diagram summarises how when both structure and culture were subject to negative feedback, the two were also mutually reinforcing, with the consequence of protracting the status quo as Weber described for Ancient India and China.

The history of modernity can be written as the long drawn out epoch—not yet over—in between the above diagrams, based upon a fundamental lack of synchrony between structure and culture, whose generic effects were:

(i) to slow down social morphogenesis, which was generated in the familiar forms of urbanisation, industrialisation, and democratisation, all institutional transformations produced through responsiveness to positive feedback, but also;
(ii) rendered social change not only slow but partial through the surges and lags between structural and cultural change and their differential impacts upon different sectors of the population—most obviously urban/rural—and;
(iii) to make it a supremely conflictual process, but one painfully slow in penetrating and mobilising increasing tracts of the population.

Through the 'double morphogenesis', in which agents are themselves changed in the self-same process of generating social change, these populations were

[3] Conditioning at lower-levels is not overridden. See Archer (1995, 214).

gradually transformed from Primary agents into Corporate agents (those collectively organised in pursuit of articulate aims). Even through this over-compressed sketch, it is still important to ask what has changed (see Wight Chap. 5) because many of the above three features are still evident today. Another way of posing the question is Porpora's: 'So what has been left behind?' It is possible to respond to this qualitative question even though empirically impossible to substantiate the quantitative speed of change.

To do so involves examining the third-order of emergence that has engaged at the macroscopic level—as the results of the results of the results (the relations of the relations) of the first two orders of morphogenesis. This is despite the empirical outcome still being obscured by the competitive compromises of late modernity. Realists will not be surprised that the conjoint and coterminous operation of more than one generative mechanism gives rise to a complex array of empirical manifestations, since multiple mechanisms can and do interfere with one another's exercise and resultant outcomes.

What is of overwhelming importance in the last twenty-five years is the fact that structure and culture have come into *synergy* with one another with far reaching morphogenetic consequences. Their morphostatic reinforcement (Fig. 1.1) is precisely what underwrote the endurance of 'old and cold' early societies through action motivated by vested interests in negative feedback (the situational logic of 'Protection'). It is now ventured that its opposite is coming into being, namely that cultural and structural morphogenesis are becoming increasingly symbiotic *through the perceived benefits of pursuing their positive feedbacks simultaneously and synthesising them.*

Clearly, this can also be told as a historical narrative (and explained through an analytical history of emergence) rather than simply stated as a theoretical proposition. Schematically, it would begin with non-overlapping groups of cultural and structural agents. We can caricature them as the scientists of Silicon Valley, initially unrelated to the endeavours of late twentieth-century capitalism (at first being more closely related to the military), and the structural protagonists of multinational capitalism, pushing out globally for cheap labour, scarce natural resources and expanded markets. If we want to put a significant date to this synergy (a 'tipping point', designated post hoc, as they necessarily are), it would be that confluence in the 1980s epitomised by the structural development of the multinational enterprises, the abandonment of the Bretton Woods agreement on foreign exchange dealings, and the cultural invention of the World Wide Web. Obviously, these had their precursors, calling for analytical histories of emergence at earlier second-order levels. Space precludes their examination here just as it prevents detailing the intricate synergistic intertwining that followed between globalised corporations, finance capitalism and informatics, but whose exemplifications are well known.

Part II. Social Formations and Their Re-formation

However, these phenomena are not the tidal bore of liquidity. The synergy responsible for the global overflow of change continues to extend through the

generative mechanism of 'variety producing more variety', which works via positive feedback. As novel items (ideas, techniques, products, skills) are added to the cultural and social systems, so too the range of potential compatibilities between them increases. Innovation and even invention become matters of creative combination and change amplifies in speed and scope. Although openings for profit grow alongside, the competitive instrumental rationality of modernity ceases to be the sole motor and motive driving social morphogenesis. The situational logic of action shifts progressively away from zero-sum competition (with its winners and losers) by valorising the production of novelty through making connections, without such innovations having to overcome the opposition of entrenched interests because these cannot yet have become consolidated where new variety is concerned. The situational logic of Opportunity is still trammelled by that of Competition (hence wars over patents and copyrights versus Open flows and cyber-commons) but it has—unlike every other situational logic—the potentiality of fostering 'win–win' scenarios. Only, if and when that potential is realised will it be justifiable to talk of a Morphogenic society. If and when that happens it will be a very different place and one marked by heterogeneity at all levels and in all domains.

It would become more justifiable to use the concept of Morphogenic society if, having conceded the impossibility of empirically quantifying the amount or speed of change, some sociological precision could be given to those social forms, practices, concepts, activities and ways of life that would fall into desuetude were social morphogenesis to become increasingly unbound. The following illustrative list is intended only to point to the profound qualitative changes potentially involved: loss of inter-generational contextual continuity, of habitual and routine action, of vested (but not objective) interests, of traditional social classes, of cultural capital, of lasting norms, of a stable role array, of representative political parties and of institutionalised forms of geographical belonging. This list is far from exhaustive, completely unordered and an introduction is not the place to begin its discussion.

However, in Part II: *Social Formations and their Re-formation* three contributions are juxtaposed that are not in complete unanimity about the brief sketch just offered (and expanded in Chap. 8). Whilst my own analysis does not endorse a 'self-government' model for the social order, it has certainly not given up on the shaping of society by the conflicting pressures of primary and corporate agency straining for but never achieving 'self-government'. The prospect of a Morphogenic society and the possible forms it can take remains as relationally contested as all previous social forms throughout modernity. Human consciousness and concerns, individual and collective reflexivity, promotive and defensive organisation and institutional developments all retain their explanatory importance despite all also having undergone change.

However, Hofkirchener (Chap. 7) advances the more over-arching claim that the model of change as 'self-organization' is capable of embracing social morphogenesis, incorporating the forms of interaction just mentioned under what he terms

'revolution' along with other processes that systems theorists have traditionally termed 'evolution'. Hofkirchner is obviously right that there is nothing, in principle, which confines social elaboration to being the resultant of a single process. Whether his generous, eclectic 'evo-revo' offer can be accepted is for the reader to judge. Much turns on whether radical 'change', 'development' and 'evolution' are equally appropriate terms to apply to the social order.

Those applying complexity theory to society have rehabilitated the use of the term 'evolution' (as, ironically, they have also done for 'emergence' and 'equilibrium'). But what has happened to the old and fundamental sticking point in relation to the changing social order, the unanswered question 'Adaptive to what?' In his early discussion on social morphogenesis, Buckley showed an honest ambivalence about social 'evolution': 'In the last analysis, it would not appear fruitful to attempt to apply an evolutionary framework to social change and development. The system is far too complex, and criteria for adaptation in the longer run too difficult to determine … Yet, if we contemplate the course of sociocultural history over long periods of time it would seem that some kind of evolution of social and cultural structures has occurred' (1998, 74). Nevertheless, he still entitled his book Society—*A Complex Adaptive System* and he had mooted the issue of complexity.

Kate Forbes-Pitt (Chap. 6) confronts both ambivalence and eclecticism by moving to a meta-theoretical level and speculating about the philosophical grounds on which the assumptions of complex 'self-organization' and those of relational realism could consistently meet and exchange. She readily grants that many metaphorical borrowings by social theorists need to be stripped of their over-hasty appropriations from complexity theory in natural science and some practitioners of the latter need to restrain their buccaneering. Her suggestions for potentially establishing compatibility between complexity theory and social morphogenesis are based on two grounds. The first is meta-theoretical and rests on the real (as opposed to statistical) relationality of both approaches. They are formally alike in holding relations—rather than entities—to be their subject matter, and relations between relations to be the *explanans* for both. That does seem worthy of further exploration. The second, however, is not meta-theoretical but is proffered in terms of explanatory programmes. Here, Forbes-Pitt ventures a possible parallel between 'system' and 'social integration', which has been productive within the morphogenetic approach (M/M as an EP), and the articulation of a similar distinction between the complex system and its parts. For the time being, it appears difficult to imagine what the equivalent to 'social integration' could be in the natural world since the referents of the sociological term (Lockwood 1964) are conflictual and consensual relations between people and groups, which depend upon their human properties and powers that have no naturalistic equivalents. However, is this particular meaning of 'social integration' the only one, namely human bonding and human antagonism, or could it be construed naturalistically (without loss) as the

presence or absence of the linkages that constitute networks? It is partly to this question that the final section turns.

Part III. Networks: Linkages or Bonds?

Despite the tradition stemming from Harrison White and the growing mathematicising of network analysis, none of the last three chapters deals with the phenomena of networks as a matter of linkage alone. That is, as a matter of naturalistic connectivity or confined, as Luhmann represented it, to communication alone. No one denies connectivity but all retain the human relational connection with the original meaning of social integration and its opposite (power and struggles). Perhaps this tenacious humanism is not only an acknowledgement of SAC but also a recognition of the growing deficit in social integration now confronting the globalised world—and the problems it creates. Perhaps, equally, it is a theoretical acknowledgement of the dangers if social morphogenesis results in an intensification of heterogeneity (Maruyama 1978) without integrating growing variety as diversity in the world's population. In other words, these contributions all recognise that there is no single (even nascent) social formation corresponding to the Morphogenic Society. As a 'whole' it can take different forms of 'relational organization', as Lawson helpfully outlined (Chap. 4). Which of these may or do develop is closely intertwined with the nature of their constituent networks.

This is because, as Lazega (Chap. 9) maintains, the meso-level of networks is what links micro-level changes (such as those in personal modes of reflexivity) to the macroscopic level of the social order. The contrast with social complexity theory is striking because that approach clears the 'middle ground' completely, which is precisely why it can talk about 'agent based modelling' (i.e., micro- to macro- and vice versa). To these theorists, there is nothing of what Helmut Wagner termed 'The Problem of Scope' (1964). In Lazega's impeccable SAC analysis of networks of representatives and the nature of advice given by Judges serving the Commercial Court of Paris, he makes the important observation that '[s]tability is not automatic; it is fragile and threatened, by expansion, turnover, or normative conflicts among the elite themselves'. In other words, morphostasis has to be worked at—it is not a default option.

He finds that instead of a morphogenetic trajectory, there is a cyclical oscillation between morphostasis and morphogenesis within the network that may explain the resilience of this pre-revolutionary institution, still operating in late modernity. Elite status within the network is held by bankers with law degrees who foster non-punitive judgements for unfair business practice against others with the opposite normativity, and is, thus, broadly characteristic of a 'contested relational organization' (Chap. 8). Perhaps the influence of these representatives of finance capitalism should not be surprising in late modernity; possibly the oscillations within the Court bear similarities to those of lib/lab political parties; but, in any

case this is a necessary warning that social morphogenesis is not a straightforward upward trajectory (see Maccarini Chap. 3).

Differing from this nuanced account, the last two contributions look ahead to the role of networks from rather different perspectives. Al-Amoudi (Chap. 10) retains the background assumption of the social order as a 'relationally contested organization' and focusses upon authority as a relation of power where legitimacy is defined in terms of obligations within networks. Instead, Donati (Chap. 11) places the burden of restoring social integration upon the enhanced relationality of the networks, where power relations do not dominate. This is not outright disagreement because Al-Amoudi shows how *Occupy Geneva* explicitly rejects the legitimacy of the current crisis-ridden social and economic order, but he also documents how the movement begins, almost from the start, to elaborate its own integrative norms.

One question that Al-Amoudi's analysis in Chap. 10 raises concerns the fact that normative obligations are held to be internally related to social roles and to the 'hidden network' of role models, namely implicit reference points for members of networks. The issue arises because as social morphogenesis speeds up, so too 'role-making' assumes increasing precedence over 'role-taking'. Even accepting that the part traditionally assigned to 'role-taking' was far too static (Turner 1990), the problem arises because one aspect of faster social morphogenesis is that the role-array itself becomes more mutable, displays greater variety and, above all, the constant addition of novel roles. Is it then possible to talk of a 'hidden network' of role models for a social role that has just come into being? Who would these be, for example, in the case of the 'genetic engineer' or the 'forensic detective'? In such instances, should we be examining the shifting development of normativity amongst current practitioners themselves, such as the new—and perhaps ephemeral—norms differentiating between computer 'crackers' and 'hackers' as an aspect of social morphogenesis brought about, as Donati argues (Chap. 11), through their own 'relational steering'?

Whilst it appears that we unanimously support Donati's aim of conceptualising social morphogenesis in terms other than those of functionalism and Luhmannian systems theory and—to differing degrees and for different reasons—accept that '[n]etworks are an expression of social integration', the concept of 'relational steering' must be handled with precision. Care must be taken with the statement that what 'distinguishes the relational form of steering from other forms of steering is the fact that it is based not only on positive and negative feedbacks, but rather on relational feedbacks'. The latter are not a third and distinctive kind of feedback. If acted upon, and there is no deterministic necessity for that to happen, then deviation amplifying positive feedback and restorative negative feedback are what networks of couples, friends and third sector associations receive and to which

they respond, not a third kind. Their reflexive deliberations are what define their courses of action, which does not preclude external negotiation between them, but human responses to feedback of either kind are—as Donati argues—always reflexive and never mechanistic.

Instead of a distinctive form of feedback, 'relational steering' refers to *how* positive and negative feedbacks are received in relation to a particular *goal*—the pursuit of the network's *common good*.[4] And that is where the concept becomes of considerable interest for the prospect of a Morphogenic society. One of Donati's consistent concerns (see his Fig. 11.1) is un-stabilised social morphogenesis, giving rise to a dissipative or chaotic society through its loosely related or unbonded nature. In that case, social theory would indeed hand over to complexity theory, but he articulates an alternative—one that valorises and is also dependent upon social integration.

Thus, the key question becomes, from the multiple versions that Morphogenic society could assume, which are most and least propitious towards the co-existence of that higher social integration and system integration upon which stabilization-without-stasis depends? The major factor militating against their mutuality is the endurance of the situational logic of competition, which in fact intensified by moving onto a global scale since the 1980s, reducing both types of integration simultaneously. As production, investment, markets and employment became increasingly global, what was lost was the post-war mutual dependence between the systemic and the social (Archer 2007b). Whilst ever the boundaries of the nation-state retained some real importance in defining the outer skin of societies, the necessary and intensive interplay between the systemic and the social within the same territory also meant that the state of social integration *mattered* to systems integration and vice versa. This is the storyline of the unfinished 'post-war formula' made up of social democracy + neo-capitalism + the welfare state, which was cut short by the morphogenetic synergism of the late twentieth century.

The effects were registered as a simultaneous decline in the relatively high levels of systemic and social integration that had recently been achieved in the developed democracies, and the simultaneity of their decline reinforced the fragmentation of each other. In Albrow's words, 'once culture, economy and even politics were delinked from the nation-state, there followed more general delinkage of each from the other, and of all from society' (2002, 8 see also 1997). Mutual regulation depended upon the state of society mattering to the working of the system and the progressive regulation of systemic institutions mattering to members of society. This was decreasingly the case for the multinational economic elites whose concern about their practices receiving legitimation from within any nation—which in the past had meant accepting conciliatory regulation—evaporated because now there was no determinate and indispensable population of

[4] 'Relational steering consists in sharing the relationality of the network as a common good (a relational good) among subjects that intend to accomplish a project open to new opportunities'. Donati in this volume, Chap. 11 , p.22 ON PROOFS.

employees who were also its national legitimators. Social consensus became increasingly irrelevant to the exercise of institutional power, which had less and less need to strive for legitimate authority (see Chap. 10).

Hence the situational logic of competition continued to be most marked in the multinational corporations, but the absence of legitimation became the new institutional rule: education and health became global enterprises, run as such, indifferent to where they recruited fee-paying numbers, collaborating with metrified world listings and competing in new fields—the IMBA or tourism for cosmetic surgery. The one institution that could not remain indifferent to legitimacy, because it cannot substitute among its subjects, remained the national polity. These staggered on with versions of the same bureaucratic centrism in Europe and America until and during the economic crisis. Nothing could underline the new abyss between system and social integration more clearly than governments pressing for more austerity and the almost classless resistance of their populations to that same austerity. Once the trivialising manoeuvre of scapegoating the superrich (bankers' bonuses) fails to distract, the full brunt of low system integration fuelled by the logic of competition will be confronted as antagonism.

Yet, plummeting social integration, where the divide between employed and unemployed joins that between the generations; where ethnic 'illegals' reanimate racism fuelled by the 'poor white' grievances of the indigenous population; and where the criminal classes foster turf warfare in the inner city and buy themselves into what they please outside it, represents widespread volatility but renders the aggrieved incapable of combination. Low system integration together with low social integration has always been regarded as an explosive formula, propitious to radical change. Nevertheless, it is not the sufficient condition for issuing in a new social formation. Social conflict and social change are often related but they are not synonymous; further compromises may yet prevail and procrastinate.

Conclusion: Transition and Transformation

Finally, this book raises the question of whether or not the process of social morphogenesis may issue in a Morphogenic social order—one that could assume the same multiplicity of forms as has been the case in modernity. Here, it is important to distinguish between 'transition' and 'transformation' as different phases of macroscopic change, displaying different features. Specifically, from the M/M approach, transition refers to the interactional (T^2–T^3) phase, whereas transformation would designate the resulting elaboration at (T^4). The basic shortcoming of empiricist and actualist accounts is that observable *transitional* features are simply extrapolated and presumed to constitute *transformation*. Instead, and at most, social morphogenesis has been discussed as a process that could prove *transformational*. Contributors are in agreement about the meta-theoretical need to adduce a *generative mechanism* accounting for the possible transition towards transformation, but not yet clear—and therefore cannot be consensual—about either its definition or operation. Transition is always a messy business, with its differential surges, lags and resistances at the institutional level, given the different objective interests involved. Precisely because of this, it can

also be long drawn out and some of the 'compromises' attempted can appear to be, and could possibly constitute, effective life-support systems for the prolongation of modernity.

What I have ventured in this Introduction is a preliminary theoretical sketch of a *generative mechanism* whose unfettered exercise could issue in a Morphogenic social order. However, it is indeed fettered by structural, cultural and agential influences operative in late modernity—though largely elaborated in the nineteenth century—whose protagonists continue to maintain that 'there is no alternative'. Thus, what has been considered here (contra-TINA) is not a 'Manifesto for Morphogenic Society'. Rather, a theoretical agenda has been proposed in order to promote further clarification and future deliberation. The ten contributors to this volume—and to our ongoing Workshops—should be seen in the role of discussants and not of advocates.

In summary and with due respect to SAC, the sketch ventured works in terms of the three orders of emergence resulting from social morphogenesis today. At the macroscopic level (third-order), the generative mechanism is held to derive from 'Contingent Compatibilities' coming to predominate societally for the first time, though to different degrees throughout the one global social system. It consists in the relationship of intensive synergy between structure and culture that, in turn, introduces the situational logic of opportunity in opposition to the prevailing logic of competition.

At the institutional (second-order) level, however, we confront the paradox of various institutions seeking to take advantage of such synergy whilst also retaining the situational logic of competition (particularly the market economy) and compromise (especially the national polity). In other words, the institutional array—including market and state—does indeed contribute to social morphogenesis. Nonetheless, the changes endorsed are ones intended to defend, promote and prolong vested interests that are rooted in modernity. In consequence, the situational logic of opportunity is far from being universal. This raises two major questions:

(i) Can the situational logic of Competition—and its attendant compromises—be displaced by the situational logic of Opportunity, and variety then be distributed throughout the social order rather than concentrated in the hands of a minority?
(ii) Does social morphogenesis require regulation such that variety is integrated as diversity rather than division or can it realistically be regarded as self-regulating?

At the (first-order) level, agents (individual or collective) and actors confront rapidly changing structural and cultural contexts in daily life and across generations. Does this necessarily augment low social integration by fostering incomprehension, disunity and transitional Luddism? Alternatively, but with the same consequence, is agential heterogeneity becoming such that solidarity is precluded by individualism? Since we tend to regard competitive individualism, in its many manifestations, as the root problem blocking change to a better if not necessarily a

morphogenic society, we are disinclined to follow any of those theories proffering yet further individualism as the inevitable outcome: be it 'institutionalized individualism', 'cosmopolitan individualism', 'networked individualism', or the 'transactional individualism' towards which Systems Theory has tended in the past. Quantitatively, change seems likely to increase in pace, but qualitatively what type of society will be promoted by intensified social morphogenesis hangs on the answer to the last key question:-

(iii) Is the transition towards a social order possible, whose relational bonds underwrite social solidarity despite the current global deficit in social integration?

Different answers to each question will lead to different conceptions of the social that could be realised in various parts of the world through distinctive global and glocal interplays between their SAC features. However, the transition to and stabilisation of a new Morphogenic social formation ultimately hangs upon system integration and social integration not only increasing but coming into a relationship of mutual regulation—and that is the most problematic condition of all for transformation.

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Part I
Social Morphogenesis and Societal Transformation?

Chapter 2
Morphogenesis and Social Change

Douglas V. Porpora

Have we entered a new stage of society that might appropriately be called morphogenetic? To say so is to use the word morphogenetic in a new way. Morphogenesis, a term that comes from the Greek, literally means a change in form or shape. Although its original usage was in biology, morphogenesis was picked up as a term for social change by social systems theorists, who at that time thought biological models might also be appropriate to society.

Margaret Archer (1982, 1995, 2007), however, gave the term new currency in social theory by using morphogenesis to identify a realist approach to the structure-agency problem as distinct from the then more prominent approach of Giddensian (1979, 1981, 1984) structuration theory. As Archer conceptualized it, morphogenesis depicts a dialectical relation between structure and agency that, in contradistinction to structuration theory, does not conflate the two. So conceptualized, morphogenesis also departs from social systems theory, which generally represents a variety of social holism that leaves individual agents entirely out of account.

Archer's morphogenetic approach caught on at least in realist circles, broadly enough to be equated with the realist approach to social theory. I myself have been one of its strongest supporters, describing it as a contemporary articulation of the pivotal principle underlying a non-reductive Marxian approach to political economy (Porpora 2011). As such, morphogenesis is a meta-theoretical rather than a theoretical conception.

To speak now of morphogenetic society is to relocate morphogenesis from meta-theory to theory, that is, to identify it with particular mechanisms associated with a particular social formation. This book as a whole represents an initial appraisal of how apt such a theoretical designation might be.

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But before we even begin speaking of morphogenesis in theoretical terms, we need to understand morphogenesis as the meta-theoretical principle Archer originally conceived it to be. Presenting such understanding is the purpose of this chapter. More specifically, the purpose of this chapter is to present the morphogenetic approach as a meta-theoretical basis for understanding and explaining social change and in fact as the only tenable meta-theoretical basis for doing so.

As I have been speaking of the distinction between theory and meta-theory, I need to make that distinction clear. Although some have sought to provide what they call morphogenetic explanations for some aspect of social life, I believe such effort—or at least that designation of such effort—is misguided. As a meta-theoretical principle, the morphogenetic approach does not explain anything in particular. It resides rather at the level of underlying philosophy or fundamental ontology. The morphogenetic approach identifies the ingredients of any explanation of social change, namely structure, culture, and agency, and the generic form of their interrelation.

Any particular social change will need to be explained by the particular structures, by the particular cultures, and by the particular agents involved. In itself, as a meta-theory, the morphogenetic approach does not say anything about these. Thus, as a meta-theory, the morphogenetic approach explains nothing. On the other hand, I will argue, the morphogenetic approach identifies the inescapable form that every effective account of social change must take when fully explicated.

I will begin by explicating what the morphogenetic approach is. I will then compare it with the other approaches current in sociology today, which end up variously conflating structure, culture, and agency. Then, I will review various forms of social change and how the morphogenetic approach accounts for them. Finally, I will turn attention to the world today with questions about the appropriateness of calling our current stage morphogenetic.

2.1 The Morphogenetic Approach

The morphogenetic approach begins with what Archer (1995) calls analytic dualism. Actually, today, the designation analytic dualism may be a little misleading as there are at least double—and perhaps even triple—distinctions that need to be maintained, in which case we are beyond the dual.

Archer originally coined the phrase analytical dualism against Giddens's duality of structure, which, redefining structure principally as rules, thereby assimilated structure into agency. In opposition, Archer's analytical dualism affirms the continuing need to maintain an analytical distinction between structure and agency. Although they always interrelate causally, structure and agency remain ontologically separate.

According to the morphogenetic approach, structure does not refer to rules as it does for Giddens's structuration approach. As in the case of sociological holism and other more traditional understandings, for the morphogenetic approach as well, structure refers to relations. But in contrast to sociological holism, the morphogenetic

approach does not take structure to be relations among putative parts of a social system regarded as superorganic wholes. Instead, for the morphogenetic approach as for Marx, structure refers to human relations among human actors—relations like power, competition, exploitation, and dependency. I say these are all relations among human actors, but, more precisely they are relations among social positions that human actors occupy. Thus, it is more precise to speak of structure as relations among social positions.

So far, we see that one analytical dualism that the morphogenetic approach maintains is the distinction between structure understood as social relations and the agency of people within any such social structural arrangement. Yet there are still other distinctions Archer—rightly, I believe—enjoins us to maintain. In particular, we are also to maintain the distinction between culture and structure and between culture and agency. In all cases, Archer is seeking to avoid what she calls 'conflation', the erasure of distinctions that are analytically needed.

The distinction between culture and structure is another that sociology now tends to conflate. Anthropologists may be wont to encompass everything human under the category of culture but, traditionally in sociology a distinction was made between the ideal and the material or between the subjective and objective or what we perhaps now may call the discursive and extra-discursive. In each of the pairs of contrasts just listed, culture belongs to the former and structure to the latter term.

As for Marx so with the morphogenetic approach, the relations constituting social structure may be either subjective or objective in an ontological sense (Porpora 1993). On the one hand, a marriage relation exists only if the people occupying the related spousal positions understand what marriage is and what it entails. It is a relation that in this sense is ontologically subjective or, more precisely, inter-subjective. In contrast, a relation of exploitation or dependency may obtain between people or the social positions they occupy without anyone noticing it. In this sense, those relations are ontologically objective. So the ontological distinction between the subjective and the objective or the discursive and extra-discursive is another dualism the morphogenetic approach analytically maintains.

In contrast, with the so-called cultural turn in sociology (see Friedland and Mohr 2004), the concept of culture has now more or less swallowed up the concept of structure. The one-time debate over whether chronic poverty is the result of social structure as opposed to a so-called culture of poverty is now much harder even to conceptualize. Yet the issue has not gone away. In fact, with the worldwide crisis of capitalism and the attendant increases in unemployment and poverty, the issue has again become prominent (Small et al. 2010; Wilson 2010).

The distinction between culture and agency also needs to be maintained. In at least one regard, culture is what we collectively produce and agency what we individually do with it. To take one example, none of us individually produces language, which is a collective, emergent phenomenon. On the other hand, it is each of us individually who speaks through one language or another, exercising our own individual capacities as coherent selves to choose what it is we say. It is not rather, as poststructuralists would have it, that language is the agent speaking through us.

Thus, an important motivation behind the continuing distinction between culture and agency is not to let human agents be dissolved into culture in the manner of the poststructuralists, who prefer to speak not of coherent persons with coherent Cartesian selves but only of more ephemeral subjectivities or subject positions that appear and disappear in unfolding conversation.

Generally, an explicit premise of the morphogenetic approach is that persons are more than just inert occupiers of subject positions, that they possess both material interests and idealistic convictions and that they act more or less coherently out of both. They can be encountered as coherent 'thou's who, unlike subject positions, can suffer, and it is in part to mitigate suffering that we theorize.

The various distinctions captured by the designation analytic dualism are really just the important presuppositions of the morphogenetic approach. We now need to unpack the approach itself. As I mentioned before, for me, the approach simply articulates Marx's (2000) famous quip that 'men [and women] make their history but not under circumstances of their own making'. In other words, viewed here as ontologically and analytically distinct, there is, nevertheless, a dialectical relation between agency on the one hand and structural and cultural circumstances on the other. But to break into that circle and understand human action, we must begin with the circumstances, the actors' context.

Essentially, the morphogenetic approach signifies the understanding that people always act out of structural and cultural circumstances, which their very actions then proceed to modify or sustain. The element of time is therefore introduced as depicted in Fig. 2.1. We begin at time T^1 with the antecedent circumstances either structural or cultural or both. Whereas in Giddens's structuration scheme, motivation disappears (see Porpora 1993), according to the morphogenetic approach, there are dual sources of motivation, i.e., both structural and cultural. Structural motivations derive from the interests built into social positions, and cultural motivations derive from people's value commitments and ultimate concerns.

As people act within their structural circumstances over time T^2, they alter or sustain those circumstances in the process Archer calls structural elaboration (Fig. 2.1). The same applies to cultural conditions. They are altered or sustained by human actions. The results at time T^3 are the altered and sustained circumstances that comprise the antecedent conditions for any further analysis of action.

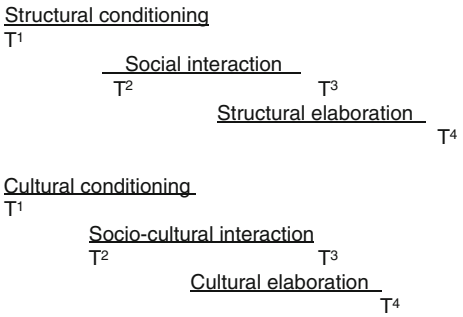

Fig. 2.1 The morphogenesis of structure and culture. *Source* Archer (1995, 193)

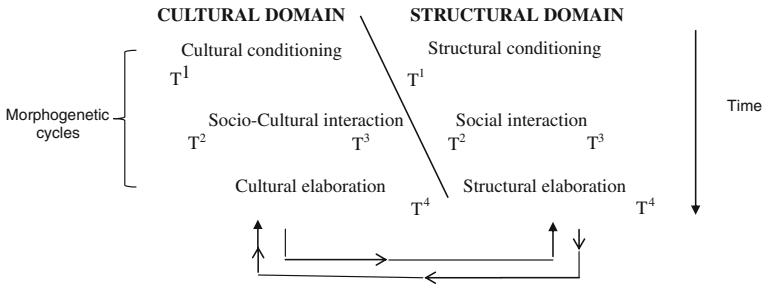

Fig. 2.2 Morphogenesis with structure and culture together. From Archer (1995, 323)

Figure 2.2 depicts the morphogenetic process in a more detailed manner, and it is clear here how, for Archer, culture and structure are both incorporated. However much people act on their structured interests, for example, they will always do so in ways that are culturally informed.

Crucial to the morphogenetic approach is that human action is undetermined even by structure and culture taken together. Instead, even with all the structural and cultural factors taken into account, human agency always exhibits an ineluctable creativity (see Joas 1997) that defies subsumption by any kind of nomothetic laws (see Porpora 1983). Thus, even taking structure and culture fully into account, human behavior can never be explained in terms of such laws. Instead, the morphogenetic approach favors narrative history as the paradigmatic form of explanation with the particularities of time and place always taken into account.

In sum, the morphogenetic approach completely supersedes the whole opposition between methodological individualism and sociological holism. In contrast with methodological individualism, people do not act apart from or outside of cultural and social structural contexts, and in contrast with sociological holism, the causal focus is on individual people enmeshed in a nexus of human relations, not on parts of a social system connected by functional relationships.

Ultimately, the morphogenetic approach brings together as analytically distinct concepts structure, culture, and human agency. Perhaps, to be added to this list should also be things, both natural and humanly made, since, as we will see in the next section, new or transformed things also play a role in social change.

2.2 Social Change Understood Morphogenetically

So, again, for the morphogenetic approach, social change involves a dialectical relation between human agency and the contexts in which those agents find themselves, contexts that include culture, structure, and physical things. Within that overriding framework, however, change may take a variety of forms.

One kind of change follows from invention. Consider, for example, the invention of the cotton gin, of the computer, or of the Internet. There are all sorts

of motives for invention, but certainly the prevailing context must include capitalist relations wherein one gains monetary compensation from inventing labor-saving technologies. The cotton gin or cotton engine was certainly a labor-saving technology that in turn effected great changes of the prevailing culture and social relations. As cotton became much more profitable, cotton production spread across the antebellum American South, expanding and entrenching the institution of slavery along with it. With that transformation and the enormous wealth it created, Aristocratic southern culture developed as well. Thus, in morphogenetic terms, a change—in this case an invention—created by human agency situated in an original context led to a radically changed social and cultural context.

Similar stories could be told about the computer and the Internet. Certainly, both profoundly transformed the prevailing divisions of labor and both, in turn, also profoundly transformed cultural consciousness in all sorts of ways. One need only consider, for example, how young people now do much of their dating via online mate-matching services.

Turning now from physical things, a second kind of change, often purely cultural, is associated with work done within a paradigm or genre. Certainly, the change is great when it is an entire paradigm that changes, when we move, for example, from classical to quantum physics or from Newton to Einstein. Nor is it only in science that we can speak of paradigm changes. We can speak equally, for example, of large transformations in aesthetics as, for example, the shift from realism to impressionism in painting or from modernism to postmodernism in architecture.

But change also occurs within a paradigm or aesthetic paradigm. The accumulation of knowledge through the work that Kuhn (1996) termed normal science within a paradigm still represents change, even if the results are less dramatic than scientific revolution. And it is the same with aesthetic disciplines. The production of different artistic pieces within a genre is a change, even if those pieces leave the genre intact. These smaller changes too can only be understood within a framework that begins with actors acting in a prevailing context.

What is true of the smaller cultural changes above is true as well for smaller changes in social structure. Not all changes in social structure alter the structure. Some changes merely alter the incumbents of each position. Such change occurs, for example, after an election in which an opposition party takes over from the party that was previously in office. Again such circulation of elites results from actors acting within a prior social context. The ensuing result, while not in itself dramatically transforming the structure of relations, might lead to such if the new incumbents opt to take matters in that direction and succeed in doing so.

According to the social regulationists such a meso-level kind of change occurred in the 1980s with the transition to a post-Fordist regime of production (see Jessop 2006). Regulationist regimes of capital accumulation are long-standing accords between capital and labor. Such regimes thus are not alternatives to capitalism but rather are a specific modus vivendi within overarching capitalist relations. Often being internally contradictory, such regimes, the regulationists argue, encounter crises that lead to the renegotiation of new regimes.

According to the regulationists, it was such a renegotiation that occurred in the 1980s. Consistently unable to realize sufficient profits under the old regime, capital sought to renegotiate the allocation of surplus that capital and labor each enjoyed. Under the post-Fordist regime that has governed us ever since, labor has been put very much on the defensive with consequences that show up in such structural effects as increased inequality.

Again, such regime transformations do not happen naturally of their own accord without human agency. When they do happen, they emerge out of struggle, struggles between actors situated in social positions with differing power and resources. In the US, the struggle that led to the current regime of accumulation was known as the 'Reagan revolution', and Reagan's role in ushering it in is a big part of why he remains iconic for the American right.

Of course, it is not just to changes within a society that the morphogenetic approach can be applied. It also applies to the more fundamental transformations through which one form of society or mode of production mutates into another. Part of what led to the transition from feudalism to capitalism, for example, was the way in which actors, powerfully placed within the old regime, changed the cultural rules, which in turn changed the prevailing relations of production. Specifically, between the sixteenth and eighteenth centuries, the rich landowners in Britain altered the cultural rules of property ownership, converting serfs into tenants and finally into a landless proletariat for growing British industries. What essentially we have to do with here are structured interests and the power of one class of actors to effect cultural rule changes with deleterious effects on the structural position of another class. In between the two structural formations lie what I have called the position-based agency of individual actors (Porpora 1987).

2.3 The Morphogenetic Approach Versus the Current Conflationisms

Today, the major alternative to the morphogenetic approach is some variety of what Archer (1988, 1995) terms conflationist thought. First, with the so-called cultural turn, structure was devoured by culture. But culture too eventually was itself devoured—by discourse and practice.

One strand of conflation traces back to Bourdieu's (1993) concept of a *field*. That concept conflated structure and agency. Admittedly, Bourdieu did speak of interests and the resources associated with different social positions. Still, for Bourdieu, objective structure largely became structure subjectively internalized in the form of habitus. For Bourdieu—and later Giddens, this move was powerfully rhetorical, seeming to overcome the opposition between structure and agency with structure now understood as both objective and subjective.

The rhetorical power of the move became apparent when Giddens's work interpreted Bourdieu for an English-speaking audience. That interpretation, which

Giddens termed structuration theory, literally swept the Anglophone world. Even today, when Giddens's name and the very expression structuration theory have faded from sociological memory, the idea remains predominant as practice theory.

The idea, expressed in Giddensian terminology as the 'duality of structure', is that structure is both the medium and outcome of agency. There actually is nothing wrong with this formulation as such except that structure has now been defined as 'rules and resources'.

At first glance, it is a highly peculiar understanding of structure as it is not structural at all. A rule—'Stop on Red' or the six points awarded for a goal in American football—is a structure? Money in the bank is a structure? Where is the consistency with the relational way the word structure is employed in other contexts, say the structure of a bridge or a language or class divisions?

In Giddens's language, what ought to be relational is reduced to monadic things, purely cultural things like rules and purely material things like guns and money. Giddens sometimes refers to these things as structuring principles, which makes more sense than calling them structure itself. Differential possession of them, which is relational, will result in further relational distinctions. So guns and money and certain rules may well be structuring principles. To call them structure itself departs from any traditional sociological understanding of structure as relations, relations either among social forms or groupings or, alternately, among social positions.

To be fair, Giddens was largely just translating Bourdieu. Although there is in Bourdieu's concept of a field a hazy sense of structure as relations among social positions, Bourdieu did not really unpack structure that way. Instead, he principally spoke of structure either as internalized habitus, which, as knowing how the game is played, is largely understandable as internalized rules, or as the resources to which Giddens likewise refers.

Hence, in Giddens, we get structure as rules and resources. It is as such that structure is now understood by many Anglophone sociologists. Of course, later in the U.S., Sewell (1992) would amend Giddens's definition of structure to include cognitive schemas, an additional monadic notion which, with the ongoing cultural turn, was readily absorbed.

What about structure as it was more traditionally understood—as relations among social forms or positions? In Giddens's formulation, this idea was termed the social system and treated purely as a causal effect of rules and resources without any independent effects of its own. So relegated, what was traditionally understood as social structure becomes a causally inert epiphenomenon, certainly not there to counter anything like the current reprise of the culture of poverty thesis.

As noted above, what we have in fact in the trajectory from Bourdieu to Giddens is a double conflation. First, we have the conflation of culture and social structure, and, second, we have the conflation of structure and agency. In Giddens's formulation, culture first swallows up structure. Although there are multiple understandings of culture, in sociological terms, culture has regularly been understood as the realm of inter-subjectivity. As Davies and Harré (1990) later maintained,

if culture resides anywhere, it is ultimately in the shared consciousness we carry around in our individual heads. Thus, to understand structure as rules and a forteriori as cultural schemas is to envelop structure within the inter-subjective. Of course, there remain material resources but, as they are inert on their own, they require human acts to exert any effect. Thus, their role too is ultimately encompassed by subjectivity.

If the first conflation is the capture of structure by culture, the second conflation is the reduction of what is left to the concept of practice. Practice, what humans do, their performativity, becomes all. In what they do, in their activity, human agents invoke the rules they carry in their heads and deploy the material resources they find at their disposal and in the process transform both. The structure-agency problem appears overcome along with any remaining opposition between idealism and materialism. Both oppositions are sublated by the concept of practice.

Alternatively, as in Foucault, everything is reduced to discourse. The material or extra-discursive disappears. As many have lamented, language now becomes everything. In fact, on this account, it is not just social structure that disappears. Human agency disappears as well, i.e., any subject of effective action. Instead of human agents or subjects, we have only Lacanian subjectivities or subject-positions, stances adopted through which language works its autonomous magic.

How do you explain social change without analytically distinct structures, without actors, without agency? You don't. Foucault, for example, does not explain the transition from sovereign punishment to the contemporary discipline of the prison. In fact, he does not explain any of his transitions. Instead, Foucault deliberately presents us with discontinuity. Apparent discontinuity in fact is a rhetorical ploy by Foucault to de-center the actor. It is part of Foucault's anti-humanism. To explain the transitions, the acting subject would need to reappear. Foucault says so himself.

> If history could remain the chain of uninterrupted continuities… it would be a privileged shelter for consciousness: what it takes away from the latter by bringing to light material determinations, inert practices, unconscious processes… it would restore in the form of a spontaneous synthesis; or rather, it would allow it [consciousness] to pick up once again all the threads that had escaped it, to reanimate all those dead activities, and to become once again the sovereign subject in a new or restored light. Continuous history is the correlate of consciousness (Foucault 2008, 300).

So here we have a passage from 'On the Archaeology of the Sciences', in which Foucault himself says what I just said. To allow for continuous change, Foucault admits, is to readmit the active subject. To avoid such agency, we must avoid considering the tissues of causality that link history together coherently.

Of course there are going to be discontinuities between historical epochs, but even discontinuities are going to be created morphogenetically by continuous actions of actors acting from within their originally structured positions. And above, remarkably, Foucault recognizes this very fact. And like Althusser, he seems to fear the re-entrance of Hegel's transcendental subject of history should any, even non-transcendent subjects, be allowed into the analysis.

Similar to Foucault, although on the more post-Wittgensteinian grounds of Winch (1958), Giddens also not only does away with structure but also full-fledged, motivated actors. Instead, Giddens denies that motives are anything that activate actors from within. Thus, he too is without resources to explain change. He talks a lot about the characteristics of a reflexive modernity but does little to explain how we got here. Although he uses the word *explain*, his goal seems exclusively to *understand* in post-Wittgensteinian fashion. It is little surprise that Giddens too expressly favors discontinuity. Thus, in *Consequences of Modernity* (Giddens 1991, 4–5), he speaks more of discontinuity and, drawing on postmodernists, says we need to move away from the continuous story lines of narrative history. Without motivated actors, he has little choice but to make this move. In *The Constitution of Society*, he validates it.

> The modern world is born out of discontinuity with what went before rather than continuity with it. It is the nature of this discontinuity—the specificity of the world ushered in by the advent of industrial capitalism, originally located and founded in the West—which is the business of sociology to explain as best it can (Giddens 1984, 239).

In contrast with the narratively a-historical approaches of Foucault and Giddens, any narrative historical account of social change—which is really to say any full account of social change at all—must invoke at least implicitly the morphogenetic approach. We see that, for example, in Rostow's (1991) famous *Stages of Growth*. *The Stages of Growth* is either a theory of metaphysical tendencies inherent in all society or, to the extent that it is not metaphysical, it implicitly embraces the morphogenetic framework.

Regarding the latter, consider, for example, Rostow's first stage, the preconditions for take-off. The creation of such conditions must involve actors in the pre-existing structures and culture of traditional society making changes in that structure and culture that make society ready for Take-off. These include, for example, the adoption of the Protestant work ethic, the commodification of agriculture, and/or investment in infrastructure. In any case, people, either through aggregate individual action or collectively through government will be doing something, something grounded within a prior cultural and structural context.

The morphogenetic approach is likewise implicit in Weber's (2002) transvaluation of ideas from the Protestant ethic to the spirit of capitalism. In the Protestant Reformation, actors embrace new ideas of salvation, which they transform in their own minds—what Archer would call a process of cultural elaboration—until it ends up a new cultural creation: the Spirit of Capitalism. Here, the morphogenetic approach is very much in evidence. And, certainly, in the phenomenological tradition of Weber's Verstehen sociology, coherent actors continue to be very much present.

And, finally, we find the morphogenetic approach ineluctable even if we look at the Althusser-Thompson-Anderson debate. Althusser (2009, 2010), of course, was one of the key figures in the Anti-humanist movement, reducing class actors to Lacanian subject positions, who like Foucault's subjects, were more acted upon than actors—in Althusser's phrase, mere carriers of structure. Defending Althusser

from Thompson's (1978) too voluntaristic critique, even the structuralist Anderson (1980) had to admit that even if actors generally do not realize the full effects of their actions, historical actors are still doing something intentional that cannot be left out of account (Porpora 1985). The conclusion is that the morphogenetic approach is the ineluctable mechanism of social change. How now do we apply it to our current situation?

2.4 Where Are We Now?

So where are we now? Our period has been labeled in multiple, different ways, from Late capitalism to liquid or reflexive modernity to post-modernity. Each designation calls our attention to different social mechanisms. Now, Archer is suggesting a new designation for the present moment: Morphogenetic society. It follows from all we have so far discussed that on whichever mechanisms we focus, our analysis will still need at the meta-theoretical level that implicates the morphogenetic approach.

In particular, therefore, any collapse of everything into practice or discourse leaves us without resources to explain all that is going on today. Consider, for example, Harré's account of the 2008 financial crisis.

> Institutions are not ontologically basic, nor are any other seemingly structured entity-like beings. From the point of view of the conversational source model an institution is an appearance, an illusion presented by the relative stability of the flux of social acts that are constitutive of the then and there social reality. The need for a clear ontological viewpoint has been illustrated dramatically in the "collapse" of part of the "banking system". Talking that way distracts our attention from the reality, the flux of social acts performed by a loosely bounded group of active agents, following discourse rules that proved in the end to be incoherent. There is and was no "banking system" (Harré 2009).

There are many things beyond Harré's analysis above, beyond, that is, people just talking with each other in various situations. What Harré appears to be saying here is that the failure of what we call the banking system was due to incoherent rules. What does Harré mean by incoherent rules? Why were bankers following them rather than 'coherent rules'?

Beyond Harré's conversational model lies a structure of inequality, overlaid on the competitive relations of the capitalist system, which induce ever more fevered profit-maximization. Such structures, which are relational, are not reducible to people's talking together here or there.

Yes, rules, too, were partly responsible for the crisis, but most pivotal were not rules governing any particular, situated conversation that bankers were having with each other. The pivotal rule changes were the Garn St. Germain Act under President Ronald Reagan and the Graham-Leach Bliley Act under President Bill Clinton, which together greatly expanded the riskier domains in which banks and savings and loan organizations could invest and lend (Foster and Magdoff 2009; Lim and Lim 2010).

Even here, we must ask why the rules of investment were relaxed, which requires us to speak of political power and of the heightened business competition of hyper-capitalism. And a key part of the crisis as well, at least in the United States, was the current concentration of wealth, not seen since the Great Depression, which left little buying power in the hands of the majority so that capital, with a surfeit of funds, was forced to invest in ever riskier ventures. All these relational factors too lie beyond anyone's situated conversation.

If Harré's social positioning theory will not suffice, neither will cavalier references to nonlinear processes; self-organizing systems; or departures from equilibria such as we find, for example, in Urry's (2003) *Global Complexity*. Social systems do not just spontaneously and mystically self-organize. To the extent that there is any such tendency, it must, again, happen through human beings, who in turn must do something to bring it about. Thus, talk of complexity theory either returns us to functionalism with unexplained feedback loops or, at the meta-theoretical level, to the morphogenetic approach.

Is there any purchase in speaking of morphogenesis not only at the meta-theoretical level but at the theoretical level as well? Does it make sense, in other words, to speak of the present as morphogenetic society? That question is what the remainder of this book is about. Although it is beyond the scope of this chapter to contribute to that endeavor, we can at least end with some questions that will need to be answered in relation to it:

- Why characterize this society at this moment as morphogenetic? Was not morphogenesis an element of all previous societies as well?
- How is this designation different from 'liquid modernity' etc.?
- What is the underlying mechanism of change in this so-called Morphogenetic Society? Is it different from some aspect of capitalist dynamics?
- Is the putative mechanism of change the dominant mechanism operating today?

By the end of this book, these questions should find their answers.

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Chapter 3
The Morphogenetic Approach and the Idea of a Morphogenetic Society: The Role of Regularities

Andrea M. Maccarini

3.1 The Topic: Morphogenesis from Meta-Theory to Forms of Social Order

A realist conception of the social stratum of reality entails some conditions and provides some benefits. One of them—indeed both a condition and a benefit—concerns the mutual relationship between reality and its representation; the latter influences the former, but the former also consistently shapes the latter or, at least, requires high flexibility and readiness to change from it. As a consequence, realist theories tend to evolve in close connection with social change, although this is not a relationship of strict dependence.

This chapter is about a particular case of such a connection. I will deal with the idea of a 'morphogenetic society' (MS) as beginning to be articulated by Margaret Archer as a development of her 'morphogenetic approach',[1] and explore the mutual relationship between them.

Let us first clarify the notion of MS. What does it mean, and what are its main characteristics? According to Archer, the MS is a type of social order that follows 'modern society' in its classical form,[2] introducing major changes with respect to its main structures and cultures, as well as to people's experience and life course. More precisely, Archer (2007, 2011b) starts to spell out the main features of the MS as follows:

[1] As I have done elsewhere (Maccarini 2011), I will call this approach 'M/M', to highlight that it embraces both morphogenesis and morphostasis as equally possible outcomes of social processes.
[2] Therefore it sometimes comes to overlap with the notion of 'late modernity' (Archer 2011b).

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(a) Morphogenesis is less restrained by morphostasis;
(b) The generative mechanism for variety to stimulate more variety starts to engage;
(c) Those features of modernity preserving 'contextual continuity' weaken quickly;
(d) 'Contextual incongruity' for (nearly) all prompts reflexivity of (nearly) all.

Its main effects are:

(a) The 'situational logic of opportunity' pre-dominates for the first time;
(b) Prizes go to those who can reflexively manipulate *contingent* cultural and structural *compatibilities*;
(c) The modes of reflexivity themselves change:

    i. Communicative reflexivity declines;
    ii. Autonomous reflexivity remains proportionately stable;
    iii. Meta-Reflexivity increases;
    iv. Fractured reflexivity increases.

(d) Civil Society transforms under the joint pressure of the two increasingly dominant modalities of reflexivity.

This view of society has far-reaching implications, and prompts discussion on many accounts.

First, is there really such a thing as a MS? Is it already with us, or are we just on our way to its development? And is it possible to draw an unequivocal outline of its profile?

Many theorists would agree that the speed rate of mechanisms of social change is rocketing. Therefore, the idea of 'unbound' or 'unmitigated' morphogenesis (Archer 2007) is partly consistent with those theories that highlight how modernity itself entails some kind of *meta-transition*, bringing not from one steady state to another, but to the continuous fluctuation of unbound contingency.[3] Yet, in spite of such partial similarities, the M/M approach rejects most of these images of society. On the other hand, some scholars even argue that social change in Western societies has slowed down significantly in the past decades.[4] Another issue concerns communicative reflexivity. Archer sees it as a declining mode, while one might point to the tremendous extension and intensification of interpersonal communication (e.g., via web, mobile phones etc.) even about very intimate matters, to conclude that the modes of reflexivity are also undergoing a profound *inner* transformation, and are not merely playing a zero sum game in which some of them increase and some decline. One might well object that external

[3] Luhmann (1997). It is worth observing that Luhmann also starts from a discourse about human reflexivity, which is clear from his citation of Maruyama (1976). Bauman's well-known idea of a 'liquid' society also fits into this mould.

[4] For an intriguing formulation of this somewhat counterintuitive thesis (to say the least) see Abbott (2006, p. 32).

conversation cannot be taken as a guide to reflexivity. Nevertheless, the increase in communicational interactions mentioned above somehow indicates a growing propensity of people to make (external) communication a constitutive part of their internal conversation.[5]

These observations raise a further issue, regarding the scope of such a way of defining the 'new world' of 'our time'.[6] What does it really mean to call the current global society 'morphogenetic'? In other words, what are the *substantive* features of the social forms and dynamics, and the qualities of social life that fall within the range of this concept? More precisely, which among them are intrinsically connected to its central mechanism of variety generating more variety and to the logic resulting from contingent compatibilities?

Finally, what is the relation between the idea of a MS and modernization theory? It seems fair to say that the idea of a MS[7] does not in itself entail any strong prediction as regards its capacity to cope with complexity, the related shape of its major institutional complexes (McCann and Selsky 1984), or the predominance of civilizing versus de-civilizing forces. The notion of MS reflects the effort to strike a balance between the old, grand, linear theories of modernization and those approaches which overemphasize contingency to the point of denying that any *theory* of social change is possible.[8]

Even these sketchy introductory remarks illustrate the relevance of the idea and its implications for social theory, as well as the conceptual complexity involved. Important as all these issues surely are, my purpose in this chapter is not to explore the descriptive content and validity of the evocative image of a MS, or its relation to modernization. My point here is to clarify the systematic significance of the idea of a MS, i.e., the questions it raises and the implications it bears for the M/M approach. I believe that this reflection can also make some useful contributions, indeed that it is a necessary precondition to answering the substantive questions.

My general thesis is that the further articulation of the M/M conceptual framework appears to be connected with the representation of society it offers, the relation being one of reciprocity. More precisely, the idea of MS could stimulate some theoretical 'boundary work'—i.e., work being done along the borders of the theory, to consolidate, expand and face challenges to it—on at least two accounts:

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[5] The dynamics of interaction, of friendships and couples among youngsters represent a good example, often presenting us with endless streams of communication strictly interweaving the subjects' internal conversations—a feature that could be associated with the typical attitude of communicative reflexives. In this respect, electronically assisted communication seems to be prompting a sharp increase. Of course, the definition of the modes of reflexivity involves much more than this characteristic only. Therefore, my remark is no more than a hint at a phenomenon that would deserve further study.

[6] This formulation clearly borrows from the title of an old essay by Alexander (1994).

[7] From now on MS.

[8] The literature on this point is obviously hugely extended. A good outline of the present situation in social theory can be found in Joas and Knöbl (2009, chapters XIII, XVIII and XX). See also Knöbl (2007).

(a) the conceptualization of emergence, particularly of what can be called 'emergence of the new'. This has to do with the related problems of abrupt (i.e., catastrophic) versus gradual change and profound versus superficial change[9].
(b) the possible meaning and role of regularity within the M/M approach.

Both spring from the M/M approach itself, and both are closely related to the notion of a MS. Arguably, the two themes are also internally connected.

In this chapter I will focus on the issue of regularity, leaving emergence for treatment in a different context. I will claim that the idea of a MS entails a further articulation of the M/M approach which involves a reconsideration of the concept of (social) regularity. In turn, my argument is also that the M/M approach allows an original representation of global society, based on a non-functionalistic, non-teleological, fully processual conceptualization of social order.

It is instructive to begin with an apparent paradox, which makes the idea of a MS somewhat puzzling. Is not society always inherently morphogenetic? Such a feature seems to lie at the core of the M/M approach. If this is the case, what does it mean to call a whole society 'morphogenetic'? In order to unfold this paradox it is necessary to distinguish among three different meanings of the crucial term 'morphogenesis'. The first two meanings reflect the shift between two different theoretical levels, namely meta-theory and theory, or formal and substantive theory. In Archer's own words, this corresponds to the distinction between methodology and practical theory. The former constitutes the conceptual framework to be used in sociological analysis, while the latter refers to its application in any actual study of a given social phenomenon, or set of phenomena, and is constituted by statements referring to that particular part of social reality.

(i) At the meta-theoretical level, the term morphogenesis indicates the basic analytical framework of all social processes. It means 'the social' can only be conceived of as a process that consists basically of the continuous creation and transformation of forms—structures, cultures and social groups—through the diachronic, cyclical connection of structural conditioning-interaction-structural elaboration versus those morphostatic equivalents that generate or contribute towards reproduction;
(ii) At the substantive level, morphogenesis refers to only one of the possible outcomes of such a process, namely to structural elaboration, i.e., transformation or change;

This shift between formal and substantive theory calls for careful distinction, but is in principle not a problem.

Now it is important to note that when Archer speculates about a MS, a *third* meaning is added. Although it is still a substantive level that we are working on, the latter differs from meaning (ii) in several respects:

[9] See Brown (1993); Holt et al. (1978); Kauffman and Oliva (1994); Smirnov and Erdshov (1992)

(iii) the notion of MS implies that:

(a) morphogenesis (versus morphostasis) does not refer to the outcome of one M/M cycle, but to a whole type of society, a whole form of social order…

(b) … which characterizes the (relatively) enduring state of structures, cultures and social groups, not just in a few spots or sub-systems, but as the main framework of society. This means that the structural, cultural and agential conditions that make change more likely than reproduction are obtaining on a large scale—i.e., for the whole society and not only in some particular areas or subsystems—and that they will be around for some time, characterizing not just one or two M/M cycles, but a type of society;

(c) therefore, it involves an ambitious claim as to (social) space and time;

(d) moreover, it amounts to saying that morphogenesis prevails over morphostasis everywhere and for a more or less long chain of M/M cycles. There is more to the idea of MS than this. Even a quick glance at the definition I have synthesized above will make clear that we are indeed speaking of a *particular* kind of morphogenetic process among others. This is because *contingent compatibilities*—and the related *logic of opportunity*—are *not* the only institutional configuration and situational logic that result in morphogenesis (instead of morphostasis).[10] Moreover, not all morphogenesis—even within the logic of opportunity—would produce the same societal outcomes described under the label of MS—as regards contextual incongruity, to make just one example.

This argument raises several important issues, most of which may be summarized in the following questions: can the M/M approach do this? Can it produce periodizations? Can it be used to define successive systems or *regimes* of social order, and to analyse the transitions between them? Does this conflict with the contingency[11] and unpredictability of social dynamics inhering in the M/M explanatory framework? In other words: can the morphogenetic approach lead to a macro-sociological agenda and how can it rise to this challenge?

On the other hand, the opposite issue might arise concerning regularity as a theoretical problem. The M/M approach provides a framework for scholars to employ in their empirical work. When a given situational logic—namely the logic of opportunity—prevails, unbound morphogenesis begins to produce its own

[10] Contingent incompatibilities also lie on the morphogenetic side. In addition, the interaction of structural with cultural emergent properties must be taken into account.

[11] This assertion must not be taken as an assumption of *total* contingency of the social world. It means that the relation between social conditionings – with their logics and generative mechanisms – and observable outcomes is mostly undetermined, because structural and cultural emergent properties and powers may not always result in predictable facts. See Archer (1995, 2011a). See also Aminzade and Larson (2009); Eben and Witton (1970). By the way, this would respond to the critique advanced by Dépelteau (2008).

social order and it seems only logical to call it a MS. Other related features—e.g., those concerning reflexivity—are strictly contingent upon that central mechanism. This can be seen throughout the morphogenetic cycles and it will last until social conditions change, and the whole question about regularities does not require any further consideration.

However, the issues surrounding 'regularity' must not be underestimated. We should recall the difference between levels of social complexity. When the M/M approach deals with an organization, or an institutional complex—e.g., an educational system—it has to do with an object of study that is quite different from 'society'. In the former case, evidence about the beginnings, internal processes and structures, defining characteristics and boundaries is much easier to produce. It is evident that a public educational system does exist, that it has existed for a determined span of time, and many of its structures and processes are quite open to investigation. In the case of society, it is obviously not its existence that is at issue. As we know very well, the question about social order is always being asked from within existing social orders. The problem here is rather the 'quality' of such a society. If we want to explore the idea of a MS as a consistent interpretation of our current social dynamics, there are some questions we should start with. Do its structures, cultures and ongoing processes allow, or perhaps require, that we interpret it as a 'new' form of society, different from 'the past'? When did it start, where was its take-off? What are its geographic boundaries, if any? How long has it lasted to date? What are its main characteristics? Is it only a temporary state of the social, or does it promise to become a (relatively) steady situation? In relation with this, does the occurrence of one or more cycles of structural elaboration legitimate the use of the label 'society'? And how many would we need for that? Has this type of society simply 'happened', and are its qualitative, substantive features only to be traced to the crucial 'engine' of unbound morphogenesis? Again, how can we say that the logic of opportunity is prevailing 'for the first time in history'?

To cut a long story short, when it comes to society, as distinct from some specific institutions or organizations, the above questions are much harder, the responses are more debateable, and evidence—even that of the very presence of regular patterns—is easily contested. The point I am making is that this enterprise is extremely complex and will involve much refining. In this context, other concepts might arise in the attempt, and serve as useful traveling companions on the journey of a morphogenetically oriented scholar.

With this said, the M/M approach bears the promise of providing an understanding of the social order that is neither functionalistic, nor evolutionistic, nor teleological, but processual. However, offering a representation of social order implies embracing phenomena that exceed the scope of single morphogenetic cycles, extending over a longer span of time, and characterizing all subsystems of society. To me, this means that the relationship of the M/M approach to the notion of regularity should be seriously considered. At the same time, social regularities entail a specific way to think about (social) time, one which the M/M approach can provide much more consistently than many other theoretical frameworks.

3.2 Morphogenesis and Regularity: Making Friends with Old Enemies?

Society as a form of order has often been conceived of as 'simply a description of certain kinds of regularity' (Abbott 2006, 324). This goes for most models that were traditionally based on evolution and equilibrium, with their variety of feedback mechanisms and cyclical reinforcement mechanisms. Yet the very idea of regularity in the social world is not fashionable in contemporary social theory.

For one thing, the way to conceive of social regularities, and their role in description and explanation, is always open to epistemological debate. There are authors who still defend the necessity of being 'only Humean' (Thalos 1999), while others point out that mechanisms are opposed to laws, not to regularities (Andersen 2011;Kemp and Holmwood 2003). It is also possible to classify different kinds of regularity to which mechanisms can give rise. Indeed, the occurrence of such mechanisms can in itself be regular (Andersen 2012; Jobe 1985). Finally, Sugden (2011) presents a different use of the concept of regularity in explanation, namely as part of a modelling strategy which does not start with unexplained regularities obtaining in the empirical world, but with a model world assumed to display certain regularities. The scientist should then try to discover whether or not there is anything similar in the real world that would be explained by the same model[12].

The thesis I am presenting is that in order to explicate Archer's preliminary notion of a MS, it is exactly the relationship between the M/M approach and the concept of regularity that must be considered. A corollary is that the conceptual tool-box of the M/M sociologist must be endowed with a more complex work kit. By elaborating on the relationship between morphogenesis and regularity, the M/M approach can be articulated further. In this way, the M/M approach can provide a viable conception of social regularities in the face of the epistemological dilemmas mentioned above.

The task is made difficult by two factors, one concerning the M/M approach itself, the other regarding social theory in general. The morphogenetic approach views empiricism as a fierce theoretical adversary and its relation to regularity has somewhat fallen victim of this original conflict. However, there is reason to think that we are now in a position to set this relationship on new ground. The second problem has to do with the macro-representations of society formulated by modern social theory and its way of conceiving of the social order, particularly with regard to time. Let me start from the latter point.

The necessity of developing some conception of history lies deep in the identity of sociology. The great classical theories, from Spencer to Tönnies and Weber, from Comte to Durkheim, down to Parsons, have presented us with grand views of modernity and its dynamics which ended up with some sort of—usually

[12] See also Oliva et al. (1988)

evolutionistic—philosophy of history. Large-scale periodizations of historical eras, of human societies and civilizations have been the quintessential products of such theories. In this context, social regularities were largely presented as being law-like (and therefore also predictive) constructs, of the kind that made scholars into 'confidants of Providence'—to use Raymond Aron's famous ironic phrase. Sociology has long proclaimed the end of that intellectual phase. Authors as diverse as Luhmann and Boudon have pushed these grand theories back into the prehistory of the discipline, into the limbo of those things everyone respects, but no-one reads anymore.

Despite its merits, this rejection also brought with it at least two negative consequences. The former is that much of contemporary sociology has become purely synchronic. Most social analyses today found their assertions about the 'increasing' or 'declining' values of certain variables on some survey or other undertaken some years before, and often on shaky or limited data sets without historical depth. Furthermore, even those who give time a relevant position in their theory—or who operate with more refined longitudinal data—do not conceive of it as *historical* time, nor do they operate *theoretically* with it. According to Giddens, there is no such thing as evolution in human society. More specifically, it is impossible to identify any central mechanism of social change. As a result of this, there cannot be any *theory* of social change, because social dynamics defies conceptual abstraction.[13] On the other hand, Luhmann is still an evolutionist, but he describes social systems as reproducing (or ceasing to exist) through single operations that have no temporal duration. All of this, says Luhmann, 'happens in the present, and in a world which exists in contemporaneity (…). Such a system does not need history at all (…)'.[14] He concedes that under certain conditions one can witness deviations from existing structures, which in turn influence structural transformations, but this has nothing to do with history. Such time is made of communicational events and depends on communication bearing inherent limitations, which require sequences. A single communication takes time to connect with another, and there are limits to what can be communicated simultaneously. There is indeed a different kind of time, one within which the *media* of communication emerge, but it is conceived of as evolutionary, biological time, impervious to sociological analysis. In spite of all this theoretical refinement, social scientists are often still prone to the temptation of grand theory. Paradoxically enough, civilizational turning points are still set in huge and simple binary oppositions—such as 'tradition versus modernity'—through which theorists keep looking for a 'new' society that is 'different' from the 'old one'. In these theoretical perspectives, regardless of their differences any discussion about regularities becomes excessively fuzzy. Regularities tend to disappear from the sociological landscape, as a result of the inadequate manner of dealing with them.

[13] Giddens (1984, 227 ff).

[14] Luhmann (1997, 244). See also Luhmann (1995, chapter VIII, *Structure and Time*).

All these difficulties notwithstanding, historical time is still knocking on the sociologist's door to present its riddles. Observations emerge from within sociological analysis itself that beg for historical depth and a thorough conceptualization of social time in order to be understood, let alone explained. This goes for both 'grand representations', which fail to translate their "big pictures" of society into truly explanatory theories, and for those theorists who dismiss the coarse tools of old comparative macro-sociology—such as large periodizations or teleology and its functionalistic reformulation (Tilly macrosociological analysis see1984). For example, it is difficult to deny that social dynamics exhibits not only a perennial, 'molecular' transformation of social structures—including more static versus more dynamic moments, abrupt change and gradual evolutions—but also other social changes that one cannot help regarding as qualitative changes. One of these is sometimes called 'evolutionary achievement',[15] or 'social invention'.[16] What these terms indicate is a set of accomplishments that have been consolidated, which allow social systems to reach higher degrees of complexity, and are the product of evolution—e.g., money or telecommunication techniques. Another domain is that of social differentiation and its forms. The description of such forms tends to stand for a general representation of society. Generic as these often are, they undoubtedly do have hugely important consequences for concrete social dynamics. In both cases, such structures and their change produce far-reaching effects upon the complexity of the relevant system. Luhmann's verdict is that they do not produce 'an epoch-making structure of universal history' but, nevertheless, one can recognize *irreversible sequences.*[17] These cannot be explained either teleologically or functionally. Yet they do require an explanation. But is sociological theory able to tap into this level of complexity without loss of scientific rigour?

To sum up, dominant long-term trends do exist that characterize central aspects of societies. Denying their existence prevents scholars from acknowledging essential features of the social world in which we live. But these types of social change must be documented by studies focussed upon sequences of events rather than being assumed or logically derived from evolutionary macro-theories. Regularities come back into the picture, but require a more refined treatment.

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[15] Luhmann and De Giorgi (1994, 221–229). It is the same with the well-known parsonian theme of 'evolutionary universals' (Parsons 1964). For a diachronic, macrosociological analysis see for example Parsons (1966), and (1971). See also Eberts and Witton (1970).

[16] Coleman (1970).

[17] Here Luhmann is thinking above all of communication media such as writing and the press and forms of societal differentiation. The relevance of these transformations cannot be denied, even though Luhmann would not be willing to revive the old semantics of 'epochs', at least not in any realist meaning: 'When *in such fundamental structures* as the media of diffusion of communication and system differentiation *evolutionary achievements intervene*, making it possible to go from one structure to the other, *the impression dawns on the observer* that he is facing some societal formations that are meaningfully distinct between one another'. Luhmann, De Giorgi (1994, 228), italics added.

When the M/M approach ventures the idea of a MS, it implicitly accepts the need to meet this challenge. Its research program then becomes one that links explanatory/interpretative sociological analysis and a macroscopic theorization of the social order.[18] We must understand the far-reaching implications of this theoretical move, how the M/M conceptual framework can address this challenge and how it might be transformed as a result of it. In many respects, an analytical conception of regularity lies at the core of these issues. More precisely, the issue of social regularities and that of the scope of the M/M theory come to overlap significantly.

The M/M approach speaks neither a functionalist-evolutionist nor a teleological language. In addition, other serious explanatory approaches usually do not tackle macrosociological issues or work on this level of complexity. The M/M methodology invites us to study the morphogenesis/morphostasis of society and of its institutions 'without *grandeur*', that is distancing itself from grand narratives and focussing attention upon the morphogenetic cycles. These are constituted by particular *relations* between some given form of social conditioning, interaction, and the subsequent structural elaboration. What can be observed is the generation of some given social forms—e.g., organizations, sets of institutions—endowed with their own emergent properties. Relational emergent properties are connected with human plans and dreams, on the one hand, and with the inner logic of the social, on the other hand. This double connection opens the observable social outcomes of such relations to the influence of a complex set of variables and forces, making them unpredictable and relatively contingent, though not totally random.

To wonder if the M/M approach can engage with a macrosociological agenda means to ask whether such notions as 'morphogenetic cycle' and 'emergent properties' are sufficiently robust and flexibile as is necessary to grasp 'crystallizations, divergences and renaissances'.[19] In other words, we should ask if M/M cycles permit us to account for the emergence of breaking points, long-term regularities and rhythms which characterize social dynamics beyond the temporal states of stasis or change.

The other question to be considered concerns the inner logic of the M/M approach. This makes its relationship to the issue of regularity a two-face coin. On the one hand, its sensitivity to the empiricist threat remains a dominant motif. From this viewpoint, Archer emphasizes the fact that emergent properties and causal powers may be active, while not producing regular outcomes. The structuring process of society is thus 'uncontrolled, non-teleological, non-homeostatic, non-adaptive and therefore unpredictable'.[20] This statement relates to another

[18] This issue has been treated in Maccarini et al. (2011). See also Porpora (2012)

[19] I am using here the formulation of recent historical-comparative macrosociology. See for instance Arnason and Wittrock (2004). See also Arnason et al. (2004).

[20] Archer (1995, 189). This is only one among many similar formulations to be found in Archer's work.

fundamental thesis, according to which emergent properties are often unobservable and *do not produce any regular outcome*. This basically depends on the two following factors: (i) a number of emergent properties and generative mechanisms are usually operating in society at any moment in time; (ii) the notion of the generative process of a given social phenomenon is only ever complete when personal emergent properties—that is human agency—are treated as indispensable to structural and cultural ones, because the latter are 'activity-dependent' upon the former. And, in principle, these work in no predictable direction, since human agents are creative. Therefore, the format of explanation made available by the M/M conceptual framework involves the narrative reconstruction of the generation of a given social phenomenon—for example an educational system—but it does not allow us to predict that *in other* (though apparently similar) *cases* things would move in the same direction and result in identical outcomes. This is a crucial point, about which the M/M approach diverges not only from a law-like explanatory format, but also from other, non-realist research programs. Let us take Peter Hedström's analytical sociology as an instance. Archer does not accept the possibility of deriving any social generative mechanism from the outcomes it 'regularly' brings about. Hedström's definition, on the contrary, is grounded precisely on the idea of regular outcomes. In Hedström's argument, a mechanism is a constellation of entities and activities—typically corresponding to actors and their actions—that are interconnected in such a way as regularly to generate a certain outcome.[21] We could express the divergence as follows. If we consider the two propositions: (a) 'mechanisms function in the same way', and (b) 'the resulting changes are regular', the connection between them is a necessary one for Hedström, while it would be contingent for Archer—and all critical realist thinkers. Critical realism traces such contingency to the ontological distinction between the empirical and the real domain—whereby outcomes belong in the former and mechanisms in the latter.

Now it is clear that, as hinted above, such a position on the part of the M/M theory is rooted in the desire to avoid presenting conclusions that would be too weak to withstand empiricist criticism. In order to defend the concept of causality from the empiricist critique, it seems necessary to draw a sharp distinction between it—and its companion concepts such as social mechanism or process—and the very idea of observable regularities.

Archer criticizes the 'neo-Humean' compromise position as follows: '… structural properties are allowed in under the rubric of [as yet] "undefined group properties" *provided* they increase our explanatory/predictive power by helping to account for observed regularities'. Thus, the right of a structural property to enter into explanation depends on ' its contribution to accounting for a constant conjunction which gives a structural property its right of entry. Therefore, the structural elements which can pass the Humean check-point, only do so on an *ad hoc* basis but are also *atypical* 'of their own kind!' In practice, they are those 'which

[21] Hedström (2005, 3; 15; 33). This idea is widely shared within the whole analytical movement.

[22] Archer (1995, 54 and 57).

approximate to observability and are in play because of their explanatory indispensability'.[22] Archer's criticism is that emergent properties—including social structures—should not be introduced *ad hoc*, but in a systematic way. The strength of this position consists of its being clearly anti-empiricist and non-deterministic. It highlights the idea that the world is filled with generative mechanisms operating simultaneously, which implies that the various forces and trends may combine in many different ways to produce unpredictable, non-regular outcomes.[23] It also places much emphasis on the role of human reflexivity, which is not to be reduced to instrumental rationality. The observable result, the macro-level 'social fact', is always the result, or better the emergent effect of numerous mechanisms and tendencies, whose combinations can hardly trace regularities. Therefore, the M/M approach identifies institutional configurations, which establish tendencies as situational logics. In different circumstances, the latter produces different outcomes. What can be regarded as 'regular' is *the form of the process* in time alone, that is to say the cycle(s) of morphogenesis.

On the other hand, let us recall a fundamental critique that has been raised against the causal criterion of existence underpinning critical realist treatments of emergent properties. The critique goes as follows: such a criterion fails to provide a consistent justification if (i) a given entity possesses causal powers, but does not exert them; and (ii) some causal power is exercised, but its effects cannot be observed. This critique poses a serious challenge to Critical Realism, as it does to the M/M approach. In a nutshell: the M/M account starts in the present, with the effects to be explained and the related formulation of the research question. Then it proceeds backwards, tracing some given effects to certain causes, i.e., to certain causal powers, which *in that case* have produced *those* effects. Within this diachronic causal account it is certainly possible to include a narrative concerning the way some powers were actually present, but were not operative, or were not effective, as a result of a particular relational configuration of other emergent properties. This amounts to saying that emergent properties do not *directly* result in observable regularities, because they must be composed within complex relational contexts, which always include contingencies and these must be taken into account. This does not mean that the aforementioned causal powers, with their combinations, cannot be consistently taken into consideration as factors within a complex explanatory model. However, we must accept the possible incompleteness of all our models. In sum, all models always call for improvement, and the emerging regularities always remain tendencies, or approximations.

Conversely, the M/M approach makes possible a more positive approach to social regularities. This can be summarized in the three following points:

(i) perceived regularity prompts causal inquiry;

[23] In this connection, see the relevant arguments developed by Douglas Porpora, when he discusses the application of the *coeteris paribus* clause to society. See Porpora (2011). See also Steinmetz (2005).

(ii) social rifts are identified through situational logics (which suggest not *when*, but *where* change will occur);
(iii) there are regular transitions between institutional configurations/situational logics: that is, 'regularities of connection'.

Let us go through each point at some length.

As regards point (i), we should call attention to Archer's following statement: 'generative mechanisms, which exist largely unexercised will not usually attract the attention of social scientists. Although emergent causal powers are *judged* to be such according to the causal criterion, social science does rely upon (something of) empiricism's perceptual criterion for their *detection*. Although the social scientist is not reliant upon (or expectant of finding) Humean 'constant conjunctions', nevertheless, an established correlation coefficient is not a gift horse to reject but rather an impetus to causal investigation. After all, our hunches usually derive from our observations'.[24] Now this gets quite close to the idea of using regularities as *explananda*. Note that in this example emergent properties are not exerting their powers. Furthermore, Archer adds: 'In other words, we note some relational property in the social order (or a sector of it) that seems to exert irreducible causal powers of its own kind—as detected through their tendential effects—even though its components can be fully described'.[25]

This quotation involves according to some practical role to the 'observability' of effects. These are 'tendential' in that—all other things being equal, i.e., in their 'pure logic, they tend to produce a given outcome. I think we should assume that outcome to be regular, in the absence of interference, if we could get to know all the mechanisms that are operating at a given moment. However, such a situation hardly obtains in human society, which is by definition an open system. It is therefore hard to generalize from morphogenetic accounts, but this leaves some place for regularities in the social world. Society itself, after all, appears to be an ordered domain.

After these considerations, we may conclude that the issue about *the degree of contingency* of the connection between social mechanisms and outcomes cannot—in principle—be fully settled.

There are other two, strictly interweaving aspects that complete the profile of the M/M take on regularities.

(ii) In the model of M/M cycles, each institutional and cultural configuration indicates the fault lines along which rifts and fractures may occur, and their likely dynamics. As in seismic phenomena, this does not allow one to predict *when* such events will happen, but it does specify *where* they are likely to occur.

(iii) With this said, I would add what could be called 'regularities of connection'. They are located at some given points of the morphogenetic cycles and make some given connections between two or more cycles more likely than others, thereby exerting a constraining influence from which a partially predictable

[24] Archer (2011a).

[25] *Ibidem*.

regularity emerges. One does not know exactly when structural (or cultural) elaboration will occur. Cycles and their phases do not always last for an identical period of time. However, once we know where we are in the cycle, we can also predict (probabilistically) *where we are likely to go from there*. What kinds of things are possible, what actions are more or less likely to succeed within a given configuration. This means that the shift between one cycle and the other is not random. For example, society is not likely to change *directly* from necessary contradictions to contingent compatibilities. Time, interaction, and some intermediate passages are needed. This theme is developed in some of the most brilliant—and less cited—pages in Archer's work.[26]

Can these regularities of connection exist not only as links between one M/M cycle and another, but also as 'composite' meta-cycles embracing long-term phenomena? Can we find a name and a rationale for such 'long cycles'? If this were the case, we would be able to grasp beginnings and ends, bifurcations, irreversible transitions, particular kinds of regularities, mechanisms of reinforcement, crystallizations, divergences, etc. The idea of a MS entails development and refinement of the M/M approach, through which it manages to cope with these special kinds of 'social facts'. In the next section I will put forward some additional concepts which can assist in this task. They should be defined and used in such a way as to be fully consistent with the whole M/M approach. Such concepts are meant to increase the sensitivity of the M/M approach to regularities even further and to make its relation with (social) time and history even thicker, allowing for qualitatively rich observations. In addition, they should be conceived as sharply different from the non-processual models that tend to account for regular 'social facts' on the ground of law-like notions of evolution or equilibrium.

3.3 Duration, Pace, Trajectory, Turning Points, Transitions, and Cycles: New Bricks for the Morphogenetic Fabric

The need to understand social regularities beyond the 'standard models' and with a fully processual thrust fits in well with some basic features of the M/M approach. Indeed, it is characterized by its careful incorporation of time. Now it is clear that the M/M approach provides a conceptual framework for analysis, leaving the substantive study of this or that phenomenon for a distinct moment of the sociologist's work called 'practical theory'. Abstract as formal theory must be, such a theoretical framework does not intend to convey the idea that M/M cycles are, so to speak, 'all the same', occurring and recurring in just the same way, and only producing different outcomes—and outcomes of outcomes. They do not simply follow one another as abstract movements between postulated steady states.

[26] See for instance the treatment of *derived connections* among configurations in Archer (1988).

Therefore, time-sensitive concepts can serve to characterize them in a more nuanced way.

The concepts I will discuss in this section can help us to differentiate the way M/M cycles are designed, making their analysis more detailed, and to enhance their substantive sensitivity to the qualitative features of both change and regularity. These concepts are time-sensitive, because it is necessary to observe how a given order, rapidity or duration of events influences social outcomes. Thus, sequences of events unfolding in similar, though not identical, fashion in different historical contexts can be identified. This can be done through concepts that recognize the diversity of patterns of temporal connections among events and structures, thereby helping to theorize continuity and change. What they grasp is the causal power generating the character of connections among events. In other words, it recognizes the temporal character of how they are connected. This is not an abstract movement between two postulated steady states (T1 and T2), but the way in which—as noted above—a given order, rapidity or duration of events influences their outcome. For example, a certain action takes a certain meaning and produces certain consequences, according to the point of a social temporal sequence when it takes place.[27] We need to be able to observe such effects empirically.[28]

In the present context, these concepts would also complete the picture we can draw of a MS. This they do because the notion of MS prompts a discussion about series of phenomena, their frequency (pace), duration and possible directionality; about what the turning points have been, which transitions were involved, and what shape they took. All of this articulates the treatment of M/M cycles further, insofar as it links certain characteristics that could simply be identified in the particular narratives concerning a given phenomenon to more systematic consideration.

The temporal concepts I am introducing were not forged within the M/M framework, nor do they originate in critical realism. But they are not the offspring of empiricism either. They are largely used in historical sociology and seem to be compatible with many forms of historical sociology, including the M/M approach.

The concepts in question are the following: duration, pace, trajectory, turning points, transitions, and cycles.[29] The former two corresponds to a quantitative understanding of events, while the others are oriented to a qualitative interpretation of social phenomena.

I cannot adduce an empirical study employing these concepts, but merely a definition and an illustration of such concepts, with the purpose of showing that

[27] By the way, this is also one reason that militates against synchronic notions of emergence.

[28] This does not mean to transform M/M into "a notion of causality based on normativity and the centrality of meaning, sequence, and contingency", to put it in Margaret Somers's words. Relations and *their* properties are still there, and must only *incorporate* time and narratives.

[29] Some of these are taken from Aminzade (1992), while the definition I give is partially different, since I put them in the context of the M/M approach.

they are compatible with a more general M/M theoretical framework and what they contribute to it.

(a) *duration*. This concept refers to the amount of time elapsed for a given event or sequence of events to take place. How long particular phenomena take is relevant to their character and consequences. Account must also be taken of perceptions, intentions and actions, because things can be *perceived* as long or short and this makes a difference to their social consequences. More precisely, duration must be dealt with at all levels involved in the M/M view of the social process, namely structure, culture, and agency. It pertains to social structures and cultures, as well as to the way culture shapes perception and is manifested in sociocultural interaction—because the fact that people perceive things as 'long' or 'short', e.g., seeming interminable or over quickly, does not depend (only) on timeless psychological features of the human species alone, but also on the way culture forges personalities and expectations as regards the temporal dimension of life.

To talk of duration implies indicating some *unity*, thus defining a beginning and an end. Duration entails the constancy of certain events, or sequence of events, over a defined period of time. The related discontinuities, providing boundaries and phases, do not coincide with M/M cycles, but refer to longer term social phenomena that repeat throughout such cycles and constitute a problem in their own right, as will be seen below.

(b) *pace*. Pace indicates the number of events occurring within a given amount of time. It refers to repetitive events, and identifies the rate or speed of the social process. Of course, the concept has to do with those events that are regarded as theoretically relevant, not to *any* kind of event haunting a given span of time. The purpose remains that of integrating this concept into theoretically shaped narratives, not in furnishing historically exhaustive chronicles of 'whatever happened'. The theoretical moment thus remains relatively independent.

Disjunctures between the pace of different social processes—or in different spheres of society and culture—may produce distinctive consequences (e.g., anomie, disorder). As in the case of duration—indeed, this goes for all the concepts under discussion—cultural orientations (to past, present and future) are relevant influences on pace. Pace is not only a structural matter. Different forms of social organization produce—and are coupled with—distinctive temporal orientations, which in turn contribute to a different pace of change.

To anticipate a consideration I will take up again below, one obvious question from my perspective would be whether or not the MS is characterized by a quicker pace. On the one hand, this would seem to be a defining feature of such a societal constellation that should be taken for granted. On the other hand, it is an issue which can still prompt stimulating insights and discussions. One example is the argument of Andrew Abbott,[30] who maintains that the pace of change in Western

[30] In various publications. See for example Abbott (2006, p. 32). For an interesting treatment of these concepts see also Abbott (1983; 1984).

societies has been consistently slowing down and our social semantics has become accustomed to apply the terms 'innovation' and 'revolution' to relatively short-lived and not very far-reaching changes.

(c) *trajectory*. This is a complex concept whose relation to the M/M cycle needs careful explanation. In the first place, a trajectory is a cumulative sequence of linked events, suggesting that change has a certain directionality. This leads to the idea of putting more M/M cycles together, and it would organize their interpretation. It clearly involves a qualitative understanding of social facts. Trajectories can also be called paths of change, because they consist of a sequential order of events. This may be appropriate to M/M accounts relating to institutional configurations and situational logics. For example, it can help to specify through which particular *sequences* of events the logic of opportunity is unfolding. When we say sequences, of course, we do not mean just a sheer temporal succession of events, but an *internally connected* series, placing strong emphasis on the more or less compelling and consequential character of all internal connections.

One question that may be of concern here is whether or not there are sequence patterns that are typical, and therefore characterize particular historical processes—e.g., sequences of democratization, urbanization, schooling, institutionalization, family life—in various regions of social time–space. If so, MS could be identified as one of them. We may then inquire further about their causes and consequences.

The notion of trajectory involves the idea that there are factors assuming different salience at different points in different sequences. This is what is usually called path dependency. Decisions made at particular points in time delimit future options in particular ways.

It is important to note that explanation involves multiple rather than single trajectories. Multiple processes overlap and intersect one another and explaining 'social facts' involves a particular logic, situating outcomes in terms of their location in intersecting trajectories with their independent temporalities. Another, quite important feature is that trajectories come in various shapes and kinds as well as describing various *types* of social change. Because they include the idea of a beginning and an end, they also involve the notions of transitions and turning points. A set of M/M cycles can be observed from this viewpoint.

(d) *turning points and transitions*. This is a concept often used in historical narratives and indicates abrupt divergences separating relatively regular trajectories. Beyond this general definition, turning points may be designated according to the meta-trajectory they form. In other words, looking at them from the advantage point of a longer time-scale allows one to differentiate among various *kinds* of turning points. Without any claim to completeness, but for illustrative purposes only, we can propose the following distinctions:

(i) *Focal* turning points, which lead from more random to more linear and regular paths;
(ii) *Randomizing* turning points, leading from regularity to randomness;
(iii) *Contingent* turning points—displaying no unequivocal path;

(iv) *Normative* versus *non-normative* turning points, according to the different roles of cultural systems and the related social expectations in fostering the relevant 'turns'.

Type (iv) may of course apply to all the previous ones, being based on a different distinction.

In this case, as well as in all macro-sociological representations, the analogy of the life-cycle of an organism will not do. Different social processes display distinctive temporalities.

On this basis it is possible to identify subsequent key choice points and the related bifurcations (Ward 1995) and alternatives, pinpointing actions and mechanisms that sustain movement along a chosen path and prevent reversal or drift. Here again, the M/M cycle may be the basic unit of analysis. However, this concept provides a systematic way to read their sequences, one that also enables specific meanings to be attributed to particular points within the cycle. It can also contribute to deciding how M/M narratives should choose their own time boundaries, i.e., where they should begin. Also, we should note that the notion of trajectory—just like that of an M/M cycle—involves a non-mathematical conception of time, i.e., one which cannot be defined chronologically by homogeneous units.

One cautionary statement concerns the fact that both subjective and objective aspects must be distinguished and linked when accounting for turning points. It is obviously possible that some 'turning points' only exist in people's perceptions, having no correspondence to objective structures. The methodological companion to this idea is the notion that 'turning points' can only be reconstructed through people's own narratives, which express their all-too-subjective opinions and attitudes. However, in these cases, such 'discontinuities' usually do not withstand historical analysis, let alone the further progress of full-blown social morphogenesis in all its multi-dimensional nature. Moreover, a realist perspective prompts us to detect the interweaving influences of all factors that contribute to producing such sociohistorical discontinuities.[31] Finally, the (wrong) methodological claim mentioned above should not be confused with the (correct) idea that turning points are indeed 'narrative concepts', *in that* they always refer to at least two points in time. In order to designate a given event or moment as a 'turning point', a sufficient amount of time must pass to legitimate the conclusion that the course of events has undergone lasting change.[32] It is therefore necessary to observe such a

[31] This thesis should not be confused with the assertion that some turning points may essentially *consist of* a change in perceptions. This case, though, should not lead to theoretical confusion. A fundamental change in the cultural sensibility of the public may be in itself the 'social fact' to be examined and explained. Culture, and social groups, all have their own M/M cycles. But a complete explanation of their dynamics always involves the consideration of other morphogenetic processes. On this theme see also Lauer (1981).

[32] I am taking the formulation 'narrative concept' from Abbott (2001, p. 245, footnote 12). This author endows such a concept with the specific meaning I have underlined, which must be sharply distinguished from a subjectivist notion.

point from another, successive point in time. This means that 'turning points' can only be reconstructed *ex post*.

Another, potentially tricky aspect concerns the duration of a 'turning point'. It is easy to find confused versions in the literature, which characterize a 'turning point' as a 'process'. Granted, the event or chain of events which produces the decisive change must have some temporal extension. Nevertheless, 'turning points'—and transition phases, for that matter—must have an identifiable beginning and end, and a relatively small temporal extension compared to the longer, uniform trajectories that precede and follow them. Fuzzy and tricky as this delimitation might be, it is crucial in order to prevent confusion with various other situations and changes, which do not need any specific concept.[33] Take a quick example. Losing one's job, or making a particular decision about one's family life, or being accepted be a leading educational institution, are all events clearly delimited in time and not gradually changing 'situations'. They are obviously not *instantaneous*, possibly do not result from a single act, but from a chain of actions—e.g., the selection process that finally gains entry for someone to a given educational or work organization. But they can, and must always be defined as (relatively) 'short' or 'little' time units.

Finally, a transition may be defined as a span of time that leads from one trajectory to another, but is longer than a single turning 'point'. Most importantly, from all the concepts previously defined some meta-cycles may emerge. A general definition of cycles is they are repetitive events defining a temporal sequence of growth and decline, involving ascending and descending phases. They express some regularity within different units of chronological time. Such 'meta-cycles', then, are different from the M/M cycles as a *form* of the social process and typically embrace a set of the former. They entail a substantive definition.

One possible objection must be discussed right away. It might be objected that trajectories, duration, pace, and the like can simply appear as contents of the M/M narratives and there is thus no need to make them the object of explicit analysis, nor do they add anything to the understanding of the social process. My point in introducing them is that they should be used as reference points and additional units of analysis in empirical studies oriented by the M/M approach. Adding these tools to the 'basic model', rooted in the repetition and intersection of M/M cycles, would increase the sensitivity of the approach to further characteristics of the social. That is to say, such concepts should be used as reference points for analysis, featuring in all the narratives that are proffered about the morphogenesis/morphostasis of given institutions, organizations or any other social phenomenon. In this sense they would serve as a way to develop each situational logic temporally, while remaining on the level of abstraction that allows empirical study.

[33] See again Abbott: '(…) indeed it seems that is the point of having a concept of turning point, as opposed to simply one of change or causality or succession, all of which would cover a turning point of this extremely gradual kind'. (Abbott 2001, 251).

Some meanings and implications of a MS might then appear in a different light. There is a temporal dimension to each situational logic that these concepts could help to unfold in a more systematic fashion, by seeking analogies that make particular cases not 'particularities', but specificities. The way in which intersections produce key moments or conjunctures that mark the coming together of relatively autonomous processes can thus be revealed. At those points, the choices and intentions of actors become highly consequential and the possibility of structural change arises. Different morphogenetic processes converge and produce outcomes, but their timing can thus be studied more systematically.

Reciprocally, a view of society emerging from the M/M approach could explore the forces impinging on key choices that were decisive determinants of future opportunities and shed light on the regularities that make up a certain societal constellation without indulging in the sweeping generalizations of old-style macrosociology.

3.4 Conclusion

There are many conclusions we can draw and many directions we can go from here. The notion of a MS indicates that the M/M approach is starting to advance not just a method for the study of social processes, but a substantive, process-based view of social order, dealing with the actual content of such order in a non-functionalistic, non-evolutionistic fashion.

As I have explained, this enterprise entails at least two major challenges:

(a) to grasp long-term, relatively *regular* social phenomena and their relevant qualities in a *generative* fashion. This means striking a balance between—and indeed marking a difference from—functionalistic and evolutionistic representations of society and excessively contingent theories, which would even prevent scholars from asking 'big questions' about society and 'where it is going'. Much as the traditional answers have certainly been unsatisfactory and although the social role of sociology has profoundly changed since then, these are still some of the questions that are most frequently asked of social scientists. A generative model involves the use of temporal concepts and the development of tools of observation which may allow us to gain purchase upon real processes;
(b) a generative approach must remain strictly connected with the empirical dimension of sociology, rejecting the notorious separation of so-called 'social theory' from 'sociology', i.e., from empirically based studies. Insofar as we can highlight its positive relationship and its particular way of dealing with the issue and role of regularities, the M/M approach makes it possible to identify 'robust', or 'long-term' morphogenetic cycles. These display some (relative) endurance. The concepts I have illustrated in the third section of this paper constitute an ideal complement to that approach, providing a way to introduce

the results presented in its narratives within more systematic grids. None of this goes as far as to rehabilitate the predictive capacity of social science, but it allows us to distinguish short-lived phenomena from 'social facts' and structures that are likely to enjoy a longer life and more far-reaching effects.

The idea of a MS is a challenge to and an opportunity for the M/M approach. Its effectiveness in profiling MS in terms of the duration of its main processes, its characteristic pace of social change, the typical trajectories emerging in various sociocultural domains, its temporal boundaries and decisive points of take-off, still remains to be seen. Because realist theories are free to explore the social realm without stifling epistemological constraints, a promising outlook for understanding the 'new' society of 'our' time does not seem illusory.

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Chapter 4
Emergence and Morphogenesis: Causal Reduction and Downward Causation?

Tony Lawson

4.1 Emergence

What is there to say about emergence that has not already been said? I suspect very little. And yet divergent claims persist. Here I focus on a prominent pair of contested claims that continually reappear in the literature on *emergence*, are seemingly defended by leading contributors, and yet, in the manner they are often presented at least, seem to me not quite right. My purpose is little more than a systematic examination of what is involved in advancing these claims with the hope of providing clarification. The two claims I have in mind are those associated with the notions of *causal reduction* and *downward causation*.

I start, however, with the concept of emergence. Emergence is simply a term that expresses the appearance of novelty, or something previously absent or unprecedented. Emergent causal properties are often the primary focus of the philosophy-leaning literature that employs the concept, though where such properties exist they must be the properties of something, an emergent entity or some such. And an emergent entity, where addressed, is usually found, or anyway held, to be composed out of elements deemed to be situated at a different (lower) level of reality to itself, but which have (perhaps through being modified) become organised as components of the emergent (higher level) entity or causal totality.

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Emergence, then, as widely interpreted is ultimately a compositional term, and one that involves components being organised rather than aggregated.

So understood the term itself indicates nothing about how higher level entities bearing causal powers have come into being. Nor in and of itself does it imply anything about any relationship that might hold between the causal powers of the higher level (emergent) entity and those of its components. Rather, the category emergence seems often to serve as little more than a place holder to indicate an incompleteness or gap in the analysis, and specifically an absence of any account of processes whereby unprecedented phenomena occur. It is this gap, I take it, that theories of morphogenesis aim to fill.

No doubt, for many, the strategy of adopting a placeholder at this particular juncture of an analysis provides an attractive shortcut. It does seem *prima facie* mysterious that a novel form of entity, etc., and so order, should ever be possible, whatever the context. This is especially so in the face of the seemingly all pervasive relevance of the second law of thermodynamics, according to which there is a tendency in everything to messiness or disorder. Nevertheless, order of sorts clearly exists all around us. So, just as clearly, there is a good deal of work to be done explaining its appearance in the midst of seemingly relentless tendencies to the contrary, whatever the scenario.

It is this explanatory endeavour that many investigators seek to avoid. This is perhaps understandable, at least in some contexts. Very often a set of phenomena regarded as emergent from lower level elements of a seemingly quite different sort are collectively taken to comprise the subject-matter of a particular domain of study. Social reality, for example, is usually understood as having emerged (and continuing to emerge) from nonsocial phenomena, and constituting a separate realm of study. In the circumstances, many investigators with reason find it convenient to pitch analyses at the level of an emergent order of a form that interests them, say forms of social causation, employing the term emergence to mark the spot where more historical or diachronic explanatory work remains to be done. And much useful research has been carried out in this fashion.

Causal Reduction and Downward Causation

A major problem of using the category emergence in this place-marking fashion, I believe, is researchers do often find a need to take positions about the nature of relations between higher level and lower level entities and properties. But when armed with little more than a category marking the spot where analysis is missing, speculations based on intuitions (or that resonate with existing prejudices) tend to prevail. In particular, claims and counter claims persist about relations said to hold between the causal powers of an emergent entity and those of its *own* components. It is two specific sets of claims about this relation in particular that I want critically to examine here, theses that are, respectively, associated with particular notions of

both *causal reduction* and *downward causation (*or *top-down causation* as the latter is sometimes termed).

I will provide formulations of these conceptions in due course, but note for now that there is a sense in which versions of causal reduction tend in some way or sense to prioritise lower level causes over higher level ones, whilst versions of downward causation do the opposite.

Both notions, as I say, are usually tied to that of emergence. Thus, while Searle (1992) for example believes that that "[o]nce a property is seen to be *emergent*, we automatically get a causal reduction" (p. 116), Elder-Vass (2011) informs us that "emergence and top-down causation can be reconciled, and that both play important roles in the social world" (p. 1).

My assessment will be that neither conception as usually formulated is sustainable; or rather I am not convinced of various positive evaluations made, or implicitly advanced, regarding them. Specifically, I am not persuaded that the doctrine of causal reduction is of such general validity as causal reductionists hold, and I doubt whether the conception of downward causation as formulated has any relevance whatsoever.

It is clear that debates over the relevance of these conceptions or theses continue unabated. A likely significant explanatory factor, I am suggesting, is precisely the widespread practice of using the term emergence as a mere placeholder marking the spot where relevant diachronic explanatory work remains to be done (and, for some, as a promissory note that it will eventually be). That is, I am speculating that the failure to explore how lower level causal phenomena become enlisted as components of higher level causal entities allows contending claims about the relations between the causal powers of the two to go unresolved. The limited aim of this chapter is thus to examine whether a focus on forms of processes of emergence, or their dynamics, can shed light on the relevance of the conceptions or theses in contention. This, as I say, means turning explicitly to, and drawing upon, issues studied under the heading of morphogenesis.

The key category to understanding my own position and focus throughout, it will be seen, is that of the organising relational structure of an emergent entity. Any emergent entity, as I have elaborated it above, is essentially a *system*, by which I mean that it is composed out of other (lower level) elements that somehow are bound together (and to elements in their environment) and (so) in some sense or ways interrelate. It is the linking or bonding of the components that I express by the notions of relational organisation or organising relational structure of the entity; the latter binds the components to each other and to aspects of the environment. To anticipate what follows, my basic assessment of much of the literature on emergence is that whilst this (relational) organisational structure tends to be in various ways underplayed by causal reductionists, it is often conflated with the system as a whole by those enamoured by the notion of downward causation.

4.2 Causal Reduction

I start with the conception of causal reduction. For completeness, I first briefly consider a rather simplistic version of it according to which the causal powers of an emergent totality or system are held to be reducible to the causal powers of its components. This version is easily dispensed with. For once it is recognised that in all systems the organisational structure is an essential causal component of the totality; yet one that is extrinsic, and so additional, to the powers of any individual components, it is easy enough to see that this thesis is quite untenable.

Consider briefly the construction of a house. The components include bricks, mortar, wood, panes of glass, cement, etc. Of course there will be a context, a plot of land, and this will be prepared so that the various components can relate to it in an appropriate manner. At any stage in the process of construction, an observer will find not only the part of the building constructed so far, formed out of various components, but also the relational organisation of the latter components (to each other, and to elements in their environment). And this organisation will be essential to the house's construction and properties. As the house is completed, so is the relational organisation of the house's components; the two—the totality and the organisational structure—emerge simultaneously. Each are causal, but in different ways. The house has the power to provide safety and shelter, to facilitate family or other indoor activities, to be bought and sold, and so on. The arrangement of the parts makes the house feasible. The latter is a case of *formal causation*.

To appreciate the role of arrangement or organisation, imagine the house is taken apart and its various components bound together in a blind or random fashion. It is unlikely the outcome would have the causal powers of a house. The organisation or arrangement of the bricks and other components makes a difference. And on this criterion of causality, i.e., of possessing the power or ability to make a difference, the *relational organisation is causal*.

So it is easily seen that it is not the case that the causal powers of emergent systems are reducible to those of their components.

The example just noted is, of course, of a sort where the emergent powers of efficient causation of the totality (the house) can be easily determined or inferred from knowledge of the manner in which the components are arranged (which is why architects and their plans are useful). More typically, however, any such inference process (from components and the manner of their relational organisation to system powers of efficient causality) will not be feasible, or anyway not so straightforward, not least because knowledge of (perhaps complex) component interactions will also be required. This recognition does not at all challenge my claim above about the causal contribution of organisational structure. But it is this more complex scenario that is a primary concern here, not least because it is associated with more interesting interpretations of causal reduction.

Searle's notion of causal reduction is perhaps the most widely accepted example. It is, as already noted, formulated with respect to emergent phenomena,

but it is only in respect to a system arising out of interactive components that Searle supposes the causal features warrant being referred to as emergent:

> Suppose, we have a system, S, made up of elements a, b, c… […] In general there will be features of S that are not, or not necessarily features of a, b, c…[…] Let us call such features "system features".[…]Some system features can be deduced or figured out or calculated from the features of a, b, c…. just from the way these are composed and arranged (and sometimes from their relations to the rest of the environment). […] But some other system features cannot be figured out just from the composition of the elements and environmental relations; they have to be explained in terms of the causal interactions among the elements. Let's call these "causally emergent system features." Solidity, liquidity, and transparency are examples of causally emergent system features (Searle 1992, p. 111).

If it is such 'causally emergent system features' that most concern Searle, it is, as I say, in relation to these that he advances his thesis of causal reduction. According to it, the causal powers of a high level entity can be explained completely in terms of the causal powers of it components:

> This is a relation between any two types of things that can have causal powers, where the existence and a fortiori the causal powers of the reduced entity are shown to be entirely explainable in terms of the causal powers of the reducing phenomena (Searle 1992, p. 114).

A first feature to note here is that Searle is in fact advancing an epistemological notion of causal reduction; the latter is couched in explanatory terms. In consequence, it may be suggested that Searle is merely observing (correctly) that a diachronic explanatory account of all higher level entities can be provided.

But in his suggesting that the existence and causal powers of the emergent entity are 'entirely explainable' in terms of the causal powers of the 'reducing' phenomena, Searle is advancing a more strongly reductionist position than this. If it is generally the case that (as with the house) the organising structure of components makes a causal contribution to the powers of the whole (and I shall suggest that this is so), then Searle's notion of causal reduction seems to require that the organisational structure is also explained (produced) solely by the causal interactions of the lower level components. Only where this is so can it be held that Searle's notion of causal reduction is at least feasible.

It may be the case that, seemingly like many other contributors, Searle is inadvertently neglecting the causal impact of structure rather than arguing that it is produced (and so explained) by the interactions of lower level causes. For even if, or where, the causal interactions of components do (could) produce an emergent structure along with any emergent whole or entity, the latter whole will (would) remain ontologically irreducible to its components just because, or where, the structure or arrangement is essential for it; the latter relational organisation cannot be said to be the same sort of thing as, or composed of, these elements. So it seems to me that once we take note of organising structure, then an ontological reduction is usually proscribed. Yet, Searle seems to think instead that it is mostly feasible:

> Once a property is seen to be *emergent*, we automatically get a causal reduction, and that leads to an ontological reduction, by redefinition if necessary. The general trend in ontological reductions that have a scientific basis is toward greater generality, objectivity, and redefinition in terms of underlying causation (ibid, p. 116).

So it may be that Searle is merely overlooking the causal role of organising structure; for any cognisance of the latter seems to block any inference that a causal reduction, even if possible, must leads to an ontological reduction.

However, that may be, the interesting question to examine nevertheless is whether organising structures can typically be explained by the causal interactions of the components of eventual wholes. My evaluation is that this is usually not the situation, especially with regard to phenomena of the social realm, and here I provide some backing for this evaluation. This necessitates a focus on actual processes of emergence; it requires that I turn explicitly to the study of morphogenesis, which I now do.

4.3 Morphogenesis and Dynamics of Emergence

The sorts of processes that stand most chance of supporting the causal reductionist position are those associated with self-organising systems. The idea behind this (not wholly appropriate) label, presumably, is precisely that the systems in question are somehow organised through the interactions of elements that eventually constitute their components. My focus then will be on such processes or at least those that appear to be causally necessary or contributory to higher level emergents. This, in any case, is the most appropriate orientation for social analysis, for, as I argue elsewhere (Lawson 2012), all social phenomena depend on human interaction.

But I part company from the causal reductionists in suggesting that even in these cases interactions of elements that become components are rarely sufficient to produce emergent entities or 'causally emergent system features'. In most cases, factors entirely extrinsic to lower level components and their interactions are necessarily involved, preventing causal reductions of the sort in question.

Needless to say, I cannot examine all the conceivable concrete processes of emergence of this (or any other) sort. It seems to me, however, that a key feature of any such process is the form of dynamics involved. And it turns out that if we focus on the latter, numerous processes (and conceivably all) can be conveniently sorted into one or more of three basic categories or types, according to the nature of dynamics involved.

Certainly there appears to be more regularity at the level of dynamics of process than of the details of the entities these processes produce. Equally to the point, an examination of these processes does appear to throw light upon the nature of the relations between higher level and lower level causal powers that are of concern. Indeed they are found to be relevant for assessing not only the general relevance of the notion of causal reduction here under examination, but also, as we will see in due course, the coherence of the concept of downward causation.

I shall refer to the three forms of dynamics I have in mind as *non-recurrent dynamics of emergence*; *simple recurrent dynamics of emergence*; and *complex recurrent dynamics of emergence*. Processes involving these dynamics can thus be, respectively, termed first, second and third order processes of emergence (and their products termed first, second and third order emergents).

These three basic types of dynamics, as I say, seemingly span (that is, complex combinations of them cover) many if not all of those that appear to be systematically at play in the sorts of processes of emergence favoured by those who defend a notion of causal reduction. Contentious though the latter claim may be, I think the greater challenge I immediately face is to indicate that there is actually more than one basic form of dynamics, and so process, involved. For, in much of the literature, the different processes are effectively treated as of one and the same kind. Whilst I do not want to suggest hard and fast separations or divisions, I believe nevertheless that important distinctions are usefully made.

Before going further, however, let me quickly add a clarification about the strategy I am adopting here. By claiming to identify three different forms of dynamics involved in the emergence of novel forms, and by suggesting that, or at least examining whether, they are relevant not merely to the non-social realm but also, and especially, to the social domain, I am not at all intending to suggest that social reality can be understood as other than necessarily open, highly contingent and radically contested. It is always the case that human beings are human beings-in-social relations, faced with fundamental uncertainties, and fallible, albeit always also capable of reflexivity, forming plans, developing an array of desires, contesting, challenging and criticising anything, not least forms of organisations that confront or include them, as well as going along with situations they do not want nor choose or necessarily even (fully) understand. The dynamics to which I refer can be understood as no more than tendencies often in play. In any case I think it is unhelpful to view all of social reality as bound up with emergence, even where significant transformation is involved.[1]

My focus here is primarily with this social realm. As such, I am primarily interested in whether the notion of causal reduction holds in this domain. However, I start with an example from the (non-social) natural realm just because it does seem to fit with, and so perhaps at least helps illustrate, the notion of causal reduction here in question.

[1] The last thing I want to promote her is any kind of mechanistic conception. (That said, although there is no a priori reason to suppose that phenomena of social domain need be like those of any other in any particular regard, emergence as characterised above is a category that presumably links all the domains, including the social to the non-social, and so it is at least of interest to determine whether, at an appropriate level of abstraction, the sorts of dynamics identified operate more widely).

Non-Recurrent Dynamics of Emergence

What then do I mean by non-recurrent dynamics of emergence? The term non-recurrent is introduced because, in the versions of dynamics examined below, recurrent or cyclical processes are involved. In this first simple case instead all that is involved are basically processes of mutual cancelling.

Let me recall that the great mystery covered by the topic of emergence is how order can come about at all when the forces of nature seem to push towards only disorder. As noted above, the second law of thermodynamics holds that everything tends basically to messiness (or to increased entropy). However, order clearly does emerge and so must do so via, not by somehow overcoming, the second law.

The way to make sense of this, it seems to me, certainly in the non-social realm, is to view any emergent structure or order as one that contingently or fortuitously remains after other potential structures have been absented by the forces in question. A very basic mechanism working to this effect within a given process of interactions of particular elements is one whereby opposite or opposing forces effectively cancel, whilst any that contingently remain are reinforced. If, or where, this happens, it can certainly seem like any organising structure of interacting elements that remains was brought about by the interaction of those elements alone as part of a constructive process of order creation. In this scenario, at least Searle's notion of causal reduction, as I say, seems to have validity.

It was noted above that when Searle introduces his notion of emergence, he makes reference to examples like properties of liquidity (of various forms of matter). So let me follow suit and consider one such property. Specifically, let me briefly consider the case of surface tension.

Surface Tension

Surface tension is a property of the surface of a liquid matter whereby the latter gives resistance to an external object. It arises because similar molecules in a liquid are reasonably cohesive (albeit, of course, having more freedom of movement than when the matter is in a solid sate). Specifically, similar molecules have the property of sticking together, of being mutually attractive. The reason for this is that the shape and structure of molecules is such that when two or more get close to each other, this affects the distribution of orbiting electrons in a manner that creates electronic attraction. And surface tension is one of the many properties caused by cohesion of similar molecules, resulting from *a cancelling of equal and opposite forces.*

The process whereby this happens can be described in different ways. Where a molecule is surrounded on all sides by other molecules, it is pulled equally in every direction, so that the resultant or net force on it is zero. However, any molecule at the surface does not have molecules on all sides and is pulled away from the

surface direction. This results in internal pressure, whereby the liquid surface area is minimised through contraction.

Alternatively put, a molecule in contact with another is in a lower state of energy than one that is not. The molecules away from the surface are surrounded by others and so have lower energy states than those at the surface. For the energy state of the liquid to be minimised (under the second law of thermodynamics), the number of higher energy surface molecules must be at its lowest. A minimisation of the number of surface or boundary molecules results in a minimised surface area.

It follows that each part of the surface of a liquid will take the smoothest shape it can. Where any disturbance serves to roughen the surface shape, the result is a greater surface area and so higher energy; so the surface will push back against any such disturbance. This indeed clearly affects the shape of liquid droplets. Indeed in the absence of other forces, including gravity, the emergent surface tension would ensure that drops of virtually all liquids would be perfectly spherical.

In this example, then, there is reason to suggest that both the emergent property of surface tension, along with the emergent structure of the drop of liquid upon which the former depends, result from the interaction of the component molecules alone. Here Searle's notion of causal reduction seems relevant.

Notice that the internal organising structure of the molecules emerges at the same time as do liquid properties like surface tension. This simultaneous emergence of structure and totality, we have seen, characterised the construction of the house, and is in evidence in all other examples considered below. It is a feature that will become relevant in due course in the discussion of downward causation. But for now I am focusing on the fact that in this example, there is a sense in which the higher level properties are explicable solely in terms of the interactions of the eventual components.

Perhaps some will consider such an example as not a form of emergence at all just because statistical dynamics and quantum theory can explain how interactions of molecules produce liquid properties under appropriate conditions. Even so, it is not individuals or lower level components *per se* but the interaction relationships between them that, with an increase in scale, become amplified and aggregated to result in liquid or other system properties. This is why surface tension and other properties of liquidity are found across a wide variety of suitably combined molecular species. And as I say, it is examples such as this that are drawn upon in accounts of causal reduction, or at least the more plausible interpretation.

Crowd Formation

If causal reduction as formulated by Searle can be said to have some relevance to non-social phenomena such as properties of liquids, I am not convinced it holds very much at all in the social realm.

This is not, however, because I suppose *social* processes involving forms of cancelling do not exist. Indeed, a thesis I would advance for the social realm is

precisely that underpinning much collective human endeavour or group interaction is a tendency towards situations of *reduced mutual incompatibility of individual interactions*, driven by a process of resolving or *cancelling conflicting actions or action possibilities.*[2]

A simple example is that of crowd formation where the component individuals share a common or related goal. Even here though, despite processes of cancelling being involved, I think it is not the case that the resultant formation depends *solely* on the interactions of component individuals.

Consider, as an illustration, a situation where very many mostly unconnected or uncorrelated individuals set off to watch a sports event or rock concert at a large arena, say at Wembley Stadium in the UK. As the individuals converge on one or more main roads leading to the stadium, the various individual paths of dancing and dawdling from one side of the road to the other etc., become effectively cancelled, leaving paths of least mutual incompatibility as non-cancelling practices of walking directly towards the stadium come to dominate.

Here, as in the case of liquid properties, it is clear that a form of order emerges just because or where a structure or arrangement can withstand (or can best withstand) processes to disorder or destruction. The emergent relational structure is the result of processes of absenting (of alternative potential structures). In all cases, the same basic dynamics of emergence are involved.

Once more, the emergent totality has powers of efficient causation. Traffic is held up as, unusually, walking on roads takes precedence over driving. And people in the roads ahead of the crowd, hurriedly get out of the way. Moreover, individuals in these crowds often report shared experiences of increased security and even oneness with others. These are not reducible to aspects or powers of any component individual.

There are pre-conditions of organisation of course. All individuals want to go to the same place, i.e. to the stadium, the road is of a restricted/finite width, with the two sides providing a symmetric set of constraints; individuals typically prefer not to offend others, and so forth.

With an eye once more to the discussion of downward causation that eventually follows, let me also note that, as in the case of liquid properties like surface tension, the relational organisation that survives the process of cancelling is just as emergent as the totality that is the crowd, and once more it comes into being along with the emergent totality and its powers of efficient causation. Without the *simultaneously* emergent relational organisation, there is no emergent totality.

Human beings, though, are not molecules. In addition to being reflexive and relatively autonomous, they are always culturally situated, and act in accordance with (including reacting to, or contesting) pre-existing community conventions, rights and obligations, and so forth. Certainly, the shape and nature of the

[2] In other words, it is ways of acting that become eliminated. Thus, I do not mean processes such as two-candidate elections where a vote for one cancels a vote for another. In such cases, the acts of voting either way remain feasible throughout.

formation that comes about, the rights and obligations that bind individuals in a particular crowd formation, will vary according to whether the individuals involved are, say, walking to a concert in the UK, undertaking a pilgrimage to Mecca,[3] advancing as an army in a foreign land, representing their countries in an Olympic Parade, marching and playing as a brass band, demonstrating against some political decision or situation, and so on. Each crowd will experience the development of obligations specific to it.

With any crowd, a somewhat novel organising relational structure emerges (and is continually reproduced and/or transformed). Individuals are obliged to walk in a given direction, to seek to avoid colliding with others and so move at an emergent speed. Also rights of interaction can emerge that, in different contexts, are not typically readily open to relative strangers, taking the form, perhaps, of modes of communication (general conversation, and joke telling) and/or general interaction (harmonious singing and chanting). *But always the organisational structure that emerges will be formed out of pre-existing context specific collective practices, including the rights and obligations they carry.* If people stand or walk closer to others than they would in a near-empty street, the distances between bodies that are deemed acceptable will depend on local or dominant cultural norms and other context specific factors, and so forth.

In other words, the emerging organisational structure, and so totality and its powers, are rarely if ever created (completely) anew, but rather are formed out of pre-existing aspects of social structure, even though they usually undergo elaboration in the process (e.g., new positions and connections involving novel rights and duties). This structure is extrinsic to the human individuals whose interactions are organised by it, it is not reducible to, and is not entirely explicable in terms of, though it depends upon, the (organised) interactions of its current human components. Thus, causal reduction in the sense of Searle is not applicable here.

Notice, parenthetically, that although the cancelling interactions are clearest in large group events such as these, group interactive emergence also characterises many forms of smaller -scale collective practices including queuing (whether to enter the stadium, to pay for goods in a store or whatever), participating at seminars through emergent conventions such as raising hands, and turn taking; or clapping at the end of concerts and so forth.

In all such cases, one can imagine many different ways that any individual involved, if alone, could fulfil their aim (get to the stadium, make a purchase, pose a question, or show appreciation to a performer). But in a crowd, these would be ineffective even if possible. Of course, alternatives are often imaginable. But these will typically require a lot of individual effort (making a scene in the seminar to gain attention; being parachuted into the football ground). Those practices that do

[3] Apparently, the relevant religious conventions (which must be followed for a pilgrimage to be regarded as valid) disallow any pilgrim in Mecca from shaving, clipping nails, wearing perfume, swearing, fighting, hunting, carrying weapons, damaging plants, covering various parts of the body (the head for men, the face and hands for women), marrying, wearing shoes over the ankles, and so on.

emerge are forms that in a sense minimise the amount of energy used up in achieving the goals of each individual. Any resulting form of emergent order is one that remains possible after many other more individual forms of action have been cancelled.

Notice, that not every situation in which a shared objective is pursued by a collection of people has, as an emergent outcome, an orderly, or organised, form of behaviour. People in the UK may queue in an orderly fashion for the post-Christmas sales. But with the expectation of a very limited quantity of any desired good on sale, once the doors are open there can be an almighty scramble with damage occurring on the way. Things are even worse of course when individuals are rushing to exit a site because of a fire, or a bomb, etc. Individuals can get trampled and seriously injured if not killed, which is not the intention of others in the crowd. I mention this just to indicate that an orderly outcome may not be feasible; the processes that generate disorder do not always, or even typically, result in order as their outcome.

However, the central point here, if to repeat, is that specific social structures out of which the emergent relational organisation of a crowd is formed, where an orderly formation is indeed the outcome, are not *created* by the component individuals and their interactions but in significant part pre-exist such interactions, even if through the latter they are in degree transformed as well as reproduced. Causal reduction does not hold, certainly as a generalisation, and does not apply even in this simplest of examples of first order non-recurrent dynamics, in the social realm.

Simple Recurrent Dynamics of Emergence

Just as relevant to the issues before us, there are more complex forms of dynamics of emergence in evidence. And here I think the concept of causal reduction is seen to have less relevance still.

The second form of dynamics of emergence I want to examine characterises processes in which particular features or biases do not cancel (with other factors), but are amplified and/or propagated throughout the system. Very often, these non-cancelling features or biases are extrinsic both to the lower level components and their interactions. Clearly, if any features are to be amplified or propagated (rather than cancelled against others), they need to be repeatedly entered into the component interactions. So the form of process of emergence in question involves a cyclical dynamics, comprising an iteration of component interactions. So my focus now is upon such cyclical or iterative processes.

A quick but an insightful illustration of simple iterative dynamics of emergence of the sort I have in mind in the social domain is provided by Margaret Archer's (1982) use of 'Castro's example'. Let me briefly elaborate.

Following the Cuban revolution, Castro was faced with a highly illiterate community. Interactions between its members occurred in many ways at many

levels, all of which contributed to, amongst other things, the general standard and process of development of literacy in the population. It is easy to imagine how, if such a system were left unregulated, the literate would mix with each other and educate their own children, and the illiterate would remain illiterate.

However, after the revolution Castro introduced a systematic external bias into the process of educational development that had an iterative or cyclical dynamic built into it. A constraint was imposed on all such interactions taking the form of 'each one teach one'. This meant that each literate person had the obligation to render an illiterate person literate; and, moreover, that when this was done, these same teachers now along with their newly literate former students, would set about rendering another cohort literate.

This clearly imparted a cumulative tendency into the development process, a tendency in fact to double the literate population after each period of literacy education. If x % are literate at the start and it takes roughly T years for a literate person to help a previously illiterate one to literacy, then assuming no countervailing influences, after T years the literacy rate will be 2x %, after 2T years it will be 4x %, and after NT years it will be 2^{N}x %, and so on until 100 % literacy is obtained.

Of course, in any such scenario there are bound to be countervailing factors, learning rates will not be uniform, and 100 % literacy is never achieved anywhere. The process takes time, and depends on various parameters, including the original degree of illiteracy, etc. But the cyclical dynamics serving to propagate an extrinsic bias or ruling are clear. The example illustrates a cyclical process whereby starting with a highly illiterate community, a significantly transformed one with a high degree of literacy can (and did) emerge. The final outcome is indeed an emergent form of system or community with its equally emergent causal powers. Indeed, the emergent literate community now supported perhaps 'a national post service, mail order businesses, bureaucratisation and less obvious but more significant developments like international communication with its ramifications for religion, technology, political ideology, etc.' (Archer 1982, p. 470).

Just as clearly, relational structure (formed in part out of pre-existing structure) emerges along with any emergent totality. In Cuba, the emergent structure of rights and obligations (where on occasions the fulfilment of a right [to be educated] is transformed into an obligation [to teach others]) to coincide with the ever developing/emerging shape of the community as a whole.

Needless to say, there are always pre-existing relations between individuals in any culture. The dynamics set in train would not have bypassed, but drawn upon and worked through, the pre-existing relational structure, as well as through any resulting transformations in the latter. In this novel scenario, presumably bringing together people of different classes and social statuses, the result would have been the continuous transformation of norms and conventions of interaction, of negotiation and renegotiations of rights and obligations, and so forth, as the organisational structure binding a significantly transformed Cuban community came into being.

Essential here, then, is a process that circulates (or spirals) within a system, with initial (lower level) dynamics reoriented by constraint emanating externally to the preceding interactive educational practices [though not of course one that was external to all Cuban society].[4] The effects of the constraint are continually fed back into the lower level interactions producing a transformation or deviation in the pattern of these interactions that is thereafter reproduced or propagated throughout the system. Where influences of this sort become persistent, the effects of biases can dominate the distributive tendencies characteristic of non-recurrent dynamics of emergence considered above, and give rise instead to simple recurrent dynamics of emergence. For such dynamics to be underway, it does not matter whether the biases are intrinsic or extrinsic to the system. But they can be, and seemingly are usually, extrinsic. And the fact that they even can be is a further reason to reject the idea that the conception of causal reduction under consideration could have significant application, at least in the social realm.

As I say, my concern here is the social realm. But in case it should be concluded from the foregoing that the thesis of causal reduction at least applies generally to the non-social realm, let me briefly indicate that this too is not so; that processes of emergence turning on the sort of external bias or input noted above that is propagated via a cyclical process is not restricted to the social realm.

A brief consideration of the much discussed[5] example of a snow flake should be sufficient to convince on this point. Although micro-forces at the level of water molecules will be at work whatever formation emerges, the eventual shape of any snowflake will depend on the range of external factors bearing on it from the dust particle that originally seeds it as a water crystal, through to its collisions with other crystals as it falls to the ground, the temperature variations experienced on the way, the vapour supply, and so on.[6] In other words, the manner in which the ice

[4] I use the example for illustrative purposes because it is widely discussed in the morphogenesis literature. If a reader is bothered by the thought that in the case of Cuba, the governmental input is not wholly 'extrinsic' because the government was introduced by, and continually depends on the actions of, the people, we could instead, just for purposes of illustrating the process, imagine a conquering force of a hitherto 'isolated' nation or tribe seeking to introduce a form of literacy on a 'each one teach one' basis (or perhaps allowing mercenaries to covert the conquered to the conquering force's religion on such a basis).

[5] See for example Deacon (2006). In many ways, in fact Deacon's whole approach to morphogenetic mechanisms, though geared to biology, seems similar to that presented here.

[6] Snowflakes are composed of snow crystals (normally between 2 and 200) that can take a bewildering variety of geometrical forms, from simple hexagonal prisms to complicated dendritic shapes. These crystals combine or 'aggregate' with one another in a multitude of different arrangements, determined in large part by contingent external factors, to form the complex and varied patterns in the snowflakes.

Mostly, ice crystals form around specks of dust or other external particles which provide surfaces on which water molecules in clouds may condense together to form ice nuclei. Once nucleation has occurred, the snow crystals grow by diffusion of the surrounding water vapour onto the ice surface.

Forces on the surface of the crystal govern how the water molecules are incorporated into the ice lattice, and the extent to which the crystallography influences the growth appears to vary as a

crystals combine or become organised will depend on contingent factors that amount to its history. This is so at every stage of a snowflake's trajectory. But just as significantly, early developments of structure cumulatively restrict later ones. Early aspects of crystal growth facilitate and constrain later developments. The emergent momentary organisation of any falling snowflake feeds back into the lower level dynamics, inhibiting most once feasible molecular accumulations and points of expansion at it biases the flake towards specific still feasible paths of expansion. Mutually enhancing biases of molecular configurations and dynamics and the contingencies of the crystals historical path co-determine the final outcome.

In short, we have a recurrent process of interactions wherein the impacts of contingent external events lead to biases of structure or arrangement that not only emerge with, and influence, the overall shape at each point, but constrain the manner on which new accretions or aggregations can occur. Causal reduction is not easily supportable here either.

Complex Recurrent Dynamics of Emergence

I have, I believe, covered enough ground to establish the case that the conception of causal reduction under consideration does not hold universally or perhaps even especially widely. But in case doubt remains, let me force home the point by considering yet more complex forms of dynamics of emergence where lower level interactions remain a necessary condition. The third type of dynamics of emergence I now want to consider takes the form of first and/or second order dynamics of emergence coming to interact with each other, in a manner that sustains or facilitates the development of the interacting lower order components as parts of an organised *multi-part* emergent totality.

(Footnote 6 continued)
function of temperature and vapour supply in a highly non-trivial way.

As the snow crystals grow larger through diffusion, they begin to fall through the cloud. Since there exist crystals with a range of shape and size, some sediment at different speeds to others, and collisions result. During such collisions the crystals may 'stick' to one another, forming aggregates or snowflakes. Snowflakes may also grow through riming, the accretion of supercooled water drops lying in their path.

Throughout its development the structure of an individual crystal will be influenced by the hexagonal shape biases characteristic of water molecule symmetry (each water molecule is composed of two hydrogen atoms and one oxygen atom (H_2O). In a solid state, water molecules form weak bonds (hydrogen bonds) with each other that pull them into a symmetrical hexagonal (6-fold) lattice shape. For this reason the number of sides of a snowflake will be 6 or multiples of 6). In each case, too, the structure will be influenced by radial symmetry of heat dissipation or redistribution, which equalises accretion rates at symmetric positions in the growing crystal lattice network. But equally the structure is influenced by the crystal's unique path or history of experienced temperature, humidity, pressure, speed and nature of fall.

Effectively, the process I have in mind is one of 'natural selection' wherein selection is made from the set of possible *relations* (of reciprocity) between different emergents; and in the first instance between those that have resulted from first and/or second order processes of emergence. Any relation that remains, or is seemingly 'selected', where one does indeed survive, is simply one found to be less susceptible than others to certain prevailing pressures to go under, i.e., whose relata are least (or anyway not destructively) incompatible.

Any such emergent totality is composed out of lower order emergent forms along with the constraining relations of their mutual dependence. Needless to say, in social examples of third order emergence, pressures that affect survival include the power-play of groups and/or situated individuals with different material interests, each continually seeking to get the upper-hand, underpinning tendencies that may stabilise or destabilise any system that contains them, and so on.

In all cases of third-order processes, the reproduction of higher level emergents depends on the simultaneous reproduction of first- and second-order emergents, just as the reproduction of higher level emergents can lead to lower level emergents being sustained.

Examples of this more complex or higher order emergence are all forms of communities, whether human based or plant and/or animal eco-systems. The sort of dynamics of a process of emergence I have in mind is perhaps usefully illustrated with a narrative provided by Magoroh Maruyama (2003):

> Consider the development of a city on an arable plain which initially was unpopulated or very thinly populated, where a wave of new settlers arrive. At the beginning, the large plain is entirely homogeneous as to its potentiality for agriculture. Perhaps a group of migrants was passing through it with wagons pulled by horses. A horse dies or a wheel breaks. The man who cannot go further stops there and begins to farm. This is the initial kick of subsequent causal loop processes. Since there is a farm already, others are attracted to this location and join the first man. One of them opens a tool shop. Then this shop becomes the gathering and socializing place for the farmers. A food stand is established next to the tool shop. Gradually a village grows. Increased agricultural activities necessitate development of industry in the village. The workers in the industry become consumers of the farm products, and the village grows into a town and eventually becomes a city (Maruyama 2003, p. 601).

Although Maruyama's accompanying discussion is easily read as suggesting an analysis of the (repeated) occurrence of a single dynamics of emergence, the developments described in this passage involve a complex combination of two if not three different types of process.

At first sight it appears that the process Maruyama describes kicks off with a dying horse or a broken wheel. But for this event to be significant, the migrants involved must have arrived in the location in question, and for sets of further migrants to be affected thereafter, they eventually have to pass by that way too.

In other words a feature implicit in the passage from Maruyama is a formation that allowed the migrants to appear on the plain in the first place, and one that is repeated if iterative interactions of an appropriate kind are to occur. This is a

wagon train.[7] And unless wagon trains repeatedly followed the trails of previous ones (presumably in such cases using professional guides that had made the journey before), emergence of the sort described does not occur; in order that new migrants are 'attracted to this location and join the first man', and indeed presumably even for the first migrant to respond to the accident by settling and starting a farm, the latter must be located on a well-trodden route.

So there is a casual loop or repeated process in play. And a biased feature sets in: the originally homogeneous plain now has a contingently situated farmer. A result is that as others pass through, some who have presumably had enough travelling, and who are continuing just because there is little in the way of a desirable alternative option available, now recognise that one such is open to them after all and decide to stop off and set up close by. Migrants would presumably stay close by for the safety in numbers that is involved, or in the recognition that the first farmer is successful etc.

Notice that any such decision would depend on much reflection and possibly re-evaluation of plans. Also setting up in proximity to the other indicates something about social relations, etc. In other words, the fact of cyclical dynamics does not imply a mechanistic process. If patterns of dynamics are common to different social situations, they nevertheless are coloured by and work through exiting social relations and collective practices.

However, a point to note here is that in the example described an additional *complex recurrent dynamics of emergence* also sets in. The community starts to *differentiate* as one person 'opens a tool shop'. This mutual dependency of tool shop and farms on each other is an example of third-order emergence. It represents an emergent totality that is due not to just one interactive recursive system but two. And it is a form of dynamics that underpins a tendency towards heterogeneity.

Notice that the relations connecting any two forms of emergents are clearly extrinsic to both the components of those emergents and their interactions; rather they are 'selected' because of purposes served, or at least according to features found to be beneficial, at the level of the totality. Indeed instead of micro-level efficient causation determining outcomes, it may even seem as if there is a form of final causation involved in the sense that a set of emergent high-level potentials for serving pre-existing needs or wants are selectively met. The potential for a (viable) tool shop, always desirable to individual farmers, emerges with the growth of farms. The same applies to the food store when that eventually appears in the narrative as well. In such cases, there is a sense that, whatever the level of organisation, there is a related fundamental set of absences or needs-waiting-to-be-met or system incompleteness, along with some human experimentation underpinning a tendency to meet these absences, to reach pre-existing target forms

[7] Maruyama does not actually mention a wagon train even here (and neglects to mention how the migrants arrived in earlier versions of this story—see Maruyama (1963). Nevertheless, this is how in the early US, the migrants travelled (paralleling the reliance upon camel trains or caravans in the African deserts). Interestingly, though I need not labour it here, its form would have evolved precisely according to the first order non-recurrent form of dynamics discussed above.

of order, that complex recurrent processes of dynamics achieve. However, we view this, the driving factors here are extrinsic to lower level components and their interactions, so that once more we can see that a causal reduction will not typically be the case.

After the emergence of the tool shop we also find combinations of the different dynamics of emergence in play. The tool shop in itself introduces a new bias in the interaction patterns of the farmers, underpinning a new second-order process of emergence as 'this shop becomes the gathering and socializing place for the farmers'. This, as was just noted, supports an additional third-order process as a 'food stand is established next to the tool shop'; and so on.

Through a repeated complex combination of these three forms or orders of processes of emergence turning on three forms of interactive dynamics of emergence, we learn that eventually a village grows, and further in time, through more combinations of the noted dynamics, that 'the village grows into a town and eventually becomes a city'; and so the process continues.

In all such cases it is clear that iterative interactions are involved. And because potential relations are in effect, what are selected over it is even more apparent than in earlier examples that relations of organisation emerge along with any emergent totality. The central conclusion to be emphasised or reiterated at this point, though, is that with features extrinsic to and not produced solely by the interactions of the lower level components, causal reduction, as a generalisation certainly, does not seem to be sustainable.

So to sum up on the topic of causal reduction, a sketch of various forms of dynamic processes of emergence gives reason to conclude that it is *not* a conception with general validity. For a start, a synchronic (point in time) causal reduction is seemingly never relevant just because any emergent system-level powers of efficient causation always depend upon the relational organisation of the components that emerges simultaneously. But nor is a diachronic causal reduction of the sort that Searle appears to favour generally feasible, for extrinsic factors are very often, and seemingly usually, a condition of any emergence. One most promising scenario for causal reduction of the diachronic sort in question is that of non-social first-order dynamics of emergence, as illustrated by the emergence of various properties of liquid (states of certain materials) such as surface tension. But it is not clear that this form of reduction has relevance to the social realm at all. When considering even the simple example of crowd formation, culturally pre-existent norms and conventions including rights and obligations bear on the sort of entity that can emerge. And in situations of recurrent dynamics, external biases can matter and play a compositional role.

Alternatively put, emergent systems are organisations of typically pre-existing systems, and these depend on the relational organisation of the (possibly modified) pre-existing system as components. Because the latter—the organising relations—are *always* extrinsic to the components organised, the synchronic versions of causal reduction are false. And because the organisational relations are not generally

explicable *solely* in terms of the interactions of the eventual (and possibly modified) components, then, as a generalisation, any diachronic version of causal reduction is false as well.

4.4 Downward Causation

I turn now to examine briefly whether this heuristic overview of forms of dynamics of process of emergence also bears at all on the relevance of conceptions of downward causation. The version I want to contest understands 'downward causation [….][as] the concept that a system as a whole has a causal influence on its constitutive parts' (Hulswit 2006, p. 261), that 'higher level entities causally affect their lower-level constituents' (ibid., p. 263). Such a conception, as already noted, is also sometimes referred to as top-down causation, and those who accept it emphasise that 'top-down causation occurs only when an entity has a causal impact on its own parts' (Elder-Vass 2011, p. 4).

Although the conception of downward or top-down causation seems to be widely taken for granted, there is also a small critical literature that seemingly shares my own unease with the concept, even if this literature does not actually appear to take us very far. However, it does provide a helpful starting point. Especially useful is Hulswit's (2006) contribution in that its purpose is 'to lay bare [though not resolve] the major problems underlying the concept of downward causation' (Hulswit 2006, p. 261).

It is also convenient that Hulswit first explores the notion of downward causation by way of analysing the dynamics of (football) crowd formation in similar terms to the way I have described it above. From his analysis, Hulswit concludes that 'the crowd does something to the people involved, it makes them behave in different ways, it governs their behaviour (p. 264). And this example, according to Hulswit, exemplifies the paradox that underpins all of the confusion associated with the notion of downward causation (as well as apparently additional confusion surrounding concepts of self-organisation and emergence):

> All the problems involved in the three crucial concepts mentioned, self-organization, emergence, and downward causation, are related to the same basic paradox that all phenomena characterized by self-organization, emergence and downward causation seem to violate the principle of irreversibility that is considered to be inherent to the principle of causation. By saying that B is the cause of A, we mean among other things that B explains or conditions or causes A and that A does not explain or condition or cause B. [….] But when we say that the crowd causes individuals to behave in certain ways, we do say that (a) the behavior of the individuals in some way causes the behavior of the crowd and (b) the crowd in some ways causes the behavior of the individuals. Any theory of downward causation must come to grips with this paradox' (p. 265).

Hulswit consequently insists that this cannot be done without addressing the following two questions:

> 1. Given that 'to cause' appears always to involve something that causes and something that is caused, what sorts of thing are said to be, respectively, causing and caused within the context of downward causation? And 2. What is the meaning of 'causing' in downward causation? (p. 265).

Hulswit explores various attempts to resolve the paradox identified, but basically concludes that all fail leaving a confused literature in which 'the concept of "downward causation" is muddled with regard to the meaning of causation and fuzzy with regard to what it is that, respectively, causes and is caused in downward causation' (p. 284).

My goal is to seek and resolve some of this confusion making use of the insights drawn from the heuristic morphogenetic sketches and analyses set out above.

When addressing the conception of causal reduction above my focus was on emergent organisational structure and my concern was to indicate that, for the social realm especially, this structure could not be explained solely in terms of (as a creation of) the component interactions it serves to organise. Here, I want to draw attention to a slightly different feature or insight from the foregoing overview of processes of morphogenesis. As above, I want to stress that there is always a distinction to be drawn between any emergent system or totality and the organising relational structure of the system's components; the latter is a property of the former, but the two are not identical. But here I want especially to emphasise that in all cases examined the totality and the organising structure emerge simultaneously.

If we take this insight seriously it follows that if, as is usually the case, the terms 'top' or 'downward' in top down or downward causation are relativised diachronically to moments of emergence (rather than say synchronically to wholes and their parts), there are in fact *two* (not one) forms of higher level emergents. By this criterion not just the emergent entity as a whole, but also its relational organising structure, lies at the top or higher level. For, to repeat, in all cases examined an emergent totality and its structure emerge *simultaneously*.

However, if instead the higher/lower relation is interpreted as a synchronic or compositional one, indicating that an emergent entity as a whole is designated higher level and that anything on which it depends (or out of which it is formed) is regarded as lower level, then by this criterion the organising relational structure seemingly lies at the lower level.

I believe it is this confusion, and specifically a failure to recognise that on the diachronic criterion of levels an emergent totality and its organising structure *both* lie at the higher (or same) level, that underpins problems or paradoxes surrounding uses of the conception of downward causation.

For if top-down or downward causation is used to express the idea that an entity or whole (synchronically) causally impacts upon its parts (as appears to be the case in the examples noted above), the notion is clearly untenable/incoherent. A whole cannot so act; for the former is composed out of the latter. However, at any point in time the organising relations of the whole can and do make a difference to how the components interact. This, as noted earlier, is a form of *formal causation*. And, by

the diachronic criterion for distinguishing levels, the impact of the relational organising structure on the components is indeed a form of downward causation (albeit a form of formal causation). I am suggesting that it is the failure to distinguish, analytically, the emergent entity and its emergent structure, allowing an unrecognised analytical slippage between the two notions of downward causation, that explains the paradoxes and confusions that abound.

Consider the example of crowd formation that Hulswit uses to illustrate the central paradox. The paradox is that, at a given moment, causation *should* go in one direction only, and yet, Hulswit informs us, 'the behavior of the individuals in some way causes the behavior of the crowd and the crowd in some ways causes the behaviour of the individuals'.

But neither the behaviour of the crowd causes the behaviour of the individuals nor vice versa. The crowd and its behaviour certainly emerge through individuals (and perhaps small local groups) interacting in an organised fashion in a given context. But at a given point in time, the latter collectively (along with the relevant organising structures) constitute the former, they do not cause it. Of primary interest here, however, downward causation in the sense of the whole causally impacting its parts does not hold either. The individuals in their interactions draw *not* on the crowd behaviour as a totality, but on the relational structures that organises individuals as components of the crowd. And it is through these same interactions of relationally organised individuals that the relational structures are in turn reproduced and/or transformed. In short, causal interaction is between individuals and organising structure. And all such interaction is sequential, as we have seen in all the examples examined. Thus, when an individual comes to act, the organisational structure (in the form it currently takes) is given to the individual, and through the sum total of the actions of that individual and all others momentarily acting on that structure, the structure is reproduced and/or (in part) transformed. This happens repeatedly over time.

Perhaps the latter part of the argument is easier to see in the case of, say, language as spoken in a community such as the UK. The totality of speech acts does not causally determine an individual speech act or vice versa. Rather the structure of language is given to each individual and through the sum total of individual speech acts at any given point in time the structure of language is reproduced and/or transformed.

At one point Hulswit writes:

> Once the crowd is in place and the [football] match begins, the 'law' of the crowd becomes even more imperative. Some people behave in ways that would be entirely foreign to them if they were all by themselves. In short, the behavior of individual people seems to be governed by the behavior of the crowd that is constituted by those people.
>
> [….] the crowd does something to the people involved, it makes them behave in different ways, it governs their behaviour (ibid, p. 264).

It is certainly the case that very often 'people behave in ways that would be entirely foreign to them if they were all by themselves'. But so, too, individuals behave in ways that are rather different when participating (within a crowd) at, say,

a performance of a violin concerto, or a funeral service, or an airport, or on a beach. In each case the individuals are faced with specific sets of collective practices or conventions, rights and obligations, etc., and act on the basis of these, thereby contributing along with everyone else in the relevant vicinity as an element in a relevant totality.

Even an individual alone acts differently when situated as a motorist on a motorway, or when preparing a meal, or whatever. Individuals causally interact with each other and the organisational social structure, but not (synchronically) with the behaviour of some totality of which they are a part; and nor does the latter (synchronically) causally impact its own parts. Rather the totality is the sum total of its constituent components and the organising relational structure, and causally acts through (not on) its components.

From this perspective, as far as I can see, all paradoxes and confusions disappear. Hulswit's two specific questions about the nature of causation in *downward* causation can thus be answered as follows. It is (1) the organising structure that does any downward causing (should we persist with this terminology) as it bears causally on the (human individual) components of the relevant community or system. But (2) the form of causation is not efficient but formal causation.

In the social realm, specifically, the organisational structure takes the form of community-accepted collective practices with their (often implicit) sets of rights and obligations, and so forth (see Lawson 2012). Any causal bearing that even the organisational structure has on human practices is causation in the sense *not* of 'bringing about' individual practices such as, say, speech acts, but of shaping them through serving as conditions of their possibility. For, of course, organisational structures are not somehow able to bear down on the individual in some external unmediated fashion. It is human beings that do things, so that everything that happens in the social world does so through human activity.[8]

Contributors who hold instead that downward causation is a relation between events at two different levels of organisation (see for example Sperry 1987; Kim 1996, 2000; and occasionally even Elder-Vass 2011) are in effect treating the higher level as restricted to the acting emergent total entity and neglecting the relevant higher level emergent which is the shaping or organising relational structure.

I hope it is clear that in making the forgoing case I am not at all suggesting that there are no emergent social systems of collectivities with their own efficient causal powers. Clearly there are. My argument is rather that these collectivities act

[8] It is through human activities that social structures have a causal influence whether synchronically or diachronically. If the individual in moving to a different socio-cultural context or system wants to function capably within it, he or she must become knowledgeable and skilled in its local structures. Thus, although the latter do not force themselves on the individual, to the extent the individual seeks to become locally competent her or his practices, and perhaps eventually capacities and dispositions, will be significantly shaped in conformity with the traditions of the new society nonetheless (on all this see Lawson 1997, 2003 especially Chap. 2, 2012; or Archer 2000, 2007).

only through (but not on) the causal practices of the *individuals organised as their components*. Trade unions affect the bargaining process *through* the actions of the individuals organised as its members. Armies fight wars *through* the actions of its soldiers (and increasingly its technology). Wholes cannot (synchronically) have a causal impact upon (as opposed to through) their parts; organising structures, in contrast, can causally impact the component individuals, albeit only by way of providing the conditions or means of forms of individual activity. We all draw on community collective practices when going on in daily life, but that is quite different from saying that it is the communities of which we are a part, and of which the collectives practices are properties, that cause us to do what we do.

My own suggestion for avoiding the confusions and apparent paradoxes that abound is that we desist altogether with talk of 'top down causation' or 'downward causation', not least because (by the most familiar criterion for designating something as higher) there are two forms of higher level emergents. Rather, once we recognise that wholes cannot (synchronically) impact upon their own parts, it seems sensible, and certainly potentially less confusing, to talk instead merely in terms of human-individual and social-structure causal interaction.

4.5 Final Comments and Conclusion

If a social totality exhibits powers of a sort not possessed by any of its components, and is typically not explicable solely in terms of the interactions of the latter, I recognise of course that such causal powers nevertheless emerge only through the relational organisation (involving, in the social domain, an empowerment) of its components, and are exercised, as mechanisms or processes, only through the inter-actions of its relationally organised (human) individual components. An Olympic Games, concert, war or industrial strike cannot be staged other than through the activities of various participants. *The position I defend is not a version of methodological holism.*

But equally, if individuals are empowered (and constrained) through being positioned as members or participants in a community, the positional powers are always system properties and individuals remain the agents of these powers only when appropriately positioned and relationally organised as components of the system (see especially Lawson 2012). Thus when a police officer arrests a suspect, or a judge passes sentence, the powers of arrest or sentencing are those of the community, of the wider system, but born by, or 'invested in', or accessed by, those individuals that occupy various relevant positions, and only for as long as they do so occupy such positions. *The position I am defending is not version of methodological individualism.*

The argument of this chapter is really very simple. Contributors who accept the existence of emergent phenomena tend to view them as complex systems possessing equally emergent causal powers and being composed out of other (lower level) entities with their own causal powers. Debate persists over the relation

between the powers of efficient causation of the emergent higher level entities and those of their causal components. Two theses in particular are continually raised and contested. The first, turning on a conception of *causal reduction*, holds that in some sense higher level causal powers can be reduced to the causal powers of the lower level components either alone or along with their interactions. The second, turning on a conception of *downward causation*, holds that causal actions of (lower level) components are in part caused by the (higher level) entities or wholes out of which they are formed. I have ventured that the longevity of contestation over the relevance of these notions has rested in part on the fact that analyses of how novel entities actually emerge is rarely made or brought to bear. I have thus examined whether reflection on the nature of morphogenetic processes allows us to draw insights that bear upon the more prominent conceptions of causal reduction and downward causation. I have suggested that indeed this is the case and that such insights support the view that the former conception lacks general relevance, whilst the latter lacks coherence.

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Chapter 5
Morphogenesis, Continuity and Change in the International Political System

Colin Wight

5.1 Introduction

Our contemporary social circumstances are fundamentally changing; or so we are continually being told. Globalization, we are led to believe, is changing everything. Time and space are no longer what they once were; class structures and gender relations are said to be undergoing transformation; there are increased hopes for disarmament paradoxically existing alongside increased fears about nuclear proliferation and claims that interstate war may now be obsolete; existing state boundaries, and the nature of the state itself, are also in question. At the same time, we are allegedly experiencing a worldwide upsurge in religious renewal, increased awareness of global environmental problems, new forms of protest, a state of constant crisis in the global economy, cascading democratization across the Middle East, and so on. There is reemerging talk of 'a new world order', despite the perceived failures of the Obama program for 'change', the emergence of what is variously called 'post-industrial', 'post-capitalist', or 'postmodern' society, and of 'the end of history', and now, of course, the possibility of the 'morphogenetic society'.

Change, then, seems to be the leitmotif of the contemporary world. There are, however, two potential problems with the contemporary fascination with change. First, change seems to be something new: before there was continuity, now there is change. But change is constitutive of the social world, hence they cannot have been a (social) time that contained no change. Second, the focus on change is prone to ignore what has not changed. For just as change is constitutive of the social world, so is continuity. That something is undergoing change can only be understood relative to that which does not change. If everything were changing,

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then change could not be experienced as change. We identify change as a disruption of the non-changing. But the disruption is never total since what can be said to be changing—processes, events, things—requires that something related to the entity undergoing change does not change. Even in extreme instances of change—metamorphosis, for example—there is still a residue of the old such that we can identify a change from 'this' into 'that'.

In one sense, change is integral to social life. Social practices, particularly at the micro level, are always 'products-in-process'; hence we experience them as things undergoing constant change. As social theorists, however, our concern is not confined to the micro level of human interaction but is also with the macro structural patterning of human activity organized into societies. This is particularly the case in terms of my own discipline—International Relations.[1] As a discipline dealing almost exclusively at the macro level, the great issues of continuity and change have always been at the heart of theoretical debates. Yet, despite the importance of change in the development of International Relations as an academic discipline, its focus has been on political, not social change.

Under conditions of globalization, however, the notion of impermeable state boundaries is no longer tenable. Hence the idea that the state is a container within which sits domestic society, and outside of which sits international society is no longer apposite. However it is defined, it seems clear that we now exist in an era when it makes sense to talk of society in global terms. This also means that analysis of change at both the global and local levels has to go beyond the political to encompass all aspects of the *social*. There is thus good reason to think that international relations are integral to the process of social change wherever it occurs today.

The aim of this chapter is to explore the causes, courses, and consequences of global social change from the vantage point of morphogenesis (the Morphogenetic Approach was originally developed by Margaret Archer, (see; Archer 1979, 1982, 1995, 2000, 2012). Morphogenesis is the chosen explanatory framework because I believe it enables and facilitates the integration of concepts and methods from IR, sociology and history, and other cognate disciplines and demonstrates how they can be combined in a reconstructed mode of analysis that would help us to explain, understand, trace, reflect critically upon, and perhaps even consciously and positively contribute to, reconstructions of social relations. My focus is on international relations; however, a large part of my argument rests on the assumption that social change anywhere in the contemporary world can only be examined from this global context, and that morphogenesis provides us with a unique framework for integrating all of the human sciences in this endeavor. The chapter has three sections. Section 5.1 aims to situate the problem of social change as dealt with in international relations; Sect. 5.2 outlines some issues that I consider need to be

[1] I will use International Relations (in capitalized form) to indicate the discipline and international relations to refer to the practices.

addressed when looking at the issue of social change; Sect. 5.3 provides a first take on what I think morphogenesis brings to bear on the issue.

5.2 Some Contexts

Before we can move towards an understanding of international relations and social change we need to examine why the discipline of international relations has largely ignored the issue thus far. Two interrelated factors help explain this absence. The first is the dominance of 'realist' accounts of international relations in the discipline.[2] The second is a direct consequence of this realist dominance; this is the impoverished account of the 'international' to which the discipline remains wedded. These two factors produce a situation in which the state is seen as the dominant actor (statism), politics is viewed as a closed realm of human activity (politicism), and the explanatory frameworks used within international relations stress continuity over change (Scholte 1993).

Realism, in particular, impedes the study of social change from a global perspective by reducing international relations to interstate relations. For realists, such as Hans Morgenthau (1954), and neorealists such as Kenneth Waltz (1979), states are the only actors worthy of mention. Obviously there have been theories that have challenged this restrictive statist view, yet statism still prevails in international theory. Indeed, even when notions such as the 'international society' emerge it is still conceived of as a society of states (Bull 1977). Even those sociologists who entered the terrain of IR did so with the aim of 'bringing the state back in' (Evans et al. 1985; Giddens 1985).

Of course, the state is still a major actor at the international level. However, social, as opposed to political life, is not reducible to the state alone, and there is clearly a range of important non-state actors and social relations that transcend state boundaries and contribute to processes of change, both inside and outside of the state. Yet, historically, the focus of the discipline of international relations has been on power politics to the detriment of other forms of social activity. As Hans Morgenthau and Kenneth Thompson (Morgenthau and Thompson 1950, Preface) put it, the core of 'international relations is international politics, and… the subject matter of international politics is the struggle for power among sovereign nations'.

Finally, realism has hindered the analysis of change because, in the final analysis, it privileges continuity over change. Indeed, for many realists, international relations resemble Nietzsche's (1967 [1901]) realm of 'eternal recurrence'. Not only has there been no fundamental change, there can be none. As Robert Gilpin has argued, 'the fundamental nature of international relations has not

[2] Realism here bears no intellectual, theoretical, or practical relationship to the kind of philosophical realism that underpins morphogenesis and is usually known as Critical Realism, Transcendental Realism, or Social Realism.

changed over millennia. International relations continue to be a recurring struggle for wealth and power among independent actors in a state of anarchy' (Gilpin 1981, p. 7). This commitment to the unchanging nature of world politics is endemic to all realist approaches, irrespective of whether they embed its source in an unchanging human nature (Morgenthau 1954), or the anarchical structure of the international system (Waltz 1979).

Hence realists typically refer to classic historical texts such as Thucydides, Machiavelli, and Hobbes, which are said to articulate eternal truths about world politics and, it is claimed, are still relevant today (Dougherty and Pfaltzgraff 1981, p. 2). These realists believe that anarchy creates a realm that predisposes states and their policy-makers to adopt a stance of self-interest, irrespective of national attributes and the intentions of policy-elites; that is why they favor continuity over change. The price paid for the maintenance of domestic political order is disorder at the international level. By institutionalizing Hobbes's Leviathan domestically, the 'state of nature' does not disappear, but rather is transferred to the international level. Hence irrespective of whether we are considering the city-states of ancient Greece, the city-states of Renaissance Italy, or modern nation-states, the relations between units in a state of anarchy remain the same.

Of course, there have been challenges to this view. Liberals and constructivists highlight the fact that state interests vary, that policy-makers have the capacity to learn, and that there are possibilities for cooperation at the international level (Keohane and Nye 1977; Wendt 1999). In addition, post-modern theorists have highlighted the fact that some of the realist key categories, such as sovereignty and anarchy are no longer applicable in a globalized era. Walker (Walker 1993, p. x), for example, claims that mainstream IR theories 'remain caught within the discursive horizons that express spatiotemporal configurations of another era'. What this highlights is that we are confronted by the fact of change in the practices of global politics without a concomitant change in our theoretical concepts. We live in an era of profound change, but our ways of seeing the world have not changed and outdated and traditional theoretical concepts act as ontological blinkers (Wight 2006) rather than as aids to understanding.

Of course, realists can still point to the many continuities that exist in global politics. The 'war on terror', the misguided invasion of Iraq, and the ongoing conflict in Afghanistan provide compelling evidence that power politics is still alive and kicking. But equally, there is much about contemporary life that suggests that change has occurred and that it continues to do so. Although there are some critics (Stiglitz 2002), it is generally accepted that a process of globalization has been underway for at least 200 years now (Ohmae 1995). However one interprets them there is no doubt that every aspect of social activity—communications, ecological matters, commerce, regulation, ideology, and so on—has become more international in scope, often eluding national controls.

Not only day-to-day social activity, but also processes of social change have on the whole become progressively more globalized in that major rearrangements of social life have transcended national borders to the point of spreading worldwide. Industrialization, the spread of capitalism, neoliberal economics, secularization,

militarization, the advent of the welfare state, the rise of nationalism, and bureaucratization, are all good examples. The global expanse of social change has, in various instances, appeared so marked that we can be prompted to ask whether developments such as those just mentioned have been, at least in part, a product of international forces. In other words, might the cause of these shifts in the character of social life lie distinctively—to some greater or lesser degree—in the realm of international relations? This proposition seems to have been widely, if perhaps only tacitly, accepted amongst governing elites of the world insofar as we have seen a proliferation of interstate efforts to control the impact of globalization through intergovernmental consultations and cross-border cooperation.

Moreover, there is clearly an emerging civil society at the global level. Reform movements, and groups advocating change, and all manner of transnational non-government organizations regularly project their campaigns on to the global stage. In particular, one can point to anarchist anti-capitalist movements, anti globalization protests, Islamic revivalism, and environmentalism as examples of forces that operate on a global scale today. Alongside these one can also point to the recent 'occupy protests' and the Arab Spring as indicators of how large-scale social change is embedded in, and perhaps produced by, global structures. From the preceding discussion, it is clear that in order understand change at the global level we need to broaden and deepen our understanding of international relations. What is advocated here, through an engagement with morphogenesis, is an integrated world-historical sociological explanatory framework which fundamentally reformulates, and thereby transcends, the different disciplinary traditions out of which it develops.

5.3 Some Problems

According to John Ruggie since 'no shared vocabulary exists in the literature to depict change and continuity…we are not very good as a discipline at studying the possibility of fundamental discontinuity in the international system' (Ruggie 1993, pp. 140–144). For some years now International Relations has experienced a period of major theoretical reorganization precisely because change seems to be ubiquitous in the contemporary world. To a large extent the momentous changes brought about by the end of the Cold War were responsible for this and the discipline has been subject to deep criticism over its inability to predict or even retrospectively explain how the end of the Cold War came about (Kratochwil 1993; Patomäki 1992). But we do not know what to make of the end of the Cold War because there is no consensus on what we mean by change, not to mention how we identify it.

The end of the Cold War was not only said to bring about change; something more fundamental was being claimed. Increasingly, scholars of international relations have asserted that fundamental transformations followed from the demise of the former Soviet Union (Koslowski and Kratochwil 1994). However, the term 'fundamental' is problematic without a way to differentiate between differing

kinds of change; trends from transformations, major change from minor change, and qualitative from quantitative change (Holsti 1991).

Forms of Change

Markers that identify change need to be embedded within a framework that allows us to specify what kinds of change are involved. This means that we need a more nuanced account of the different forms that social change can take. At a minimum I would suggest differentiating between: (1) change as transformation; (2) change as replacement; (3) change as addition/reduction, (See, Holsti 1991, for a more detailed account of this).

Change as Transformation

Transformation can be the outcome or result from quantitative changes which, when accumulated over a period of time, bring new forms of social practice into being. But, logically, the new forms must, in some way, derive from previous practices or patterns. A transformation can partly replace old forms of social activity, but by definition, transformations always involve the movement from one thing to another and they must include aspects of the phenomenon/practice/process that has been transformed. A transformation cannot emerge *ex nihilo*. In the case of social and political institutions, when we talk about a transformation, it only makes sense to talk of transformation when we can point to that not subject to transformation. This generally requires us to identify features that have not changed. Hence for example, when we talk of the transformation of the state under globalization we identify what has been transformed about the state alongside that which has not been transformed. There has been a transformation of the state as an institution, but not its replacement.

Change as Replacement

How are we to understand claims about 'postmodernity', post-Westphalian, or the post-international? Much depends on how the term 'post' is interpreted here, and this is where different conceptions of change become important. For example, if we do indeed live in a 'postmodern society' then it must be the case that we have somehow transcended modernity and entered a new era; the modern has not simply been transformed, it has been replaced. Post-modern implies an era after, or beyond modernity. Certainly there may be residues of the past that endure in the new, but for the prefix to have any meaning it must be that qualitative changes have taken place in the form of social organization under consideration. Similarly,

if, as Rosenau (1990) suggests, we now live in a new epoch of post-international politics, then the main characteristics of international politics as we have experienced them since 1648 must have disappeared and have been replaced by other (or new) practices, ideas, and norms. That the number of states has grown, that we communicate more and in different ways, or that we trade more within the context of a increasingly complex financial system does not necessarily mean that we have entered a new era.

Change as Addition/Reduction

Change can also be simply additive or reductive without necessarily involving qualitative change. Do increasing levels and rates of exchange in the global economy mean that the state will disappear? Is interstate war necessarily obsolete just because the number of internal conflicts within states is increasing? Have we entered the era of 'new war' (Kaldor 1999)? Things are certainly changing in each of these domains, but the change is quantitative, not transformative, or a matter of replacement. This type of change can be considered as additive, or reductive. If the total number of global infant deaths in a year falls then there has been change, but the deaths still continue. Change of this kind, particularly if it is additive can mean increased complexity. Equally, it can also mean that, while the power politics associated with realism might be increasing in certain parts of the globe, relations of cooperation can also be increasing at the same time elsewhere. Just as growing levels of activity at the level of global 'civil society' do not replace national-level political activity, nor does the emergence of peaceful interstate relations within Europe mean that conflict has disappeared everywhere.

Indicators of Change

From the perspective of everyday life, the events that make the headlines in today's media represent change because they are not the same as yesterday's news. The global 24hour media run on an uninterrupted sequence that is structurally predisposed to stress change over continuity. For most international historians, however, the micro events that fascinate the media would only be worthy of interest if they could be shown to be fundamental moments in the production of change at the macro level. Somewhere between these extremes, it may be possible to note certain indicators where things appear to have changed in some significant way. It is extremely difficult, of course, to identify objective markers that suggest one type of change is more obvious than the other. Those of a more pragmatic orientation would argue that the only question is the uses to which different conceptions of change are put, but a realist (in the philosophical sense) cannot be happy with this incipient instrumentalism.

According to Fernand Braudel, micro actions and activities can be aggregated to produce a multi-layered narrative of change at the macro level (Braudel 1990). This approach is consistent with a morphogenetic framework, with macro cycles of cultural and structural elaboration and transformation representing the macroscopic outcome of micro-activity. However, this still does not answer the issue of change since trends only represent quantitative changes in certain practices, and they do not help us to identify the kind of qualitative change associated with transformative change.

Trends

Trends record a quantitative form of change. Populations seem to be on an incessant upward trajectory, the number of international organizations continues to increase, global communications increase exponentially, the volume of international trade and finance grows, and the numbers of people traveling across national boundaries increases every year. What do these trends mean?

The mere existence of these tendencies, no matter how well documented, does not make them significant, or transformative. The changes must have verifiable and significant consequences, otherwise they are simply the quantitative statement that things are not the same as they used to be. If the European Union doubles its membership by 2030, is it the same organization or have its functions changed and in what way? Trends can be important indicators, but they are not, of themselves, indicative of fundamental change. What is required is the identification of a causal mechanism(s) able to explain how quantitative change leads to qualitative change.

In the absence of a discussion of the mechanisms that produce qualitative effects from quantitative changes there is no way of knowing when change becomes meaningful, or transformational. Some of the problems of simple quantitative analysis become important here. For example, there is no doubt that there has been an almost unquantifiable increase in global communications over the last decade, but without an analysis of the meaning involved and the impact of this increase on social relations the bare data is just that, data. There is no doubt that a realist approach to social science forces us to look at these issues in much greater depth than an instrumentalist approach to social and analysis allows. Nonetheless, the realist social analyst still faces these problems, and in fact, precisely because of his/her commitment to realism must confront them head-on.

Significant Events

The cataloguing of ‘significant events’ constitutes another much-used indicator of social change. According to this approach change is not simply the accumulation of many acts, which, when aggregated, can be analyzed as trends. Significant events are singular not cumulative; they represent system transforming moments in and of

themselves. Of course, significant events can emerge out of trends, but when they do so they are best understood as tipping points that arise when the accumulation of a trend acts as a catalyst for some major event. What matters is not simply the accumulation, but a great departure from the normal modes of social practice, resulting from the accumulation, which is often dramatic and transformative over a short period of time. This approach is endemic to international relations, with the Westphalian treaties of 1648, WWI, WWII, and the end of the Cold War serving as clear markers of great upheaval and change. Historians, of course, routinely use major events to structure their narratives. 1900 to 2000 is an accurate designation of the twentieth century, but what use is it, and what does it tell us? The actual dates, accurate as they are, are meaningless in the absence of a narrative that provides them with a structure and meaning. Hence, for most international relations theorists the key dates in terms of configuring a notion of the twentieth century are 1914 to 1989; the beginning of WWI and the end of the Cold War. When we refer to the twentieth century we mean something in particular and we cannot separate this meaning from the significant events that frame our narratives. Of course, what constitutes a significant event is dependent upon perspective and a feminist may well come up with a different set of dates and periodizations for that period.

Moreover, although an era or period can be demarcated by significant events that seemingly caused major disruptions in or changes to previous practices, their real import is not always clear. Thus, the identification and import of great events is not always immediately apparent. A good example of this comes from Martin Wight (Wight et al. 1978, p. 85) who argues that the Versailles settlement was not only the termination of WW1, but 'the final victory in Europe of the French Revolution over the Holy Alliance'. For Wight, the Versailles Treaty represents the end point of a process that had begun decades prior to the signing of the treaty.

The difficulties of demarcating significant events as indicators of change are nicely articulated in Ian Clark's *Globalization and Fragmentation: International Relations in the 20th Century* (1997). Clark argues that although most historians use great events, such as 1914, 1919, 1939, 1945, 1989 as demarcating significant changes, there is no agreement on how these dates should be interpreted. That they were all significant *events* is beyond debate, but there is no consensus as to whether or not these events were the sources of change or transformation. As is the case with trends, choices concerning great events, while perhaps not arbitrary, do need detailed specification as to their import.

That a major event, such as WWI was significant is beyond question, but as the interwar period demonstrated it did not permanently alter diplomatic and military practices and institutions. Likewise, was 1945 a major event of such magnitude that it requires us to specify it as demarcating two significantly different epochs of twentieth century history? Clark robustly disputes the dichotomization of the twentieth century into two clearly demarcated epochs each with their own dynamics and modes of operation. Thus what can appear as a radical discontinuity to one observer can look very different to another. These are difficult issues and it is unlikely that theorists are likely to agree on the import of significant events, particularly, given that they will likely approach such events from radically different perspectives. This is not to

suggest, however, that such decisions cannot be made, but it does indicate that much more is required in terms of identifying change than simply the recognition of something significant. Again, as was the case with trends, we need an account of *how* the significant event led to consequential change.

Technological Innovations

In many respects, technological innovations could be considered under the rubric of 'significant events'; this is probably the case with social innovations, but technological ones are different, and they are best considered as developments as opposed to events. The twentieth century, in particular, has seen social and technological innovations that are claimed to be radically altering social life (Greenfield 2003). For example, after 1945, theories were advanced that suggested the 'nuclear revolution' had made the Clausewitzian conception of war obsolete (Skolnikoff 1993; Smith 2005). Of course, the trajectory of war since 1945 does not support this conclusion. Certainly, it is clear that the 'nuclear revolution' has altered the nature of relations between great powers, but it has not terminated violence between states. Yet the idea of a 'nuclear age' still has some significance and there can be no doubt that the development of the atomic bomb, and its eventual use in 1945, did usher in new dynamics to international politics. But when considered alongside the impact of the computer, however, it might well be that the 'nuclear revolution' pales into insignificance in terms of engendering change or transformation. Undoubtedly nuclear weapons altered traditional security thinking, however, the microprocessor revolution has changed the daily life of billions of people across the globe. In many respects, the impact of the computer revolution has been far more ubiquitous, and, potentially at least, far more transformative than nuclear weapons. Indeed, it is difficult to conceive of globalization taking place without the facilitating impact of electronic technology. Again, however, as with trends and significant events there is no real consensus on the consequences of technological innovation.

5.4 Some Suggestions

In this section I attempt to demonstrate some broad, and at this point schematic, suggestions about how social morphogenesis might be applied in the domain of international relations if we are to understand social change. It should be noted that my particular interpretation of morphogenesis differs from that of Margaret Archer in some fundamental way, most importantly in how we understand the issue of agency. What follows will not be an exhaustive account and I will only specify some fundamental principles that I believe follow from the adoption of social morphogenesis in the analysis of social change at the global level. I suggest five key points: (1) that social life is prone to change; (2) that these transformations

result from forces at different levels of social life, including the international level; (3) that social relations are multidimensional, so that the process of social change involves complex combinations of political, economic, cultural, psychological, and material forces; (4) that a wide range of actors can shape the course of social history in a global setting; (5) and, that structural forces play an important role in terms of the production of social change.

Social Change Does Happen

Before any analysis of social change can be undertaken we need to establish at the philosophical level if the social is an object that is susceptible to change. It seems strange that this even needs to be said. Yet in the context of the realist orthodoxy that dominates International Relations the fact that morphogenesis, embedded within a critical realist social ontology, demonstrates theoretically why this is the case is already an important contribution (Archer 1995). This is not to say that a study of change ignores continuities in social life. Indeed, as already noted, we discern discontinuity in relation to continuity; each helps define the other.

From a morphogenetic perspective change can transpire with regard to any of the five facets of social life that are discussed later in this section: that is, in respect of levels, dimensions, actors, structures, and trends. The prime concern of most studies of social change is with societal transformations; with major reconstructions of the overall social order. Thus, for example, liberals focus their attention on the supposedly 'progressive' move from 'traditional' to 'modern' society. In a similar vein, Marxists are concerned with understanding the change from a feudal to a capitalist system, and use this analysis to project the possibility of a further immanent change that leads to a post-capitalist mode of existence. And critical theory and postmodernism highlight the potential emancipatory possibilities in contemporary global life, in the hope that they may provide transcendental potentialities for less oppressive forms of social organization.

This points to something important. All the analyses of social change mentioned above, are either concerned with prediction, or emancipation. In this respect, the analysis of social change is centrally concerned not just with describing it but with controlling and/or promoting it. However, the principles, articulated here simply sculpt out the general theoretical underpinnings of an explanation of social change based on my interpretation of the morphogenetic perspective.

Levels

Any coherent morphogenetic approach to social change must involve a multilevel conception of society (Archer 1995). The international therefore must be an important part of any analysis of social change including, inter alia, the individual,

the group, the community, the country, the region, and all other levels of social life. Global conditions affect, and are affected by, social relations that encompass more than the relations between several or all countries. However, a cautionary word is required here. The morphogenetic approach cannot proliferate the number of levels indefinitely. If the concept of emergence is to have any meaning, it must be restricted to those instances where the emergent level can be shown to have properties and causal powers of its own that causally impact back on the lower levels. However, if this principle is demonstrated, and with the global it clearly is, then, talk of a level is justifiable.

In that case, the morphogenetic approach to social change needs to incorporate the idea of a world society (Buzan 2004). Interactions and interdependence between people on a global scale have, today, become sufficiently intense, enduring, and encompassing of the whole globe that the term 'world society' seems wholly appropriate. Moreover, these global social relations are now ordered, controlled, and regulated at the global, as well as at the domestic level such that they are now capable of producing distinctive transformative tendencies of their own.

This is not to say that all transformations of social life will be, or have been, engendered at the global level in every instance. To suggest that the process of social change can be generated from a global context does not entail going to the extreme of asserting that world-level forces constitute the single mechanism driving transformation. On the contrary, it is necessary to consider these global forces in the context of local configurations (and the relations between them) as well as to analyze the contradictions that may arise as a result of complex multileveled social relations interacting in new and unimagined ways. There is clearly a potential risk that studies of social change can become susceptible to globalist excesses, by neglecting the particularities and the degree of autonomy that other realms may have from the international realm. However, morphogenesis guards against this tendency because it insists that all structural and cultural elaborations only exert their effects through human agency.

Moreover, an account of social change grounded in morphogenesis provides a vital corrective to the equally problematic approach which fails to give the global level due attention (Rosenberg 2007). Morphogenesis provides a non-conflationary explanatory framework, where research on the dynamics of social change can avoid both the fallacy of endogenous analysis of state bound societies and that of extreme globalism. That is, morphogenesis requires us to consider the various levels of society concurrently, and in relation to one another. After all, the various levels of social life intersect, overlap, and in many ways, constitute, and deeply affect, each other. Empirically there are no neat dividing lines between levels and, in the final analysis, there are no neat dividing lines between these realms, and in the end the distinction of different levels of social life is dependent upon the specification of a set of causal powers and liabilities that might be said to reside at one level and not another. Hence, world society is not a sphere existing on its own, but rather involves complex interconnections between levels of social organization ranging from the individuals to the globe. Social change therefore results from the

intricate interplay of all levels and not simply from endogenous forces, or from exogenous factors, or even from 'domestic and international' conditions, but from the complex structural relational context that emerges when all the levels are considered holistically.

This approach drastically alters one of the key typologies of international relations; the level-of-analysis problem (Singer 1961). According to this approach to levels, the world is composed of the individual level, the bureaucratic level, the nation-state level, and the international system level. Analysis, it is argued, can focus on any of these levels. What the model suggests, however, is that agency can be relocated up or down the levels so that what appears as an agent on one level becomes a structure on another. For example, if one considers the relationship between the individual and bureaucracies, here the individual functions as an agent and the bureaucracy constitutes the structure. If one moves up a level, however, to the bureaucracy/nation-state conjunction, bureaucracies now feature as agents with the nation-state playing the role of structure. In terms of International Relations, the dominant level of analysis has always been between the international system and the nation-state. This means that the discipline has moved all too easily into treating the nation-state as an individual agent. Hence the vast majority of those working in the discipline assign to nation-states the properties normally given to human individuals. Or as Alexander Wendt has put it, 'states are people too' (Wendt 1999).

Morphogenesis provides a way out of this. For, in critical realist ontology the first question we have to answer is levels of what? We could refer to levels of political organizations or any other aspect of the social field, legal, economic, social and cultural, for example. Moreover, in each of these examples the form, number, and type of the levels may differ since there is no need to assume that one scheme of levels fits all situations. The location of individuals at every level is important, since it highlights the fact that it is through the different positioning of individuals in structural contexts at the various levels, that they interact. In effect, this way of thinking about the issue theoretically links micro and macro phenomena.

Dimensions

Morphogenesis also highlights the fact that social life unfolds across several dimensions. Global relations of social change obviously involve politics, whether analyzed through traditionally conceived of centers of political power, such as governments or other, less formal channels. Equally, important, however, are economics, culture, language, psychology, and material relations insofar as humanity and the wider environment mutually shape the course of social history. In some accounts of global relations these dimensions are treated in a hierarchical fashion. For example, some historical materialists suggest that economic factors provide the primary spur to social transformation. In contrast, modernization theorists have tended to incline towards technological determinism, and some postmodernists come close to suggesting cultural determinism.

However, the separation of political, economic, cultural, psychological, and ecological factors into distinct unconnected levels is an error. Certainly particular levels may possess their own causal powers but the levels are always related and, potentially at least, interact with one another. In actual social life each of these dimensions is simultaneously cause and effect of the others. Hence, under a morphogenetic account social history has no prime mover, with the dynamics of change emerging from the complex combination of political–economic–cultural–psychological–ecological domains; this is what I term 'structural relationality'.

Actors

The fourth principle for explanations of social change in a global perspective is an expansive concept of who the actors are. In contrast to international relations' traditional state-centrism, a morphogenetic study of world relations would not a priori give priority to political elites or governments as the key agents of international history. Non-state actors, international organizations, pressure groups, advocacy networks, religious bodies, workers movements, political parties, commercial enterprises, and individuals, to name but a few, may be causal agents involved in processes of social transformations. Moreover, the morphogenetic perspective requires us to acknowledge that in all of these social forms, change can only take place if human agents change their practices and/or ideas.

This is not to underestimate the role of the state in terms of the production of social change. States have played a major part in shaping the social arrangements we confront today and, despite claims to the contrary, we can expect them to continue to do so for some time to come. However, the specific impact that the state has on social change is, theoretically at least, much like that of any other type of actor, and hence its impact can only be assessed empirically and not assumed in advance. Moreover, under a morphogenetic approach the state is more correctly viewed as a structure within which human agents act. The power agents possess to act in the world will depend on where in this (and other) structures they are positioned (President, diplomat, cleaner, etc.).

Structures

The fifth principle underlying the morphogenetic approach to social change is that social life is structured: social relations always exist, develop, and emerge in the context of a prior structured context that to a significant degree shapes the process of transformation. Structures provide both a constraining and enabling context providing (or impeding) access to resources and rationales for interactions between people. In addition, certain structures provide identities and roles that agents take with them as they move from one structural context to the next. In this sense,

agents always take (some of) their structures with them as they move through the various levels of social life.

It is because social activity always unfolds in a structural (and cultural) context that social practices and events are not wholly random, but to a considerable extent unfold in accordance with the general principles of social life prevailing at that place and time. Thus, according to the morphogenetic perspective, researchers should begin with the already existing structural context before proceeding to chart the structural and cultural elaborations that unfold as social practice develops. In particular, and as a result of the academic division of labor, students of social change from a global perspective have a special responsibility to examine social organization at the international level. The morphogenetic conception of structural power also insists that the frequency and direction of social transformation results not only from actors' decisions, but, in addition, from the ways that actors' identities, perceptions, beliefs, and goals are molded by structural and cultural conditioning.

Indeed, structural influences may at times produce unintended outcomes that are not aligned with the aims of the actors involved. For example, there is no doubt that capitalism has helped both to cause and to sustain large sections of the global population in a state of poverty, even though the persons engaged in those capitalist activities may have genuinely believed that they were promoting economic advancement for all. In this sense, structures have their own effects and situational logics of which the agents may not be aware; and it is this point that gives social science its critical edge.

However, morphogenesis is not a form of structural determinism. Structural analysis does not necessarily have to accept the discredited structuralist view that the activity of individuals and groups is structurally determined; there is a crucial distinction between conditioning and determining. Structural determinism is not compatible with a morphogenetic approach where structure is one of several influences on process of transformation. Actors, cultures, and structures stand in a relationship (potentially asymmetric) of co-determination, not of conflation.

5.5 Conclusion

The principles outlined above concerning the possibility of change, levels, dimensions, actors, structures in global social life provide a starting point through which the analysis of global social change might be tackled. They do, however, need to be incorporated into an overall framework for understanding social change from a global perspective. A basic premise of the morphogenetic approach is that a phenomenon (in this case social change in a global context) is best understood as a complex structural complex of interrelated parts. Hence, to explain and understand social change, we need to consider the global as a structured systemic totality. Moreover, since social change emerges in the context of systemic interrelations between the various elements of social life on a global scale, it cannot be

understood by any approach that takes an a priori stance on the relationship between material and ideational factors in terms of social analysis.

All the various levels, actors, domains, and structures detailed above interact; hence a morphogenetic approach to the explanation of global social change would necessarily also include a focus on the intersection of the structural, cultural, and agential relations that constitute the social order as a whole. Indeed, given the elaborate relations between the levels, dimensions, actors, and structures that are in play in social life at the global level, a commitment to structural, cultural, and agential relationality seems unavoidable.

Clearly, the principles outlined above offer no more than broad guidelines for international relations to social change, embedded within a morphogenetic perspective; nor are they exhaustive. Equally, if, as argued change is endemic to social relations and if, following the principles of morphogenesis, agents by reflecting creatively on their historical condition can nurture positive transformative possibilities within their structured situation, then students of international relations have a critical opportunity. If the pursuit of research on political realist lines (as opposed to Critical realist ones) might subtly contribute to a self-fulfilling prophecy that international society revolves around timeless interstate competition, then the introduction of a morphogenetic perspective might provide a useful corrective to this tendency and be able to supply a generative mechanism of social change itself. In other words, research into social change from a morphogenetic perspective can itself be part of a process of positive social transformation. At the beginning of the twenty-first century there is a pervasive feeling that we are witnessing widespread social change. The continuing global financial crisis, new forms of protest, the war on terror, and an unstable international environment all suggest that we are in the midst of a time of change. This assessment may, of course be wrong, but the consideration of such global processes from a morphogenetic perspective would hardly be misplaced.

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Part II
Social Formations and Their Re-formation

Chapter 6
Self-Organization: What Is It, What Isn't It and What's It Got to Do with Morphogenesis?

Kate Forbes-Pitt

6.1 Introduction

There is much talk of self-organization in social science, usually in tandem with the related concept of complexity. It does not look like a difficult term, it looks amenable. But in the disciplines from which it derives, and in complexity theory itself, 'self-organization' has very specific meanings. Moreover, it has meanings and brings with it underlying assumptions that might be argued to exclude humanistic forms of social science: Those theories acknowledging the properties and powers of agency—consciousness, intentionality, reflexivity, and relationality. Self-organization, I will argue, was not *designed* to include theorizing about humans.

It is important to ascertain what the words mean and what the underlying assumptions are because, like it or not, when a term is imported from one discipline to another it brings with it its original concepts and assumptions. It is rather like one's in-laws; one doesn't take a partner to gain in-laws, just as one doesn't import a term in order to import its meta-theoretical assumptions, but the in-laws come with the partner we choose, whether we like it or not, and can remain an enduring problem! Much the same might be said for meta-theoretical assumptions. When a term is imported that was developed to explain phenomena in another discipline, the environment where it originated and 'matured' is imported too, as a set of presumptions. These are assumptions about the phenomena for which explanation is sought and the meta-theoretical assumptions and scientific practices with which the explanation was first formulated.

'Self-organization' was 'conceived' in thermodynamics and 'matured' in physics. In neither discipline does the term 'self' have a meaning that invokes

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either consciousness or a single thing and certainly not 'individuality'. This is the first and the most serious source of potential misunderstanding of this term when it is imported into social science. In fact, as I will show, in most cases the phrase *'spontaneous, internally generated regularity'* could be substituted for 'self-organization' and still be a reasonably accurate portrayal of the phenomenon to which natural science refers. But note how unattractive (and potentially redundant as an explanatory term) such a phrase would be to social science! Any seductive appeal is lost to all but the most quantitatively minded social scientist. Note, too, that bringing out the importance of regularity highlights the reliance of self-organization theory on the empirical level.[1]

However, the importance of assumptions goes beyond definitions. I will argue that a central, enduring, and underlying assumption of self-organization concerns the status of the relations between objects and the relations between relations within a given system. This, I argue, is an assumption shared, in the broadest terms, with morphogenesis. However, neither can be of any use to the other, or brought together in any way, without a meta-theoretical analysis of what underlies each. For the moment, the stumbling block for the application of any aspect of complexity theory to social science is the nature of the object, not the nature of relations. Morphogenesis has a coherent meta-theory; complexity on the other hand, has developed by and large in a meta-theoretical vacuum.

The complexity scientists who have made claims about its applicability to social science have tended to assume a 'straight line' between 'things biological' and 'things social' and that human behavior is a biological function. This is an anathema to social science. Social scientists who have imported terms like 'self-organization' and have tried to apply them to social phenomena have tended to ignore the specific meanings of complexity and either used them metaphorically or simply substituted 'agents' for 'elements', without examining whether or not this is possible.

I will conclude by proposing that if the two areas of study are to be brought together, what is required is a meta-theoretical analysis of both and an acknowledgement of the shortcomings of self-organization (as an element of complexity theory) in relation to social theory as it stands. To consider these shortcomings and the possibility that common ground between social science and self-organization might not be possible, I will outline first the meanings of the terms used routinely in writings on self-organization but which might be misleading for the social scientist. In doing so, the limitations for social theory of what is and can be referred to within the confines of the original definitions become quickly apparent.

[1] For a critical realist, much of the work on complexity speaks only to the empirical domain. There also exist the domains of the actual and real. Observations and remarks limited to the empirical domain fail to examine questions about mechanisms—or 'laws'—which would question the intransitive 'reality' of what is experienced, or to give the transitive experience an intransitive referent. The failure to examine this essential area of the production of knowledge is highlighted briefly in a later section, but to discuss it in-depth would constitute a separate paper.

6.2 The 'Self' in Self-Organization

The most obvious difficulty when importing the term 'self-organization' is the meaning of the word 'self'. In complexity, self refers to a system composed of elements and implies the system and that which is *internal* to it. The boundaries of this system may be arbitrary, for example, the area between two intersections on a freeway for a given period of time—but they exist for the purposes of analysis of what lies within them. Perhaps a social scientist would argue that this is not a system, but frequently in the study of complexity, a system is defined in this way.[2] One way to understand the reference to 'self' in the freeway example, is everything that is within the system so defined. A car coming into that area enters the system under investigation and, upon leaving it, exits the system; it is the *behavior* of the car while it is within the 'system'—particularly in relation to other cars—that is of interest. The *system*, at least in part, comprises the *behavior* among or between the elements within it, which do not need to be constantly present.

I will expand on this as the chapter progresses but, for now, what is important to take forward is that 'self' makes no reference to *individual* system elements, or to any kind of consciousness, it refers to the *system* under investigation, the boundaries of which can be defined by the observer, and its use implies that the word following (as in self-organization, self-similar) is a description that is *internal* to that system. The purpose of the word 'self' therefore might be seen as *excluding* what is external to the system.

Contrast this with the use of the word 'self' in social science. Let me take as an example a discussion of 'self-consciousness' in Archer's *Being Human* (2000). Archer makes a long argument about self, the continuous self through time and bases the notion of self, at least in part, on embodiment.

> The origins of the self/other distinction derive from our embodiment in the world, for our incarnation involves a theory of perception (Archer 2000, p. 129).

> The human body is unique, because of its dual role as the source of perception which is also able to sense itself. It is particularly in touching oneself … that the self-consciousness which constitutes me as subject, rather than object, arises (Archer 2000, p. 130).

Archer goes on to state:

> What I am arguing for, is the self as an emergent relational property whose realization comes about through the necessary relations between embodied practice and the non-discursive environment (ibid, p. 123).

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[2] Traffic studies in complexity are enduring examples, from mentions in Sterman's paper *Learning about Complex Systems* (1994, p. 299) to Chowdhury et al. (2000), *Statistical physics of vehicular traffic and some related systems* to numerous mention in Boccara (2003) *Modeling Complex Systems.* This object of study precedes any mention of it in the social science literature, where it is frequently used as a link to justify application to social phenomena, a justification that is erroneous based upon these studies that are purely mathematical.

It cannot be reasonably suggested that she is arguing for the self as an arbitrarily defined system containing interacting parts in the way that complexity theory does, because the embodied being must pre-exist the emergent relations; this just would not fit with her wider arguments. Thus the notion of self for which social science argues is, despite huge debates, entirely different from what those who defined complexity theory and self-organization intend when they use the word. As previously stated, this is surely the first point of potential misunderstanding of one discipline's concepts by another.

When discussing complexity and self-organization, the words 'linear' and 'nonlinear' are used frequently and are contrasted with one another. To what do they refer and what is the contrast? There are some basic points about the difference between linear and nonlinear and it is not necessary to go beyond these. To differentiate 'linear' from 'nonlinear' is to make a contrast in terms of predictability. This predictability is often with reference to how a system will 'end up', given knowledge of its 'initial conditions' and its 'boundary conditions'. With reference to thermodynamics which, we should not forget, is where complexity theory was founded, and so from where the ongoing definitions derive, Prigogine and Stengers write:

> … linear thermodynamics, like equilibrium thermodynamics, may be described in terms of a *potential*, … Whatever the initial conditions, the system will finally reach the state determined by the imposed boundary conditions. As a result, the reaction of such a system to any change in its boundary conditions is entirely predictable (Prigogine and Stengers 1984, p. 139) (my emphasis).

In other words, where Prigogine uses the word 'linear' he means that the 'state', or final conditions, towards which the system might be said to be 'moving' is predictable; he can say what the 'end state' will be. He bases this prediction not on how the system is initially, but on the conditions of its boundaries; the final 'state' will be *externally* defined and the effect of this definition is predictable.

In the case where a system's behavior is termed 'nonlinear', whatever the 'initial state' or whatever the conditions at the boundary of the system, the system will reach a final state that is *unpredictable*, even if all the factors are known. This is fundamental to self-organization; the 'end state' of the system will derive solely from the behavior of *internal* system elements. Even if this behavior is a reaction to external conditions, the end state—the final condition of the system—will be determined solely by *internal behavior*. When the term 'nonlinear' is applied, no statement in the form 'if A occurs, B will occur' is possible.

Thus, 'self' in self-organization can be seen to mean that the 'organizing' derives from within the system itself; it is internal and not due to external factors in the form of 'boundary conditions'. In Prigogine's terms, there is no '*potential*'—by which he means an externally driven 'end state'—that is identifiable or definable before it is reached. This being the case, the 'state' that the system will assume is not predictable. External conditions do not 'shape' or 'decide' the outcome and therefore knowing them does not help predict the outcome. In this context, the term is far from assuming anything akin to teleology or a 'guiding hand' and specifically excludes these possibilities, assuming the *absence* of both.

6.3 The 'Organization' in Self-Organization

It will not have escaped notice, even at this early stage of simply defining terms, that the attitudes towards prediction between the natural and social sciences are somewhat different. For natural scientists, prediction is something of a 'gold standard' for measuring success. The possibility of prediction is always seen as an appropriate and important way to frame a problem such that 'success'—in their terms—can be achieved. Hence, the reference I make here to the distinction between linear and nonlinear based on prediction is made in complexity theory as rooted in *natural* science. I make it in full awareness that for the realist social scientist prediction is eschewed as a possibility. I will return to this point when discussing the compatibility of the meta-theoretical assumptions endorsed in social and natural science.

It follows from the unpredictable nature of nonlinear behavior that it also makes an implicit reference to *time*. Where the 'end state' of a system is predictable from its initial state, the reverse is also true; the initial state can be determined from the end state. This is not the case in a system that is self-organizing or has self-organized, such a system is considered *irreversible*:

> … irreversibility plays an essential role in nature and lies at the origin of most processes of self organization (Prigogine and Stengers 1984, p. 8).

Nonlinearity—the inability to predict—and the attendant notion of irreversibility are central to complexity as Mainzer points out:

> … complexity is at first defined as nonlinearity, which is a necessary but not sufficient condition of chaos and self-organization (Mainzer 2007, p. 374).

So, *irreversibility* is at the center of self-organization for which nonlinearity is a necessary condition; the two concepts are necessarily linked. The notion of time as a 'one way arrow', when first proposed by Prigogine, was revolutionary. It is still not seen in this way in parts of classical physics.

Moving the focus briefly to what 'organization' means as part of 'self-organization' it can be shown that the emphasis of much work on self-organization is on spatial organization, the physical structure of the system:

> Such ordinary systems as a layer of fluid or a mixture of chemical products can generate, under certain conditions, *self-organization phenomena* at a macroscopic scale in the form of spatial patterns or temporal rhythms (Nicolis and Prigogine 1989, p. 8) (original emphasis).

In other words, the system Prigogine describes will, under certain conditions, exhibit internal behavior that results in it displaying *spatial patterns* or *temporal rhythms*. He does not say it, but the implication is that these will be *regular*. This is what is meant by 'organizing' in these terms; the creation, or coming about, of *regularity*.

This quote from Nicolis and Prigogine is useful in providing a guideline to the definitions I have given above, broken down it points usefully to the specificity of

what is meant and makes clear the limited meanings of the words used. First, note to what they refer as a 'system': A '*layer of fluid or a mixture of chemicals*'.[3] Here it can be clearly seen that the notion of system is more or less arbitrary, potentially nothing more than an experiment under observation. Second, note that it is stated that self-organization occurs *'under certain conditions'*, something that I would argue is very important. Prigogine is consistent in this and argues that self-organization only takes place after a 'threshold value' is reached. It is not simply something that happens when it is not expected, it happens in specific, measurable circumstances. Third, the referents of what he refers to as self-organization: '*spatial patterns or temporal rhythms*'; i.e., regularities. Prigogine sought to show that order is created out of disorder at a stage in a system that he termed 'far from equilibrium', which simply means the maximum tolerable disorder before order forms. He measured the formation of that order by the *creation of regularity*. This is important to bear in mind when considering applying the concepts of complexity to social science. So, as argued earlier, it is feasible to replace the phrase 'self-organization' with 'spontaneous, internally generated regularity'.

To summarize this brief outline of the definitions of terms, I can say that, within complexity theory, self-organization is the *internal organization* of a given system where such organization is dependent only upon the internal system elements and is not externally determined. The outcome of this process of internal organization is *unpredictable* and, once achieved, it is *irreversible*. The system, as it 'organizes' is not 'driven' towards a potential, or a previously defined or known state; it is in no way teleological or directed. As I have said, the concepts underpinning these definitions were revolutionary. As Prigogine writes:

> The artificial may be deterministic and reversible. The natural contains essential elements of randomness and irreversibility. This leads to a new view of matter in which matter is no longer the passive substance described in the mechanistic world view but associated with spontaneous activity (Prigogine and Stengers 1984, p. 9).

Prigogine and Stengers are alluding to the apparent ability of elements inside a given system to achieve an unpredictable regularity once thrown into a state of disorder without externally derived order being imposed. As maintained in the introduction, it is possible in many cases to replace the term 'self-organization' with *'spontaneous, internally generated regularity'* that occurs under certain conditions, and to remain reasonably accurate.

This, then, is the basic work—and basic set of definitions—in self-organization that complexity theorists took forward. Their definitions were about the material world and were specific. As they proceeded, they worked with assumptions that were challenged and reinforced. Much more important are the implicit meta-theoretical assumptions underpinning these claims.

[3] Note also the lack of claim about large, overarching 'systems'.

6.4 The Meta-Theory of 'Self-Organization'

Because the work in complexity science has proceeded, by and large, in a meta-theoretical vacuum, it is not possible to point to a specific causal theory or ontology to which it adheres. Hence, in order to examine the underlying assumptions that informed the work, it is necessary to look for ones consistently stated as necessary conditions of self-organizing behavior. In this way, what is presumed can be ascertained. One assumption that should not be forgotten is that the 'system', which I have already shown may not be what social scientists would think of as a system, must be *'open'*. This term simply means that the system must exchange energy or material (or both) with its environment (to close a system is to prevent this exchange). This is why the term 'dissipative' often crops up with reference to self-organizing systems, though it is not used so frequently now as when Prigogine was writing.[4] Much more important, and central to the arguments of this chapter, is that the systems, while self-organizing, exhibit 'scale-free' or 'scale-invariant' behavior.

Adriani and McKelvey (2006) argue that the third phase of the study of complexity is the dominance of scale-free theory [following *Energy*, which began with Prigogine and *Emergence*, initiated by Anderson (1972) and Gell-Man (1988, 2002)], certainly scale-free theory has important implications. In a popular paper in *Science*, Barabási (2009) argues for the ubiquity of scale-free networks. In part, the dominance of scalability as a topic, even phase, of study in complexity can be traced to Bak (Bak et al. 1987a, b; Bak 1996) and power-laws, though these are also brought to prominence by Newman (2005).

Terms concerning scale have a history in social science. Wagner (1964) describes the history of the notion of 'scope' across micro- and macro-sociology, which might seem to bear the closest resemblance to the use of 'scale' in complexity, and sociology's history of dealings with it. He states that, at least for the early sociologists:

> … the problem of scope has been solved "theoretically" by postulation: the postulation of the homology of small and large social systems (Wagner 1964, p. 577).

The term 'scalability' might be loosely seen as a reference to straddling the 'scope' between small and large systems, though not yet social systems. However, it should be noted that the term bears no resemblance to being able to place something on a scale exhibiting 'more' or 'less' of a certain behavior. It would be truer to say that across the scale, or scope, *the same* behavior is exhibited at *different* levels, because in complex systems, the terms 'scalability', 'scale-free', and 'scale-invariance' all refer to changes *between* phenomena that are similar at different scales. This is to be read literally, like the scale of a map that can be large

[4] Mainzer (2007) points out that there are two kinds of self-organization: Dissipative and conservative. It is dissipative with which this chapter is concerned and which are more often referenced in the complexity literature.

or small; scales at millimeter measurement, meter measurement, kilometer measurement, etc. When a system exhibits scalability, or is termed 'scale-free' or 'scale-invariant', phenomena are similar *no matter which scale is used to make the measurement* within the system. So, in the case of the Norwegian fjords, if a photograph is taken using a macroscopic lens showing fine detail at the millimeter scale, it will show the same proportions between phenomena as one taken from an airplane at a kilometer scale, even though one is a tiny section and the other much larger. Mandelbrot shows that this feature of fractal geometry—referred to as *self-similar*—has wide application in nature. Indeed, Mandelbrot made claims of universality for his fractals:

> These new structures were regarded … as 'pathological', … as a 'gallery of monsters', kin to the cubist painting and atonal music that were upsetting established standards of taste in the arts at about the same time. The mathematicians who created the monsters regarded them as important in showing that the world of pure mathematics contains richness of possibilities going far beyond the simple structures that they saw in Nature … Now, as Mandelbrot points out, … Nature has played a joke on the mathematicians. … The same pathological structures that the mathematicians invented to break loose from 19th century naturalism turn out to be *inherently familiar objects all around us* (Dyson 1978, p. 677–678) (my emphasis).

While the claims of universality for fractals are important, what underlies the claims of scale-invariance is far more important. If one is arguing that the relationship *between* elements is similar over all scales within the system under investigation, then it is reasonable to deduce that the emphasis is on the *relationship between* one element and another, rather than the elements themselves. Further, that in order for self-organization, as I have described it, to take place, those *relationships* must be present. This is, I would argue, one of the most fundamental meta-theoretical assumptions of complexity. System elements must be *connected*; they must be *in relation* to one another. One of the reasons for the dominance of these relations is the work of Per Bak (Bak et al. 1987a, b; Bak 1996) who emphasized not only relations between elements, but also relations between relations.

When Prigogine 'discovered' and described complexity, all of his 'systems' were heavily laboratory controlled. Self-organizing behavior was something observed in laboratories in situations that had been 'forced' to a level of disorder, or at least the process took place under 'false' conditions. Great excitement, then, surrounded the work of Per Bak in which he showed that self-organization within complex systems could occur from *random* input. In other words, uncontrolled energy exchange between the system and its environment could result in the same creation of order—or regularity—that Prigogine observed.

Bak's work on what he called self-organized criticality[5] came to dominate, leading him to make the claim in 1996—a claim there is no reason to gainsay—that the 1987 Bak et al. paper 'Self-organized criticality: An explanation of

[5] Bak's self-organizing critical systems are essentially systems in the process of self-organizing, no finer understanding is necessary here.

1/*f* noise' was the most cited *physics* paper of 'that period' (Bak 1996, p. xii).[6] Bak's claims for self-organization are built around the now famous 'sandpile model' in which a grid is specified and a rule created for how many 'grains' can sit in any square; his initial rule was a maximum of four. As soon as a square had four grains on it, any additional grain arriving on the square from randomly 'dropping' sand fell onto one of the adjacent squares, also at random. If the square receiving the surplus grain was on the edge of the grid, the fifth grain fell off the grid.

This model leads to a very specific kind of behavior: avalanches. Moreover, avalanches that maintain a system state; in the case of the sandpile, that state is a degree of 'slope' and, in his most important claim, avalanches are related to each other and the relations of the system elements. One of the most notable aspects of the behavior of this system is that many small avalanches make very little difference to the state, but occasionally there is a large avalanche. The relationship between the small and large avalanches turned out to be measurable and to conform to a 'power-law relationship' (here I refer only to Bak's sandpile model).

The first thing to note about a power-law is that it is not a law; it describes a type of relationship. Power-laws and scale-invariance, which I have already described, are related. A power-law shows the kind of relationship I mentioned for the Norwegian fjords, in this case a spatial relationship *between* phenomena *and* a relationship *between scales*. It can also be plotted as a variable on *logarithmic* axes, where a power-law is apparent as a negatively sloping straight line. But the power-law is not a linear relationship; it is 'linearized' by the logarithmic axes (which allows a straight line to be plotted). What a power-law shows is a *relationship* between elements and a relationship between the relationships between elements on different scales.

So, earthquakes can be plotted—on logarithmic axes—to show an inverse relationship between frequency and intensity. In other words, small earthquakes occur more often than big ones. There is no claim made here that the relationships shown on a power-law are *causal* relationships and most certainly do not take the form of a constant conjunction, i.e., that where A occurs B will occur. What they show is an underlying *regularity* in a complex system and the existence of self-similar properties, or scale-invariance. It is never possible to describe a power-law of earthquake size and frequency and show what will precede a large earthquake, it is only possible to make probability statements at best and all that is shown is a self-similar relationship; i.e. that the relationships between phenomena at different scales are similar. This is a regularity. Through Bak's work and the importance he gave to the notion of power-laws, they—and so the relationships they highlight—became important to self-organization.

Bak aligns his work with the work on fractals and makes similar claims of universal application.

[6] Note physics and not complexity, an illustration that the propositions of self-organization were becoming more accepted.

> The arguments are quite general and do not depend on the details of the physical system at hand … so that one might expect self-similar fractal structures to be widespread in nature: The physics of fractals could be that there are minimally stable states originating from dynamical processes which stop precisely at the critical point (Bak et al. 1987a, b, p. 382).

Bak does nothing to detract from Prigogine's initial observations or change the definition of the concepts I have outlined. His systems are 'open'—in the terms already described—but he claims random input of energy and/or materials. That the system is not under control, he shows, does not mean that it does not reach what he terms a 'critical state'—related to Prigogine's 'far from equilibrium'—in which he shows self-organization. This claim, importantly, opens up the notion of self-organization to the possibility of *natural* occurrence; it allows the possibility that it is an intransitive phenomenon.

Bak's work was highly influential. For two reasons, it is important to understand which claims of Bak's were challenged and why and what remains. First, because his ideas can be seen to be influential in some social science discussions of complex adaptive systems (see Miller and Page 2007), though the criticisms of his work do not tend to be followed up and his assertions are not routinely questioned. Second, because even though his wider claims do fail, what survives reveals an enduring assumption.

Bak's enthusiasm for his own work cost him dear as he postulated and defended that not only can the behavior of all self-organizing systems be plotted as a power-law relationship, but also that all power-law relationships can be said to be self-organizing systems. In other words he claimed that not only is a power-law relationship in the behavior between the relations between elements at different scales a *necessary* condition of manifestations of self-organization, but also that it is the *sufficient* condition. The former may be the case, the latter most certainly is not and this was pointed out to good effect by Didier Sornette in his 2003 book *Critical phenomena in natural sciences: Chaos, fractals, self-organization, and disorder: Concepts and tools*.

This seems of marginal interest to anyone outside of the complexity community. But, because of the influence of Bak's claims in social science, I want to be clear at this point. Bak's claim that a self-organizing system displays power-law behavior is to say the following. A given system when in the state of organizing internally displays behavior between elements that has self-similar properties such that when the behavior between elements is measured at differing scales within the system, the behavior is seen to be similar.[7] To turn this around is *not possible*, and this is the principal attack on his work. As Sornette says:

> In the broadest sense, self-organized criticality (SOC) refers to the spontaneous organization of a system driven from the outside into a globally stationary state, which is characterized by self-similar distributions of event sizes and fractal geometry patterns.… The label "self-organized" is often applied indiscriminately to pattern formation among many interacting elements. … It is the opinion of the present author that the search for a degree of universality similar to the one found for thermal critical phase transitions

[7] The property of self-similarity underlies power-law relationships.

> [Prigogine] is illusory and that the richness of out-of-equilibrium systems lies in the multiplicity of mechanisms generating similar behaviors … there are *several possible descriptions* of a self-organizing system (Sornette 2003, p. 397) (my emphasis).

Turning it around to say that all power-law relationships indicate self-organization, however, allows Bak to make vast, but ultimately unsupportable, claims of universality. After Sornette showed that these relationships are *not* sufficient for self-organization, Bak's claims that they are both necessary *and* sufficient cannot be supported.

But, Bak's claim that they are *necessary* conditions still stands. Why is this important? Because it shows that relations *between* elements and relations between relations are necessary conditions for self-organization (as described). This, in turn, remains a central and enduring assumption of work in self-organization (and so complexity); that relations between elements and relations between relations are *causally efficacious*.

Bak states that his universal claims extend to social science. He says, with reference to his own theories:

> So far we have proceeded from astrophysics to geophysics, and from geophysics to biology and the brain. We now take yet another step in the hierarchy of complete phenomena, into the boundary between the natural world and the social sciences. Humans interact with one another. Is it possible that the dynamics are self-organized critical? After all human behavior is a branch of biology, so why should different laws and mechanisms be introduced at this point? (Bak 1996, p. 183).

In other words, he includes the claim that where a power-law is found, the system is self-organizing. He alludes to this necessary condition as a 'law'—which it is subsequently shown not to be—and he raises the question of the applicability of this 'law' to social science.

There are a number of things wrong with Bak's claims and assertions in the above quotation that lead us to the meta-theoretical assertions and limitations of complexity theory. First, he claims that a law exists that governs the behavior of systems of interacting elements. In context, this clearly refers to his self-organizing critical systems (which are systems in the state of self-organization). This would need to be a causal law and no such law is presented. Indeed, complexity theory does not have a theory of causality with which to define one. One can see the natural science tendency here to which I have alluded above; where a regularity is found there should also be a law. But there is no law defined. Second, he assumes the universality of his own claims. This is based on his assertion that the power-law relationship is *sufficient* for self-organization and we now know, thanks to Sornette (2003), that this is false.[8] Third, he attempts to unite biology and human behavior. He appears to conceive of these two things as existing on a continuum from atoms to behavior; 'things biological' to 'things social'. Manifestly this is not the case, because at some point *consciousness* and *reflexivity* enter and radically change the picture. Humans interpret and decide, neurons—often modeled using Bak's work—do not.

[8] I make no refutation of the necessary condition.

Can we do better than this? Can we find a way to bring the assumptions of self-organization into social science without refusing to acknowledge the change from non-conscious system elements to human agents? Such a meta-theoretical analysis is, I believe, what is needed to bring the concepts of self-organization into social science. It is needed to avoid the unhelpful metaphorical approach that can only lead to weak theoretical assertions at best. In addition it avoids the misunderstandings and misinterpretations of the so-called "… *'Sokal-Bricont syndrome' when social scientists used physics to justify their* a priori *theories*" (Galam 2004, p. 53).[9] This is avoided because the import of terms would, given what I propose, be built on a *shared* meta-theory.

Self-organization, as I have highlighted, is enabled by the relationship between the elements inside a given system. Indeed, this can be seen to be a driver of the process from the work of Prigogine (Prigogine and Stengers 1984), through Bak (1996), to the more contemporary work of Barabási (2009, 2011) on scale-free networks and in the central concept of 'self-similar' in fractal geometry (Mandelbrot 1977) plus the work derived from it. Also important is the relationship between relationships, which is what leads to the definition of scale-invariance (that the relationships between elements are similar across scales of measurement). However, in order to make causal claims, as I believe Bak is trying to do, a theory of causality is necessary and complexity theory does not present one. It rejects the kind of empiricism we would see in Humean constant conjunctions by expressly denying the kind of 'law' that would enable the statement 'where A occurs, B will always occur' as the very foundation of the term self-organization denies this kind of predictability. Although currently it is inherently empiricist, it cannot rely on the empiricist theories of van Fraassen (1980), for example, who eschews the possibility of cause almost in its entirety. Although Cilliers (1998) claimed that post-modernism was a suitable meta-theory for complexity, he provided no causal theory. So we are left with an apparent enduring implicit meta-theoretical assumption of relations between elements being causal, but with no causal theory that would uphold this. This leaves complexity theorists in a weak position to make causal claims.

6.5 Are Complexity and Morphogenesis Compatible?

In order to talk seriously about bringing together meta-theory and so bringing complexity into any aspect of social science—and here we are talking specifically about morphogenesis as a social explanatory framework—first, the failings of complexity theory must be acknowledged. Far from promoting it as a 'magic

[9] Here Galam refers to Sokal's 'hoax' paper 'Transgressing the boundaries: toward a transformative hermeneutics of quantum gravity', and the subsequent books by Sokal and Bricmont (1998, 1999) in which they detail the misunderstandings of physics that have been used in postmodern social science in this manner.

bullet', an answer to everything, something that can, backed by enough computing power, provide us with answers almost no matter what we throw at it, it must be dealt with on its own terms. One of its central problems is the empirical nature of the research that has resulted in its current state and the lack of meta-theory on which its claims are founded. The second major problem, which I would argue is linked to the first, is its overblown claims. If there is to be any application to social science, these problems must be properly dealt with by understanding terms, eschewing metaphor, and identifying meta-theoretical assumptions. Only then can compatibility, or otherwise, be ascertained. I do not believe that these steps can be avoided. Rigor in science is not changed by the advent of computers; meta-theoretical justification for models is still needed.

Can it be said, for example, that the meta-theoretical assumptions of morphogenesis and complexity theory share any fundamentals? Morphogenesis was developed in tandem with critical realism and, by and large, morphogenesis can be seen to invoke the meta-theoretical concepts of critical realism. It is an explicitly realist theory, though the realism it rests upon is not the naïve realism of complexity theory's implicit assumptions. Nevertheless, here is a very basic common ground upon which social science might communicate with natural science, a basis that postmodern social science lacks.

Another common feature of morphogenesis and complexity theory is the emphasis on time and irreversibility. As I stated early on, time and the notion of irreversibility was very important for Prigogine. Similarly, Archer was the first, and remains one of the only social theorists to explicitly include reference to time as a central feature of an explanatory framework and show how it produces effects that are not only irreversible but go on to have further influence over time.

> Morphogenetic analysis … accords time a central place in social theory … What is crucial then is that the morphogenetic perspective maintains that structure and action operate over different time periods—an assertion which is based on its two simple propositions: that structure necessarily predates the actions which transform it; and that structural elaboration necessarily post-dates those actions (Archer 1995, pp. 89–90).

Few social theories do this explicitly and this treatment of time concurs with the notions in complexity that time is irreversible. In other words, that one can never simply reduce the system and return to an earlier state as if time had not passed.

However, I would argue that the most important, and for me the most interesting, feature of morphogenesis in bringing some alignment with the necessary conditions for self-organization, is *relationality* and the nature of the relation. Self-organization relies on the relation between elements within the system under investigation. It is both the relationships between system elements and the relations between relations—specifically that result in scale-invariance—which result in the systemic changes they theorize. In all cases, the behavior of the elements within the system, be it liquids or neurons, is *related to* other elements; they are *connected*. Indeed, I have mentioned how self-organization is often defined by referring to spatial organization as order creation and this must be founded in the relation of one particle to another.

Beyond such spatial considerations, I have referred to *nonlinear* interactions within the systems under observation that are then described as self-organized, or a system in which the behavior is described as self-organizing. Self-organization comes about *because of* local nonlinear *interactions* between elements that bring about larger 'structure' (specifically, for complexity, 'shape') of which the individual elements are 'unaware' and which is not externally controlled or directed. Instead, this 'organized' state of the system is not imposed by boundary conditions but arises spontaneously. Does this characterization, especially when it is known that it is based on an, albeit untheorized, assumption of relationality, have anything in common with morphogenesis?

> From the morphogenetic perspective … Sociocultural complexity is an unintended consequence of interaction, which escapes its progenitors to constitute the unacknowledged conditions of action for future agents. It is not, therefore, by adducing an ever more complicated 'model of man' that social complexity can be derived from *individual* human beings (Archer 1995, p. 251)[10] (original emphasis).

Morphogenesis is inherently relational, which is far more than saying individuals interact; it is an acknowledgement of the creation of social relations *that are separate from individual interaction* and that are causally efficacious. Morphogenesis takes neither a 'bottom up' nor a 'top down' view of society, or perhaps more properly, view of how society is maintained and reproduced or transformed.

> To the social realist there is no 'isolated' micro-world—no *lebenswelt* 'insulated' from the socio-cultural system in the sense of being unconditioned by it, nor a hermetically sealed domain whose day to day doings are guaranteed to be of no systemic 'import' (Archer 1995, p. 10).

Instead, Archer asserts that as society is constituted, agents are themselves reconstituted, in what she terms the 'double morphogenesis': 'Agency leads to structural and cultural elaboration, but is itself elaborated in the process' (ibid, p. 247).

In the foreword to Pierpaolo Donati's book *Relational Sociology* Archer says the following:

> Historically, social scientists have been immunized against taking social relations seriously. In the canon of sociology they are synonymous either with social interaction, such as queuing for a bus or shopping, which leave the individuals involved unchanged; they remain mere aggregates (Archer, foreword to Donati 2011, p. xi).

Donati then elaborates the 'relational alternative':

> I suggest a way of analyzing the configuration of any social relation as an interlacing of subjective and objective elements, which exists in a complex environment, so as to describe, understand and explain social phenomena as 'relational facts' … To my mind,

[10] Do not denote any importance to the use of the word complexity in this quote, I make no insinuation that Archer is talking of the same thing that I am.

> society does not host relations, it is not space–time where relations happen, *it is* relations (Donati 2011, p. xv) (original emphasis).
> The starting point I assume here is that the object of sociology is neither the so-called 'subject', nor the social system, nor equivalent couplets … but is the *social relation itself* (ibid, p. 4–5) (original emphasis).

He acknowledges his endorsement of Archer's morphogenetic approach. The synergy is not hard to see, but the concept that a system *is* its relations shares a strong link with the assumptions I have outlined that allow for self-organization to occur. This is not to imply, still less assert, that simply because parallels can be drawn, any of the systems under discussion by Archer and Donati can be said to be self-organizing or can be described in the terms of complex systems that I have already outlined; it is far too early to make any such statement. But there are shared assumptions of relations as a necessary condition.

Agents act, they act in relation—or within social relations—and this action is undertaken both in the structural context that pre-exists the action and that which comes after it, or that which is elaborated. Archer poses a riddle about society that invites us to answer the question: "What is it that never satisfies the precise designs of anyone yet because of this always motivates its reconstitution?" (Archer 1995, p. 165) Prigogine's discoveries were of systems that could not be moved 'towards' predictable outcomes by external factors, but for which outcomes were dependent on the interactions of related elements. What remains of Bak's work is the *necessary* condition of relations between elements and relations between relations for a self-organizing system.

If I reword Archer's 'riddle' as: 'What is it that never satisfies precise designs yet is reconstituted', I could be referring to a system at far-from-equilibrium as described by Prigogine or one of Bak's sandpiles in criticality. But note what has been done in order to make it fit; *I have removed the humans*. This identifies the main limitation on the possibility of applying complexity theory[11] to social problems; it is an ontological limit. In order to make the riddle approximate to the description of a far-from equilibrium system, I have had to remove the element of consciousness because neither Prigogine nor Bak, whatever the claims of the latter, allow for constituent elements being conscious in their description of self-organization. Prigogine was aware of this:

> We come to problems where methodology cannot be separated from the question of the nature of the object investigated (Prigogine and Stengers 1984, p. 204).

In other words, sooner or later we run into an ontological problem. Complexity theory's inability to account for human properties and powers is a huge stumbling block and one that is often 'stumbled over' in invitations simply to see parallels between its assertions and empirical discoveries in science and the assertions and

[11] Although, as should by now be apparent, its claims to be a theory are somewhat tenuous.

social observations of social scientists.[12] It is partly due to the lack of resolution of the ontological problem that this 'glossing over' is possible. If the question of the nature of the element in complexity were clearly philosophically based, it could be compared with the answer to the question Bhaskar poses in *The Possibility of Naturalism*:

> … *what properties do societies and people possess that might make them possible objects of knowledge for us?* (Bhaskar 1979, p. 13) (original emphasis).

This would require an ontological framework—beyond implicit naïve realism or empiricism—within which to answer the question of the nature of the object within complexity theory, something that, despite Prigogine's early identification of the problem, is still lacking. In other words, there needs to be an ontological statement about the nature of the object in *both* complexity (and thus self-organization) and in social science *before* the two can be brought together. If the two answers are incompatible, there can be no unity of the theories.

It is also worth stressing that the apparent adherence to naïve realism or empiricism throughout the development of the complexity arguments has also negated any description of the subject. Their protagonists find no useful way to distinguish between the object and knowledge of it, leaving the subjective—and the subject—under-problematized and under-theorized in complexity theory, something that presents another problem for any unity with social science.

The philosopher Klaus Mainzer humorously highlights the difficulties of rigorously applying complexity to social problems:

> From a methodological point of view, the question arises of how to represent the sociocultural evolution of societies in the mathematical framework of complex systems. The recognition of attractors and equilibria needs a phase portrait of the sociocultural dynamics which presumes the definition of a "sociocultural state" and a "sociocultural state space". "But what is the sociocultural state space of Victorian England or the Weimar Republic?" (Mainzer 2007, p. 377).

Mainzer puts the problem very well and the rigor in his applications of complexity theory in this book is praiseworthy. Of course, to social scientists his question is unanswerable and made to sound ridiculous.

The problem of drawing parallels between the use to which morphogenesis puts relations and relations of relations is somewhat different. From her 1984 book *Social Origins of Educational Systems* (Archer 1984) onwards, through the arguments advanced in *Culture and Agency* (Archer 1988), *Realist Social Theory* (Archer 1995), *Being Human* (Archer 2000) and *Structure, Agency and the Internal Conversation* (Archer 2003), Archer has consistently argued within the morphogenetic explanatory framework for the reality of 'systems' emergent from

[12] See Miller and Page (2007), in particular Sect. 9.6 in which we are not only invited to see parallels between general assertions and detailed mathematical models, but also to reverse the philosophical rationale for applying models at all.

social relations—decentralized and centralized education systems, for example—predicated upon real and causal social relations and relations between relations. This claim goes beyond predicating structure and restructuring upon the interaction of real and causal agents; it takes social relations as its ontological premise. Donati too, in his relational sociology, argues for real and causal social relations, describing 'relational thinking' as '… an epistemology with the relation as its ontological premise …' (Donati 2011, p. 122). He argues very strongly in favor of the relation as ontological in and of itself and says repeatedly that '… it is the relationality that is social', echoing earlier quotes. In both cases, then, a predicate for their sociological arguments is a social ontology in which the relation is real *and* causal.

As I have shown, the same implicit predicates underlie the empirical work in complex systems, in particular the phase of a complex system that is in the process of self-organizing. Bak describes this as 'criticality', Prigogine as 'far-from-equilibrium', but both arguments assert the necessary condition of connectivity—relations—between elements. Bak, through the power-law arguments that assert scale-invariance, also shows relations between relations as a necessary condition. In neither case can the arguments be supported unless both the connections between the elements and the connections between the connections are held to be both ontological and causal.

In this respect, the ontological requirements of self-organization and morphogenesis share important similarities. Although I have criticized the application of complexity by Miller and Page (2007), their following statement is a useful summary of the ontological task.

> One *and* one may well make two, but to really understand two we must know both about the nature of "one" and the meaning of "and" (Miller and Page 2007, p. 3) (original emphasis).

The meaning of 'and', I would argue, is to be found in the ontological and causal status of the relation whether between number, elements, or people.[13]

In the areas so far described, complexity is reasonably well formulated, if in broadly empiricist terms. Where the distinction of the 'system' from its 'parts' and the causal role of the system itself are concerned, complexity theory has little to contribute. This area might be said to have parallels with the system/social distinction to which Archer refers:

> Because emergence is held to be activity-dependent and operative in open systems, both social realism and morphogenesis (which is held to be its methodological complement) face identical problems. Both need a means of identifying structure(s) independently of their occupants and incumbents, yet of showing its effects on them … whilst coping with the intervention of other contingent relations, and accounting for the eventual outcome … (Archer 1995, pp. 167–168).

[13] Though in saying this I make no claim that the nature of the relation between these different objects will be the same.

This is a complex area and one that is key to realist social analysis. I would argue that the notion of distinguishing parts and system is under-analyzed in complexity theory precisely because the elements are not conscious and so have not had to be analyzed in terms of their possessing different properties and powers. If self-organization is to be used in social science, it is precisely this kind of framework that would be helpful and it is the kind of analysis that social theorists, particularly realist social theorists, can bring to complexity and a finer analysis of self-organization.

In this section, I have argued for an important meeting of ontological predicates, or meta-theoretical assumptions, between relational sociology and complexity; a meeting that rests upon the nature of the relation as causally efficacious and so, in critical realist terms, real. A causal theory upholding this notion is potentially more complex than just substituting 'relation' for 'object', especially when one considers the dynamics of scale-invariance. This may or may not apply to sections of social organization, but, without a causal theory upon which to ground the claims this is hard to establish. Were such a causal theory to exist, it could prove useful to both the claims of complexity theory and relational sociology. In addition, it could highlight areas of potential theoretical unity and irreconcilable differences that go beyond metaphor. As Wagner says:

> If it is desirable to develop sociological theories which are equally fit for the analysis of small- and large-scale phenomena, they will have to be worked out gradually in the combination of sustained empirical efforts with intellectual ingenuity (Wagner 1964, p. 584).

Perhaps work towards the possibility of a unification of scale-invariant self-organization and relational sociology could be seen as working towards this goal. However, without coherent and explicit meta-theory for both, such a task is not possible.

6.6 Conclusion

Whatever the doubts that have been aired, morphogenesis and its synergy with relational sociology do provide a set of fundamentals that allow consideration of how an analysis using them might be brought closer to the complex systems' characterization of self-organization. This does not amount to a claim; it is simply to venture a suggestion. As already stated, such research could not be undertaken without significant work on the implications for theories involving self-organization of the consciousness of 'system elements'. This goes beyond the mathematical, problems of modeling decision makers that has already been undertaken (Galam 2004, 2006), and would necessarily ask difficult, fundamental questions about the capabilities of the underlying theories upon which we seek to draw. Such an enquiry must be addressed to all levels: meta-theory, how the meta-theory fits with theory, how theory derives models, and how those models might 'fit' reality and social reality. It is not enough simply to assert similarity with natural science

concerns and import concepts wholesale. We might forgive Bak for assuming natural laws apply to society, I am inclined to be less forgiving of social scientists (like Miller and Page) who simply repeat this assertion but should know better about the impact of consciousness and reflexivity in the analysis of the social.

One of the most exciting outcomes of the work I propose, however, might be a revisiting of the social/systemic relationship, which Archer has used since 1979, and its application to unpredictable dynamical systems. But such a distinction needs to be congruent with both natural *and* social science, in other words, one in which the social is not sacrificed to the mathematical.

Because of the shared assumptions highlighted about the importance and reality of relationality, self-organization *might* help to illuminate some of the dynamic processes talked of in the morphogenetic approach, in particular that of the process out of which emergent properties emerge. Morphogenesis, again because of some fundamental and complementary assumptions, might help illuminate how some of the more difficult processes of self-organization apply to social science, in particular how one might differentiate the system from its wider context, while theorizing the effects of the emergent phenomena produced by a complex system on the wider context of that system.

However, taking natural science theories and importing them 'wholesale'—whether or not this is acknowledged—into social science cannot achieve such an application, or any theoretical conclusion of much interest. This is the kind of approach seen in computational social science (Lazer et al. 2009); a rigorous application of dynamical systems mathematics to social data that risks leaving out important elements of the social order completely. It risks leaving out that which cannot be computed; humans (Dreyfus 1999). Simply to import the terms and use them in a non-rigorous way risks falling foul of the previously mentioned 'Sokal-Bricmont' syndrome; affirming a priori social theories with 'flashy' sounding but under-defined semantics; a new vocabulary but without rigorous application or the necessary meta-theoretical work. This is destructive of good social theory.

Conversely, neither is it constructive simply to resist a corpus of theory because it does not appear to fit exactly what we know in detail about the 'objects' of our enquiry. Instead, what is needed is an independent, rigorous approach to the bringing together of complexity and social science in which the compatibility of fundamental, meta-theoretical assumptions and frameworks is analyzed and the limits of each set of theories assessed philosophically. This, I believe, stands a greater chance of successfully providing a useful addition to social theory than 'more data' and 'bigger computers'. The morphogenetic approach and relationality is a good place to begin such research because of the centrality accorded to relations and relationality, the assumption of non-reductive analysis and the emphasis given to emergents arising from real, causal social relations.

So far social science has not brought much to the study of complexity, it is time to ask what it can contribute.

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Chapter 7
Self-Organisation as the Mechanism of Development and Evolution in Social Systems

Wolfgang Hofkirchner

'Morphogenesis' is the core term that is used in the Morphogenetic Approach of Margaret Archer. It could be used in different contexts[1]:

- it might be used to describe and explain (the generative mechanism of) change in general, that is, evolution in general;
- it might be used to describe and explain (the generative mechanism of) change in societies, that is, the sequence of historical formations;
- it might be used to describe and explain (the generative mechanism of) change in a specific type of society, that is, contemporary society so as to make it distinct from previous historical formations—a research question Archer has begun to ask in the last 10 years;
- and it might be used to describe and explain (the generative mechanism of) change within society such as institutional change which is how Archer first developed the approach for educational systems (Archer 1979).

The question of how these different contexts can be related to each other resembles the question another term faces that has a systems theoretical background: 'self-organisation'. 'Self-organisation' can also be used to depict (the basic dynamic of) the general evolution of systems; to depict (the basic dynamic of) the evolution of social systems; to depict (the basic dynamic of) the development of a specific social system; and to depict (the basic dynamic of) institutional change.

[1] This list was induced by the intervention of Andrea Maccarini at the workshop in January 2012, see Chap. 3.

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In the case of social systems, however, the formulation makes clear how these contexts can be related: they can be cast as different levels of abstraction by means of which different levels of real-world systems are explored with the purpose of different interventions in the systems. Thus, there is a meta-theoretical level on which the respective terms focus upon the general understanding of how evolution is possible; there is a theoretical level on which the terms try to describe, to explain and to a certain degree to forecast (often in vain) the conditions of the rise and fall of social systems in history; and there is a specific theoretical level on which the terms eventually attempt to provide the tools for enabling agents to switch current social system trajectories for the better.

Hence, the more concrete the levels, the more normative they are. 'Self-organisation' can be understood as a concept in which values such as democracy, participation and self-fulfilment inhere, which makes sense in relation to the current development of social systems and its institutions (the modern political meaning of self-organisation), whereas on the level of human history the term can be assigned to a succession of ever new quests for the progress of humanity in the formation of social systems (the historical meaning of self-organisation); concerning the level of systems in general, those quests are based on an increase in the degrees of freedom of material, living and social systems in the course of evolution (the most general meaning of self-organisation). Moving from level to level is to ascend from the abstract to the concrete that reflects an increase in real complexity; the more complex the level the later its appearance in evolution.[2]

Like the term 'self-organisation' the term 'morphogenesis' can be interpreted as one that has a meta-theoretical meaning and is applied to societies (or sectors of them) to yield a meaning at the level of 'grand theories', that is, in turn, applied in the attempt to understand the working of contemporary society on a more specific theoretical level.

It is worth noting that Archer does not look upon 'morphogenesis' as a biological term that is transposed from biology to sociology. Analogies like that would yield reductions of social phenomena to biotic phenomena. That is the mistake made by socio-biology. Such reductions cannot grasp that what makes the social realm distinctive from the biotic realm, although the social is rooted in the biotic and thus has features in common with the latter. An integrative way of thinking is needed because that is the only way to do justice to the complexity of the world. 'Self-organisation' can also be seen as a concept that should not carry over the particular meaning that it has in one field to another field. However, according to the hierarchy of ontological levels, a hierarchy is conceivable that specifies which aspects of meanings are shared across the levels to varying degrees.

Though the term 'self-organisation' entered scientific discourse only at the end of the 1950s, it might well be said that the concept itself was anticipated by Ludwig von Bertalanffy years before. Bertalanffy is known as the founding father

[2] This might be qualified as the grain of truth in Hegel's idealistic idea of evolution as the unfolding of a concept until its most concrete actualisation.

of the General System Theory. His work on a theoretical biology lies at the foundation of the modern scientific approach of systems thinking.

In 1928, Bertalanffy published (in German) the book *Kritische Theorie der Formbildung* (Bertalanffy 1928). The literal translation of the title into English would result in 'Critical Theory of Morphogenesis'. The book, however, was published 5 years later in English under the title *Modern Theories of Development. An Introduction to Theoretical Biology* (Bertalanffy 1933). The German edition was part of the book series *Abhandlungen zur theoretischen Biologie* ('Studies on theoretical Biology', my translation), edited by Julius Schaxel in Jena. Pouvreau and Drack (2007, p. 302) mention that Bertalanffy was strongly influenced by Schaxel 'who strives from 1919 on for the development of a theoretical biology worthy of this name and able to open a third way between "mechanicism" and "vitalism"'. Publications in *Abhandlungen zur theoretischen Biologie* like Bertalanffy's *Kritische Theorie der Formbildung* recognised 'self-organization as an inherent and materially immanent principle of life' (Pouvreau and Drack 2007, p. 302). Also, Müller writes that Bertalanffy interpreted the phenomena in question as self-organisation processes (Müller 1996, p. 87). In 1930/1931, Bertalanffy published a paper that drew upon his book on morphogenesis but explicitly introduced the term 'Systemtheorie des Lebens' ('system theory of life', my translation) as theory of organic systems (Bertalanffy 1930/1931).

The chief controversy marring theoretical biology in his day was the deep cleft between mechanicism and vitalism, where mechanicism was the materialistic approach that tried to reduce life phenomena to phenomena that could be explained by physics and chemistry and vitalism was the idealistic conviction that there is something metaphysical that transcends being as explained by physics. General system theory was born when Bertalanffy attempted to overcome that deep cleft by formulating laws of organisation ruling biota as well as other ordered entities. By deliberating on the shortcomings of both positions, Bertalanffy developed a third view that tried to integrate the reasonable aspects of each of the two perspectives on life. Initially, he called it the 'organismic' perspective. This view took over the notion of wholeness from the vitalist standpoint by fundamentally accepting the relative autonomy of the living world. Thus, it refused to endorse the neo-positivist notion of a mechanistic morphogenesis and the possibility of a complete reduction of life to physico-chemical processes. However, at the same time Bertalanffy's organismic stance adopted the mechanistic critique of the vitalistic idea of a supra-material, transcendent entelechy. Actually, by searching for a tenable notion of wholeness Bertalanffy cleared this concept of its anthropomorphic implications and tried to put it on the firm ground of exact scientific thinking.

Bertalanffy laid the cornerstone for such an understanding within theoretical biology by advancing essential categories, namely between open and closed systems, between causality and organised complexity, and the role of entropy. In so doing, he generalised the laws formulated to grasp biota as organised systems and found himself able to apply them successfully to different domains such as medicine, psychology, psychotherapy and so forth. 'It seems legitimate to ask for a theory, not of systems of a more or less special kind, but of universal principles applying to systems in general […], irrespective of whether they are of physical, biological or sociological nature' (Bertalanffy 1955, p. 31).

Bertalanffy not only disavowed reduction to physics and chemistry, which placed him in sharp contrast to attempts then in vogue in the Vienna Circle, he also explicitly repudiated biologism in relation to the explanation of social phenomena: 'This does not imply "biologism", i.e. reduction of social to biological concepts, but indicates system principles applying in both fields' (Bertalanffy 1968, p. 125). Besides his disapproval of, as it were, vertical reductionism regarding social science, he also argued against horizontal reductionism. In discarding the summative concept of systems as mere aggregates, criticising the methodological individualism then abounding in social science as doomed to fail because of the innumerable elements and interactions in which individuals might be involved and because of its losing sight of the autonomy of systems due to the feedback the system exerts on the elements (see Müller 1996, pp. 72–73).

On the other hand, Bertalanffy did not fall into the trap of holism because he stated that the whole is something that is inherent to the living system.

Altogether, when presenting the following features of morphogenesis as empirical generalisations of findings in the literature of his time and in accordance with, if not derivable from, his newly stated system theoretical assumptions, he anticipated the notion of self-organisation: the development of the organism is, in the first instance, determined by causes inherent in the germ; the differentiation of germ parts proceeds stepwise; the differentiation refers to the whole, as it is the function of the position of germ parts within the whole that determines their differentiation. Despite differentiation, there is pluripotency residing in many cell groups; the organism shows a tendency to maintain its form in changing environmental conditions; the organism can reproduce its form within certain limits (Bertalanffy 1930/1931, pp. 393–400).

Seen that way, the morphogenetic approach and an approach which revolves around self-organisation have more in common than at first sight. While concentrating on systems that are social and on the generative dynamic of their development and evolution, this contribution aims at elaborating on their striking similarity in three fields. The first section deals with the overall diachronic perspective in which social change constitutes an evolutionary process, the second with the synchronic perspective which illuminates the inner dynamic that propels the development of any given social formation and the third with the circumstances of globality and globalism that modify the dynamic of current societies as they become participants in an emerging world society.

Those kinds of self-organisation concepts that are quite mechanistic are not considered here. Rather, it is assumptions characteristic of the framework of a critical information society theory—as put forward by the author—that receive most attention.[3]

[3] As I elaborated that framework during my stay at the University of Salzburg 2004–2010, several authors referred to it as the 'Salzburg approach' (Hofkirchner et al. 2007; see, e.g. Wan 2011). It consists of different theoretical layers. Critical information society thinking is the application of, is based upon, and includes, critical social systems thinking which, in turn, is the application of, is based upon, and includes, evolutionary systems thinking which, eventually, is the application of, is based upon, and includes, a dialectical philosophy.

7.1 Revolutions

The ideas of social morphogenesis and social self-organisation could share the same conception of historical formations as the outcomes of revolutions.

When characterising different views of change in history, Colin Wight (Chap. 5) discusses the following three options in principle[4]:

- Change as addition. That is the continuous view: something new is developing and adding to the old.
- Change as replacement. That is the discontinuous view: something new is replacing something old and this new kind is an antithesis of the old.
- Change as transformation. That is the dialectical view according to which continuity and discontinuity co-exist; change is more than additive, yet not total replacement: the old and the new co-exist in qualitatively new forms brought about by accumulated quantitative changes including residues or legacies of the old ones.

Another classification of social morphogenesis is provided by Pierpaolo Donati (Chap. 11). He discerns four possible pathways in the evolution of societies:

- The first is not morphogenesis, but 'morphostasis'. It is mere reproduction based upon invariant operations.
- The second is called development or adaptive morphogenesis and means a quantitative growth based upon invariant operations.
- The third is called unstable morphogenesis. It leads to the establishment of an interactional network, yet without structural stabilisation.
- The fourth is called creative morphogenesis because it is only in this case that the form of society transmutes and a new form emerges with a certain degree of temporal stability.

These two classifications are as close to each other as both are close to a self-organisation standpoint. In order to understand that they can connect to each other we have to acknowledge that they neither classify views that could be true or false (as Wight might be interpreted) nor classify real social change in distinctive, and exclusive, categories (as Donati can be taken to imply). Rather, both are views that recognise certain features of real social change that combine in a cumulative way.

Let us first consider the philosophical dialectic of old and new. The new can develop in two different phases. In a first phase, the new is developing under the dominance of the old such that the overall quality of the whole does not change and changes are only quantitative. Then, there might come a single point in the development at which the new turns from something that is dominated by the old into something that becomes dominant over the old and represents the start of another phase. In this phase the old does not completely disappear. It disappears

[4] I do not literally follow the classification Wight gave at the January 2012 workshop but present my understanding of it.

only when the (old) dominant quality is replaced by the new as the dominant quality of the whole. It is still there but under the dominance of the new.

In an ontological sense this dialectic makes views of change as addition, replacement or transformation become partially descriptive of real change. Note that no first-phase change needs to be complemented by a second-phase change. There is no such strict determinism at work.

Second, let us consider emergentist systemism[5] that cuts across real-world disciplines and assumes it to be founded on the dialectic discussed so far. Emergentist systemism is about the emergence of systems: systems come into being by emergence, which is known as 'meta-system transition' (Turchin and Joslyn 1999), and emergents are systems that manifest a 'suprasystem hierarchy', belonging to the synchronic aspect.

The logic by which the meta-system transition is reconstructed assumes the following phases:

- In a first phase a multitude of entities is developing, which later on will become elements of the system to be formed. In this phase they cannot be addressed as elements because there is no system yet. They have no linkages to each other. This phase may be called the individual phase.
- In the second phase these entities begin to develop relations among themselves: they interact with each other. But this interactive relationship need not be durable or stable, and can vanish according to the changing activities of the entities involved. In this interactional phase, processes may still be reversible.
- In a third phase, the interaction produces a system. Durable, stable relations are established among the entities, which by then become elements solely of that system. This integration phase makes the changes irreversible. A new system has emerged.

After the emergence of the meta-system, three different levels remain. They resemble the historical transition phases and express a supra-system hierarchy:

- an elementary level focussing on the elements that constitute the system; insofar as the elements are systems themselves, the system they constitute is the suprasystem;
- an intermediary level focussing on the interrelations between the elements of the system or of the systems in the suprasystem; these constitute the interactions of the elements;
- and a systemic level focussing on the system or suprasystem that is 'external' to the elements or (sub-)systems, respectively; the systemic level comprises the system's structure (the function its elements are expected to fulfil), the system's state (a property), and the system's behaviour (exhibited vis-à-vis the environment).

[5] As Wan 2011 nicely names it.

Self-organisation may then be viewed as the way evolutionary systems arise or change their structure, state or behaviour. Emergentist systemism concretises the dialectic of old and new in the following ways:

- given the meta-system transition and the absence of a (supra-)system, the development of the new before becoming dominant is conceived of as the generation of possible proto-elements and interrelations among them, while the dominance of the new is conceived of as the subordination of the former proto- but still current elements under a new system;
- given the existence of a (supra-)system, the development of the new under the dominance of the old manifests itself either in the rise of new elements or in the rise of new interrelations among the elements, while the dominance of the new over the old is manifest in a new structure or state or behaviour of the system.

In the second case, self-organisation can work in several different ways.

- Morphostasis as reproduction constitutes the maintenance of a system, a process indispensable for prolonging the existence of a system. Whatever a system does, it is able to do because it is able to maintain itself. Maintenance depends on the proper functioning of the elements whose interaction brings about the results needed.
- Adaptive morphogenesis or growth can be interpreted as the process in which a system—on the basis of its maintenance—tends towards a more and more efficient fulfilment of its functions without change in these very functions. There is an attractor for the system's path given by the system's structure. Also, this process is essential for the self-organisation of a system, it is indispensable for propagating its order.
- Unstable morphogenesis is the appearance of something new on the elementary or intermediary level without being stabilised by a feedback working through the systemic level.
- Creative morphogenesis is self-organisation that goes beyond the elementary and intermediary levels and affects the systemic level such that the new is incorporated by the whole system. The structure changes and, with it, the attractor and the trajectory of the system.

This holds for systems in general, that is, for any system that is self-organsing, and not only for social systems. To proceed to how emergent systemism can be applied to social systems in general, let us, finally, consider the rise and fall of historical formations through revolutions. That might be called kind from an 'evo-revo' perspective (in contradistinction to 'evo-devo' biology). Evolution signifies the cumulative aspect of change in the sequence of historical formations, whereas revolutions signify disruptive social change. In sociological terms revolutions transform society, they turn the social order upside down. That is, they mark qualitative changes in the societal system in the course of its evolution. Revolutions change the fundamental form of the societal system, they constitute a system that differs in quality from the previous system. In doing so, the whole existing societal system is worked through and appropriately adapted to form the new

system. In a sense, Revolution is permanently on-going through the conjoint impact of the processes of morphostasis and adaptive morphogenesis. Thus, calling the new system a 'social formation' or a 'historical formation' also has the connotation of a permanent process: the new system is permanently on the point of being formed.

In terms of a model of stages, insofar as the lower stages build the basis of the new stage, they are reworked so as to fit the emerging quality of the new whole. To give some examples, agriculturalism, industrialism and informationalism are contingent stages, generating social formations through the respective revolutions—the neolithic revolution, which was a shift from nomadism to sedentariness with crop growing and cattle breeding, introduced the techno-social formation of agricultural society; the industrial revolution drew upon machine tool inventions of engineers and coupled them to transmission mechanisms with energy-providers such as the steam engine—this yielded manufacturing machines that gave rise to the techno-social formation of industrial society; and, finally, the information revolution that is ushering in the techno-social formation of information society. Reworking of the old stages occurred in each case. Each new formation subjugated the one from which it had departed: agricultural society increased the control of natural resources such as plants and animals, industrial society industrialised agriculture, and the information society is informatising industry.

Yet the dialectic of evolution and revolution and the re-formation of preceding formations—their reformatting—goes beyond the emergence of systems in the course of evolution. Continuity and discontinuity are, for example, as characteristic of biological speciation[6] as of the restructuring of biotic systems. What is novel with social systems is the ease with which social formations can be tripped off by revolutions, while the basic substance of formations, the individuals, remain basically the same. Social systems are ephemeral. A breakdown of one system may be a breakthrough to another system organised by social agents who preserve their identity. They just change the system.

Individuals are the agents of change. Cells in an organism do not possess that order of magnitude in their degrees of freedom compared with human agents who have the capacity to change the system of which they are elements. In that respect, societal evolution resembles what is known as metamorphosis in biology, albeit with the proviso that a change of formation in the development of human societies is an order of magnitude that is much less determined than is a change of form in the development of 'states' in ants or bees, or the change of form in the development of a butterfly (which stands for the type of cases from which this biological metaphor originates).

That is how self-organisation works as 'mechanism' that brings forth social change by revolutions.

[6] See the picture of the punctuated equilibrium cast by Stephen Jay Gould (2002).

7.2 Reflexive Revolutions

Critical social systems thinking and the morphogenetic approach share a realist ontology within the social sciences. Not only are the individuals' bodies real—in a physical rather than a sociological sense, equally, the interactions of the individuals are real and the products of these interactions are real, even though they cannot be directly sensed. The proof of being real is the fact of possessing causal power, which can lead to exerting causal power, and not merely being subject to it. Reality is that which can be or is efficacious as well as that which is effected; that which can have or has an impact as well as the impact itself.[7]

In Hofkirchner 1998 the author presented how the self-organisation cycle working in social systems could be conceptualised (pp. 29–30):

> There are two levels. At the micro-level the elements of the system, namely agents, are located. They carry out actions, and by the interplay of the fluctuating individual actions they produce fairly stable relations among them which, in the form of rules, that is values, ethics and morals, and in the form of regularities which concern allocative and authoritative resources, gain a relative independence from the interactions. Structures like that emerge thus on a macro-level, where they exist in their own right insofar as they, in turn, influence the agents. On the one hand, they constrain the individual agency by setting conditions that limit the scope of possibilities to act and, on the other, just by doing so provide it with the potential for realizing options it would not otherwise have. In so far as the structures do not cause directly, and therefore cannot determine completely whether or not these options will be realized, for the actions are mediated by the individual agents, dominance cannot control the outcome, either. The structures are inscribed in the individual agents by an endless process of socialization and enculturation, but the engramms which are produced in the individuals serve as cognitive tools for the anticipation and construction of ever new actions which may or may not obey the rules and accept the values and recognize the ethics and follow the morals, and which may or may not fit the regularities and renew the allocative and authoritative resources and thus may or may not reproduce the structures. Either way, interaction reflects upon the conditions of its own emergence and may consciously be directed at the structures in order to maintain or alter them. In this sense only, that is, because in their recursive actions the agents refer to the structures, these structures play the dominant role in this relation of bottom-up and top-down causation. Nevertheless none of the relations in this causal cycle leads to plain results. Each influence has consequences which due to the inherent indeterminacy cannot be foreseen. By this, and only by this, qualitative change is possible.

This reconceptualization of the central issue in social science—the issue of how agency and structure are to be related—in terms of dialectic, emergence and self-organisation is able to resort to and integrate important ideas and insights of recent attempts to overcome the dichotomy in social theory which (with the exception of Artigiani 1991) do not explicitly refer to an evolutionary systems theory of society (e.g. Giddens 1984; Alexander 1995; Mouzelis 1995; Reckwitz 1997). It promises to bring about a solution to the problem of how to deal with indeterminacy in the object domain of science.

[7] Note that the German term for reality is 'Wirklichkeit' which comes from the verb 'wirken' meaning 'to act', 'to affect', 'to take effect'.

Seen from this angle, and taking into account the many reservations natural scientists manifest when confronted with the philosophical consequences of their own findings in self-organisation, one could almost state that it is the natural sciences which may learn from social sciences rather than vice versa.

Thus, in social systems structure has to be conceived of as being as real as agency.

Let us again start with philosophical considerations—the dialectic of parts and whole. The whole is said to be 'more than the sum of the parts', but it may also be less (Morin 1992, p. 124). In either way, a leap in quality between the parts and the whole requires explication. The parts–whole relationship combines determinacy and indeterminacy, necessity and contingency. In neither direction does the cause strictly determine the effect—not from the parts to the whole, nor from the whole to the parts. This is because both the parts and the whole each possess subject status and degrees of freedom. Those parts belonging to a specific whole reflect this fact by possessing (at least) one property which they do not possess when being not part of this whole. At the same time, they are not completely absorbed by sharing that particular property. They have (at least) one other property which also makes them distinct. Thus, real-world parts are neither pieces or fragments that can do without the whole (just by taking away their property as a part) nor are they instances of the whole (meaning they share all properties of the whole). In turn, the whole possesses at least one property that it does not share with any of the parts (Hofkirchner 2012).

There is no determinacy without indeterminacy and no indeterminacy without determinacy—an assumption that is taken as less-than-strict determinism (Hofkirchner 2012). This assumption admits that nature itself is capable of spontaneously producing events and entities that are not describable in a mechanistic way. Besides and beyond clear-cut, one-to-one cause-effect-relations, there are also more flexible causal connections in the real world. In fact, the latter may well be more important as well as greater in number.

Aristotle recognised four types of causes: the effective (causa efficiens), the final (causa finalis), the material (causa materialis) and the formal (causa formalis) one. In striving for scientific standards that avoided resorting to the supernatural, post-medieval science abandoned the latter three causes. Nonetheless, it is worth reconsidering all four types of causes without the need to resort to the supernatural. We can sort them into two pairs of opposites and arrange them on two continua, i.e. scales that stand orthogonally to each other. One axis shows the processual, diachronic dimension of events and extends from drivenness to end-directedness, another shows the structural, synchronic dimension of entities and extends from materiality to formative power (Brunner and Klauninger 2003). We can arrange the effective and final causes on the first axis and the material and formal causes on the second one in the following way: effective cause enters the picture from the left and final cause, as opposed to effective cause, is directed to the left. This means: the further we move to the right on the x-axis, the less important effective cause becomes and the more important the final cause; material cause enters the picture from the bottom and formal cause, as opposed to material cause, is directed to the

bottom. This means: the more we move towards the top on the *y*-axis, the less important material cause becomes and the more important formal cause becomes.

Effective cause connotes a driving force in the process, while final cause connotes a pull rather than a push. But final cause enters the picture from the left too and not from the right. Finality means influence 'from the future' as little as efficacy means the exertion pressure 'from the past'. Each process paves the way for the future by its own history. It creates a certain space of possibilities and a complementary space of impossibilities. Those possibilities do exist in the present and one of them will be selected and realised and will then open up another space of possibilities. Compared with the space of impossibilities, the process converges to one end after another through a series of concatenated spaces of possibilities.

Material cause connotes the substantial base in the structure, while formal cause connotes the shaping of it. Formal cause enters the picture from the bottom too, though its direction is top-down. It does not fall from heaven. Formal causation means influence 'by mind' as little as materiality means the exertion pressure 'by matter'. Each structure bears the stamp of how its constituents compose it. The constituents produce what they constitute by generating constraints as well as enablements that represent the form.

Having said this, the interplay of so-called upward and downward causation in hierarchical systems can be dealt with in more detail and the philosophical assumptions can be applied to self-organisation in a second step.

- In upward causation, the elements produce the system, and there is emergence because, on the macro-level, a quality is produced that does not appear on the micro-level. The micro-level comprises the elements and the interaction between the elements. The macro-level consists of relationships that express the effects of synergy.
- These relationships exert a downward causation (Campbell 1974) and feed back to the elements. This downward causation was formulated by Haken as the 'slaving principle' (1978). But the macro-level functions not only as a constraint but also as an enablement for the agency of the elements.

Elements and system work together as parts and whole. Bertalanffy, for example, took Nicholas of Cusa's idea 'ex omnibus partibus relucet totum' ('each part reflects the whole') as a point of departure. Bertalanffy wrote with regard to the organism that the characteristic of the organism is first that it is more than the sum of its parts and second that single processes are ordered for the maintenance of the whole (Bertalanffy 1928, p. 305). Here he anticipated Haken's slaving principle for the organic world (the parameters that change more slowly are those that enslave the rest of the parameters). With his empirical findings he laid the foundation for what Varela et al. (1974) later called autopoiesis (the system is a network of elements that produce new elements that maintain the network). Bertalanffy discovered that the maintenance of the organic system in a dynamical pseudo-equilibrium is produced through the change of its components (Bertalanffy 1932, p. 309).

When characterising this intra-systemic hierarchy, Bertalanffy asserted (Bertalanffy 1950, p. 135) 'the necessity of investigating not only parts but also the relations of organisation resulting from a dynamic interaction and manifesting themselves by the difference in behaviour of parts in isolation and in the whole organism'. Note that he distinguishes not only between the level of parts and the level of the whole, but also between the dynamic interaction of the parts and the relations of organisation. He clearly differentiates and relates the interaction on the level of the parts and the relations at the level of the whole. And he considers the following relationship between the interaction and the relations: the relations, on the one hand, result from the interaction and, on the other, are manifest in the behaviour of the parts in that their behaviour is different from their behaviour when in isolation. It therefore follows that there are two processes in systems:

- one bottom-up in which interactions at the level of the parts give rise to relations at the level of the whole, and
- one top-down in which relations at the level of the whole manifest themselves at the level of the parts, that is, in their behaviour.

In summary, the maintenance of a system functions such that the system (via downward causation exerted by the structure of the system) makes its elements (via upward causation that lets the structure emerge) (re-)produce the system itself.[8]

This account seems fully compatible with the concerns Tony Lawson (see Chap. 4) raises over emergence and downward causation. He stresses that, along with any emergent totality, there is a relational structure emerging that organises the components; and that it is the very structure of organising relations rather than the totality itself that causally affects the components. The totality consists of the components and the organising relations. Thus it seems inappropriate to say that the totality acts upon its components; rather, it acts through its components. It is the structure that acts upon the components. It is considered advisable here to understand the causal power of a system, which is a totality, as something working on the horizontal plane of interactions with the environment and (co-)systems, i.e. in the way effective and final cause are said to do; while downward causation is understood only as exerting causal power from one (higher) level to another (a lower one) in the way formal and material cause are said to do[9]; and to regard different views as making category mistakes.

Having discussed the dialectical determinism in the interplay of elements and (the structure of the) system, the ground is prepared for a third step: elaborating the dialectic between agency and structure in social systems and introducing reflexivity which is a *sine qua non* of human self-organisation along with empathy and collective intentionality.

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[8] This is called self-organisation, as the system (the self) refers to itself, albeit by referring to its elements; this self-reference is found in each self-organising system.

[9] Which is opposed by Dave Elder-Vass (2010).

Humans, individual agents that are elements of social systems, are self-organising systems themselves. Due to their self-organising capability they do not react in a completely foreseeable way but select one from a vast variety of possible alternatives and opportunities. And they have the capability to reflect upon these possible ways. Archer has developed an in-depth analysis and a typology of human reflexivity (Archer 2007, 2012).

Reflexivity is an ability located at the cognitive (and emotive) level of the elements of social systems. It is the reason for contingency regarding agential decisions. This single contingency is doubled, as Luhmann showed, if two agents meet at the communicative level and form an unstable dyadic relation. Ego tries to understand alter and also to understand how alter is understanding ego, and vice versa. Going beyond Luhmann, this double contingency is topped by the triple contingency that arises if agents enter triadic relations, where the dyads are mediated by the structure of the social system and thus extend to the level of co-operation on top of communication. Not only do the agents not know exactly what to expect from each other, but also none of them really knows what to expect from the social system and what the social system expects from them. Equally, the social system does not possess sufficient knowledge about what to expect from the agents or what the agents expect from it. Despite this apparently nonlinear increase of contingency, when ascending the ladder from the cognitive to the communicative to the co-operative level, there is also an increase of necessity because of downward causation, which means contingency is limited and does not become a problem of chaos, indeterminacy and complete unpredictability. For cognition, communication and co-operation form a hierarchy working within the supra-system hierarchy. Cognition, communication and co-operation are information processes taking place at the elementary, intermediary and systemic levels respectively:

- cognition focuses on the internal generation and utilisation of information in individual systems that are elements of a supra-system,
- communication on the inter-relational processes of connected individual systems, on the interactional, interfacial generation and utilisation of information by co-systems,
- and co-operation on processes that are external to the individual systems but internal to the meta-/suprasystem they are integrated with, on the collective, external generation and utilisation of information by co-systems in conjunction.

Hierarchy always means that the higher level shapes the lower one, although the higher depends on the lower. Therefore, cognition is a necessary condition for communication, and communication is a necessary condition for co-operation. Given a system of systems, co-operation of these very systems shapes their communication. This, in turn, shapes the cognition in each of them and this is not only confined to the content of the information processes. In this way, cognition, communication and co-operation are mutually conditioning one another. Thus, reflexivity in humans is a precondition for capabilities of social information processing at

higher levels. Simultaneously, it is also conditioned by these very higher level capabilities.

Compared with co-operative information processes in living systems that manifest collective intelligence (meaning that collectives can outperform single intelligent individuals), the topmost level in social systems is characterised by collective or shared intentionality. Shared intentionality means 'the participants have a joint goal in the sense that we (in mutual knowledge) do *X* together' (Tomasello 2009, p. 61). This enables joint action. Shared intentionality causes communicability as well as cognitive activity to become functional for the joint action.

A classic example is the hunter-beater in Aleksei N. Leontyev's activity theory (Leontyev 1981, pp. 210–212). Human actions are distinct from animal behaviour in that they do not consist only in the direct satisfaction of biotic needs but are mediated by a societal detour; humans reflect upon this societal detour and are aware of it. They review (part of) the societal context and act accordingly. Actions make sense because of their embeddedness in commonly (societally) shared designs for relations involving activity. This is a result of being part of a chain of actions. Actions also make sense because they contribute to maintaining a whole system of interrelated actions.

In that respect, creative use of Charles Sanders Peirce's idea of firstness, secondness and thirdness can be made (Peirce 2000): firstness is identified as a property referring to the lower level of individual agents (and their contingency), secondness as a property referring to the intermediary level of dyads (and double contingency) and thirdness as referring to the topmost level of triads (and triple contingency). Thirdness shapes secondness shapes firstness:

- The level of thirdness is reached when humans co-operate—that is, when they share a common goal (the 'third'), communicating and deliberating accordingly. Social information assumes the form of expectations. Tomasello and Rakoczy (2009) estimate that by around four years old, most children are able to utter intentional propositions—that is, propositions made up of a meta-level proposition containing psychological verbs such as 'believe, think, know' and an object level proposition that complements the former (2009, pp. 721–724). This is the function of shared intentionality.
- The level of secondness, of human communicability, is shaped by shared intentionality. Co-operatively shared expectations make communication also take on the form of expectations. What does ego expect from alter? What does alter expect ego to do? What does alter expect ego to expect from alter? Mutual expectations are formed because they are constituted for undertaking joint action. The pre-linguistic capability of infants is sufficient for them to carry out proto-imperative and proto-declarative gestural communicative acts (Rakoczy and Tomasello 2008). This is the basis of empathy, as a necessary condition for shared intentionality.
- The level of firstness, human cognisability, is eventually shaped by empathy. Human reflexivity enables humans to reflect upon themselves, and to reflect

themselves as part of a bigger picture, that is, being reflexive about their immediate social situation, but also all the way up to society itself. The actions of members towards other members of society are mediated by this 'third': the structure of society. What is expected from the very fact of being a member of society? This reflection itself is a model for every mode of (complex) thinking. It is a model for grasping the general relationship between elements and system, parts and whole, of which individual and society are merely the model instantiation. Human cognition is thus concept-dominated rather than sensation-focused (Logan 2007). This is reflexivity.

In short, collective intentionality is the ability to reach a consensus on the social system's goals that is sufficient to direct practices; empathy is the ability to reach an understanding of the other by adequately taking her perspective on the social system in question; reflexivity is the ability to reach a concept of the system in question that suffices for individual decision-making.

Given reflexivity, a critical account of the 'mechanism' that allows for revolutions can be formulated as follows: humans can reflect upon society. Because of their reflexivity they are in the position to consciously contribute to the reproduction of the social formation of which they are an element or to the transformation of the latter. However, the outcomes of revolutions are not the one-to-one consequence of intended actions. First, a 'quorum' of joint actions is needed to drive the system out of its current point of equilibrium; second, the new equilibrium toward which the system's development will tend is not identical with the intended one; and, third, the landscape of different possible equilibria is not fixed but changes over time. Hence derives the necessity for piecemeal engineering.

7.3 Reflexive Revolutions for Global Unity-Through-Diversity

Where contemporary societies are concerned, the question is whether or not circumstances are such as to require the 'mechanism' of reflexive revolutions described above in order to undergo some adaptation and modification.

What is different today is that after the second half of the last century we are faced with global challenges while trying to establish sustainable international relations that exclude the use of military violence, an ecologically sustainable use of nature, and a use of human resources that is sustainable in the socio-economic context. Global challenges have a 'dark' and a 'bright' side. The dark side is the imminent danger of the breakdown of interdependent societies with the possibility of exterminating civilised human life. The bright side marks a possible entrance to a new state of civilisation that brings about a peaceful, environmentally sound and socially and economically just and inclusive world society.

This is something that can be theorised by making use of both the self-organisation and the morphogenetic approach.

Let us start, as always, with the necessary philosophical assumptions. The part–whole relationship can be elaborated by considerations relating to diversity and unity. Diversity and unity condition each other. Diversity can produce unity (unity-through-diversity), but need not do so. Unity can enable diversity (diversity-through-unity), but it can constrain diversity to uniformity (eliminating unity-through-diversity). The world society needs a relation of unity and diversity that neither establishes unity at the cost of diversity nor diversity at the cost of unity but, instead, yields unity in line with diversity, unity in diversity, but also diversity in unity. Diversity is considered to be a necessary condition for unity. Thus it is termed 'unity-through-diversity'.

Unity-through-diversity is then the dialectical starting point for the reduction of complexity when giving consideration to the systems account of the current social order and its prospects.

Already in 1930/1931 Bertalanffy stated that morphogenesis in organic systems means differentiation until a point of maximum differentiation is reached. The evolution of self-organising systems in the universe gives evidence that new systems occur once the old systems are not able to cope with the requirements of higher complexity. Such requirements result from a mismatch between inner and outer states of a system. The bulk of species on Earth faced extermination for that reason. Those observable today found (new) ways to cope with the challenges. Higher complexity not only signifies a higher degree of differentiation. At least as importantly, it signifies a new quality of integration. Only a new level of integration can deal with an intensification of differentiation. That is how unity-through-diversity translates into the reduction of complexity through integration of the differentiated.

From the perspective of grand social theory, it might be stated that we are faced with a developmental crisis in the history of humanity. The multiplicity of crises experienced today witness to a more general crisis in the 'morphogenesis' of human societies. This 'grand' perspective is at the same time a critique of the contemporary social order.

Globalisation means that every society has the potential to become 'global'. Any evolutionary system has an inherent tendency to grow and reach out (Fuchs and Hofkirchner 2001, 2002a, b). That is what we discussed earlier under the heading of adaptive morphogenesis. However, globalising societies encountered each other and began to penetrate each other. Globality today characterises a state of strong interdependencies between societies that are nevertheless confined within the boundaries of nation states. Today they urgently need to change their operations because external effects no longer remain external. The clash of a multitude of societies hinders the development of each of them and could, eventually, lead to a disaster. What is at stake is the continuation of human life, given the existence of a network of societies that cannot be maintained any longer by means of the same operations with which those societies could survive hitherto. So far, that is what we labelled unstable morphogenesis. This unstable morphogenesis has to be stabilised and complemented by creative morphogenesis that yields a new type of integration to render world society a reality. Hence, what we are witnessing is the

second stage of a meta-system transition—from fragmented, rudimentary social systems (the components of humanity-to-be) to a real-world society. We are witnesses of processes that presage the emergence of such a world suprasystem.

The human race has all the capabilities to be the first species on Earth to master the challenges that accrue from its own development. This is so because the agents it is made up of are endowed with reflexivity that enables them, in principle, to reflect on the causes for the rising complexity and to flexibly catch up with it by making the network of social systems sustainable. 'Sustainabilisation' is the process of society finding a way to avoid anthropogenic breakdown and safeguard a stable path of development by keeping global challenges below the threshold where the maintenance of society is endangered. The historical patterns of social evolution can be adapted to the new situation of a world society in *statu nascendi*, of a humane stage in the evolution of humanity. This adaptation is tantamount to a revolution. But it is not pre-determined that this revolution will come about. That is the situation the author calls the Great Bifurcation.

Unity-through-diversity is a systems theory principle that can inform the design of social systems. A higher order integration of all existing societies within a world society is needed to guarantee the sustainable development of civilisation. Claims of universalism, of particularism and of relativism are examples of ways of thinking that will not solve the problem. None of them can conceive of a convivial world society. Either (in universalism) the one is regarded as the necessary and sufficient condition for the many. Or the many (in particularism) are considered necessary and sufficient for the one. Or one and many (in relativism) are deemed independent. Cultural thinking that reconciles the one and the many in terms of unity-through-diversity is only achievable on the basis of an integrative way of thinking that does justice to the differences as well. It integrates the differences of the manifold cultural identities and differentiates what is common as well.

What makes the 'mechanism' of reflexive revolutions cover the specific circumstances of our time is the need for reflexivity to extend the 'third' that is reflected upon from the immediate social system and the immediate society of which the individual agent is an element, to the emerging world society. In the global age, the content of:

- co-operative goal-setting and -seeking;
- communicative negotiation;
- and cognitive reflection,

needs to be unique. It is constituted by the requirements of yet another—though unprecedented—leap in complexity in the history of humanity. The agents have to catch up with the complexity they have generated. They can do so, at the co-operative level, by anticipating the outline of the new rules that are to structure world society and necessitate modification of the rules currently governing the structure of the component societies. They can do so, at the communicative level, by distancing themselves from their immediate immersion in their proximate social systems, by relativising their being member of those, by adopting the perspective of world society. They can do so, at the cognitive level, by reflecting upon

the whole they are becoming part of. That is the meaning of the reflexive revolution to come. Otherwise the metamorphosis of humanity will break down. In that sense, current society is as 'morphogenetic' as never before.

Thus the self-organisation approach presented here might well work as the focal point of a theory of contemporary morphogenetic society.

We conclude that self-organisation can, in the same manner as morphogenesis, be interpreted as a term that is:

- a meta-theoretical one, significant for every system,
- a grand-theory one, significant for every social system and
- a theoretical perspective, significant for the contemporary state social systems are in.

At every level, it is descriptive, explanatory and normative with reference to the 'mechanism' of the development and the evolution of the respective systems.

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Chapter 8
Morphogenic Society: Self-Government and Self-Organization as Misleading Metaphors

Margaret S. Archer

8.1 Introduction

The social is undoubtedly a strange part of reality. Dahrendorf once captured this when he referred to 'the vexatious fact of society'. It was vexing before he wrote and has remained intransigently so ever since. I once expressed the oddity of its constitution in the following riddle (Archer 1995, p. 165):

What is it that depends on human intentionality but never conforms to anyone's intentions?
What is it that relies upon people's concepts but which they never fully know?
What is it that depends upon human activity but never corresponds to the actions of even the most powerful?
What is it that has no form without us, yet which forms us as we seek its transformation?
What is it that never satisfies the precise designs of anyone yet because of this always motivates its reconstitution?

It is worth spelling out the challenges set by this riddle. To say that the social order is never ever exactly what anyone wants or wanted, to emphasize that this is the underlying motor of change, to stress that the social origins of any transformation lie in structured struggles between groups, and to underline that the resulting social forms are generated by all of the above is to say two things about it. First, that the process of social structuring is continuously activity-dependent but, second, that action itself is always shaped—though never determined—by the prior structural context in which it takes place. In other words and at any given

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time, the social order is the result of the result of prior social relations conditioned in an antecedent structural (and cultural) context. Such relations between individuals and groups may be in conflict, coalition, or consensus. When interaction leads to change the product of this interaction is 'morphogenesis', with 'morpho' indicating shape and 'genesis' signaling that the shaping results from social relations. Hence, 'morphogenesis' refers to 'those processes which tend to elaborate or change a system's given form, state or structure' (Buckley 1967, p. 58). Conversely, 'morphostasis' refers to those complex system-environmental exchanges that tend to preserve or maintain a given form, organization, or state of the social order or part of it. As such, the social order is shaped and reshaped but conforms to no mold; it is patterned and repatterned but is confined to no pattern; it is organized and reorganized but its organization needs comply with none of its precedents.

Because of this quintessential ability of the social order to change shape, all traditional analogies and all current uses of the analogical imagination are simply misleading. The social is not a mechanism with fixed, indispensible parts and determinate relations between them, preset preferred states and preprogrammed homeostatic mechanisms that work like the thermostat. The social is not similar to an organism, either phylo-genetically or onto-genetically, whose development can be described in terms of evolutionary adaptation. The social is not a simple cybernetic system, which presupposes a particular (centralized) form capable of carrying out goal-directed error-correction through negative feedback. Finally, nor is the social order the type of self-organizing system required by Chaos and Complexity theories. All the above refer to particular kinds of systems whose common denominator is that they have proved amenable to great explanatory leaps forward within their respective domains. I am assuming that it is unnecessary to belabour the mechanical and organic analogues again for their shortcomings, even though it is necessary to query the continued use of the term *adaptive* in the term 'complex adaptive systems', which is only too current.

To talk about the social order at all, is to deny that all things social are a matter of contingency. Only given the metaphysical assumption that some relations are necessary ones and are relatively enduring can it be reasonable to study the social, let alone to talk about social science. However, all the analogies mentioned above were bids by social theorists to borrow breakthroughs from other disciplines that were bought at a steep price. Adopting them rightfully spelt a rejection of complete contingency and a commitment to the social being ordered, but buying into them entailed a prior acceptance about *how* the social was ordered. It had to be presumed in advance to be 'like x', in the analogue domain. Yet, it seems obvious that no other discipline can presume (or more commonly be presumed) to furnish a priori judgements about the nature of social order. Every such attempt at borrowing is misleading for social theorizing because it leads away from examining social reality itself. Each new analogue constitutes a denial of what is ontologically vexatious about the social order. It also usually entails denying the significance of its human and relational constitution.

'Social morphogenesis' necessarily rejects complete contingency, but it makes no presumption that the ordering of the social resembles any other form of reality, nor that the totality is homologous with the form of one of its components (language being the favorite contender) or with some state of it (equilibrium or far-from-equilibrium). The social is only like itself and the task of social theory is to conceptualize and explain how relatively ordered and relatively enduring social forms have their genesis in agential relations, just as social beings have their genesis in social forms.

8.2 Reformulating the Issue in Terms of Morphogenesis

I will begin with what seems to be the central proposition at stake; namely, that the form of the social is always and everywhere the product of 'structure', 'culture', and 'agency' in relation with one another.[1] Without being fussy about definitions for a moment, leave out 'structure' and the contexts people confront become kaleidoscopically contingent[2]; omit culture and no one has a repertoire of ideas for construing the situations in which they find themselves[3]; without agency we lose activity-dependence as the efficient cause of there being any social order. Then either contingency or determinism would have a clear field—one cleared of social theorizing.

Morphogenesis intensifies throughout modernity but, to become dominant, requires positive feedback to be untrammelled in order to generate ever-accelerating social change. This latter state does not yet characterize the global social order. Nevertheless, the giant steps towards the social being regulated by positive feedback in the last two decades can be used to reframe the issue. That issue is as old as social theorizing, namely 'Where are we going?' It was the main preoccupation of the founding fathers, with their different answers: revolution, rationalization, or reintegration.

Nevertheless 'change', 'novelty', and 'variety' remain imprecise terms. It was mainly the protagonists of (social) cybernetics who first sought to give any *precision* to the notion of 'variety', an absence lacking in Luhmann and his followers. Nevertheless, the usefulness of this 'precision' was limited because cybernetics continued to bear the marks of its origins in information theory. The reservations that follow are intended as signposts to where reconceptualization is needed.

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[1] Even if other factors are involved (e.g. natural disasters) their *social reception* is mediated through the above.

[2] The reason for not imposing definitions (yet) is that this statement applies equally to those Individualists for whom 'structure' is generically no more than an aggregate as it does to strong 'Emgergentists' such as Critical Realists.

[3] Again this statement is impartial between those who define culture in one way or another as 'shared meanings' and those who, like me, do not.

Difficulties are rooted in the fact that most of the influential pioneers concerned themselves with 'variety' alone without giving significant attention to sociological questions about its distribution and diffusion, that is, to 'social integration' as distinct from 'system integration'.[4] Systems theory in general has shown a marked tendency to neglect the conditions necessary for new forms of 'social integration' and given almost exclusive attention to 'variety' as the main or sole driver and characteristic of social transformation. Taken to its conclusion, preoccupation with increasing differentiation between people ends with 'transactional individualism', meaning that 'singletons' transact their uniquely specific requirements directly with the system. Fundamentally, this is because the key concepts (borrowed from information theory) to capture morphogenesis[5] are ones that privilege innovation to the detriment of what binds a social order together.

Thus, it seems useful to pinpoint why the increase in 'variety' has entirely different connotations and denotations in succeeding generations of cybernetic systems theory. The brief discussion that follows is intended to show that the social sciences cannot simply borrow concepts, propositions, and theories to produce an instant 'social cybernetics' or 'sociology of complexity'. Interdisciplinarity can, at best, stimulate ideas. What it cannot and should not result in is a shuffling and shuttling of concepts between them that is damaging for both.

8.3 'Variety' for Social Science in the First Cybernetics

The definition of 'variety' in early cybernetics is one where the *quantity of variety* can always be measured. To Ashby, working in terms of information theory, the term 'variety' (1956, p. 126) referred to the number of distinct elements in a set. Hence, the preoccupation of early cybernetics with 'codes', very varied in kind but always with a *finite number* of possibilities necessarily capable of enumeration (such as the information given by traffic lights). Hence, too, the operationalization of 'variety', such that:

> [I]n a 'given set' this is a question 'of how many distinguishable elements it contains. Thus, if the order of occurrence is ignored, the set *c, b, c, a, c, c, a, b, c, b, b, a* which contains twelve elements, contains only three *distinct* elements – a, b and c. Such a set will be said to have a **variety** of three elements (Ashby1956, pp. 124-–25).

In other words, 'variety' in the 'first' cybernetics is an objective, aggregate concept, best suited to coded information where effort has been given to making

[4] Lockwood (1964).

[5] To characterize the social order, as opposed to the analytical 'morphogenetic approach that provides an explanatory framework for examining when, whether and why structural, cultural, and agential elaboration versus replication will result from a given period of social interaction.

distinctions sufficiently clear to exclude subjective interpretation[6] and to reduce any that may nonetheless intrude to the status of human error.

Let us simply note three basic differences between how the term 'variety' is used by Ashby and the ways in which it appears useful to incorporate this concept into conceptualizing increasing morphogenesis in the social order.

Firstly, as defined above, 'variety' denotes an objective aggregate such that it can be said a set 'has a variety of X elements'. What is included as 'an element' is not problematic within information theory because the purpose of clearly communicating something delineates it in advance (as in the design of traffic lights). However, in society, a crucial distinction has to be made between 'variety *per se*' and 'novelty' or 'new variety', because the effect of novelty is often the displacement of old properties. Thus, in the social order, aggregate variety frequently diminishes with certain innovations,[7] meaning that aggregates of distinguishable elements are not merely unhelpful but can be highly deceptive.[8]

Secondly, the aggregate approach is atomistic. It is capable of recording only those elements that can be counted in units or on a *per capita* basis. Crucially, this means that 'variety' necessarily excludes 'relational goods' unless these are reduced to individual terms, yet reducibility is precisely what the concept of 'relational goods' excludes. Moreover, disaggregation would entail the erroneous premise that common goods are divisible, that people's 'share' of a marriage, a football team, or an orchestra can be portioned out, which is a contradiction in terms because the relational properties making for a great team are not amenable to aggregation, as in an addition sum. Attempts to incorporate relational goods by disaggregation would also imply a fallacious notion of individual substitutability (for example, that any good tennis player can be someone's doubles' partner). The aggregative approach basically deals with individuals and quantifiable things and thus cannot include those forms of variety or novelty that are collective, qualitative, and above all relational properties.

Thirdly, the computational approach to defining 'variety' is confined to the incidence of 'elements' but mute about their distribution. Thus, the same numerical count representing 'a variety of three elements' is compatible with the three being distributed amongst different tracts of the population or all being concentrated in the same hands. Although it is usually the case that if incidence has been counted then the distribution can also be calculated, that will only happen if *distributions are considered to be as important as aggregates*. And that will only

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[6] Ashby does admit that 'a set's variety is not an intrinsic property of the set: the observer and his powers of discrimination may have to be specified if the variety is to be well defined (1956, p. 125). However, the insight is not followed up.

[7] Although this is also the case in industrial technology, displacements are less susceptible to changes in fashion or manipulated consumption.

[8] This is without entering the methodological and evaluative issues surrounding the designation of 'an element' itself, let alone when it acquires the above adjectival prefixes, all of which are challenges to or for the supposed 'objectivity'.

be the case if social integration is considered to be of equivalent in importance, i.e., if distributional issues are held to be as important as matters of aggregate variety when social transformation is under discussion.

8.4 The Second Cybernetics and Social Heterogeneity

In the 'Second Cybernetics', as Maruyama termed his approach, positive, deviation-amplifying feedback was allied to some discussion of the *distribution of variety*. Throughout his huge corpus of work (Nyfelt 2011), Maruyama dealt exclusively with 'Deviation-Amplifying Mutual Causal Processes' (1963, pp. 164–179). That is, positive feedback 'processes that are loosely termed as "vicious circles" and "compound interests"; in short, all processes of mutual causal relationships that amplify an insignificant or accidental initial kick, build up deviation and diverge from the initial condition' (1963, p. 164). The illustrations he gives are the enlargement of a crack in a rock by water collecting, freezing, and widening the fissure and the 'kick start' of a frontier town from the accidental death of a horse or loss of a wheel leading someone to settle in that spot, rather than elsewhere on an otherwise homogeneous plain. From then on, homogeneity gives way to heterogeneity as the first homestead gradually attracted other residents and later prompted the opening of shops, facilities, and transport, as the generative mechanism engaged for variety to stimulate more variety.

Forty years later, Maruyama was to complain that although his emphasis on the quantitative side of change-amplifying causal loops had been well received, most 'readers did not even notice the the more important qualitative side: *the necessity, desirability and increase in interactive heterogeneity*' (2003, pp. 607–628 italics added). Over the next four decades he stressed that 'interaction among heterogeneous elements can genuinely create new information, not just a new combination of old information, and the way the amount of information can increase' (2003, p. 618).

Here, *variety* embraces *new variety* or *novelty*, as the product of one kind of *heterogeneity* entering into 'symbiosis' with other heterogeneous elements. Symbiosis entails mutual benefits for both parties, meaning by definition that every symbiotic development is positive-sum for those involved. What, however, about those (in any given population) who are not involved? Does a gap widen between a new elite, adept at initiating symbiosis, and benefitting from it and a new mass of 'others'? In that case, it is impossible to ignore the plummeting of social integration that would ensue from such a *divided distribution* of morphogenetic variety.

What is of concern is Maruyama's growing preoccupation with *heterogeneity* (differences) alone and his disregard of *homogeneity* (similarities) in a population. The latter is relegated to the bad old days when theories of 'socio-cultural adaptation implied the desirability of sociocultural homogeneity' (2003, p. 624). Of course 'one knows what he means' and I have consistently railed in unison with him against the common equation of 'culture' with 'shared meanings'(Archer 1985; Archer and

Elder-Vass 2012). Nevertheless, an integrated society cannot be based upon *heterogeneity alone.*

Differences are necessary amongst members (as valid expressions of their differing capacities) but so are similarities: the former create the *novelty* resulting in new opportunities, the latter continue to supply a bonding that links together members of a group (community, team, or enterprise), accentuating their human commonalities and making their belongingness something more than rational instrumental opportunism. If similarities are progressively eroded while differences increase (through variety generating more variety amongst a restricted portion of the population) this is a formula for a serious decline in social integration. Such a progressive fall in social integration is not a loss that can be offset by *Heterogenistics* (1978), the socially engineered symbiosis-for-all that Maruyama advances as the solution: 'Individuals in a culture, or cultures of the world, among which symbiotic combinations can be found, can be hooked up in a network. For example, old people who like to be with children can be housed near families who need babysitters' (1978, p. 94). It is only through the involvement of nearly everyone in the process of generating *new variety* (via social policy interventions) that Maruyama (rightly) believes is capable of intensifying morphogenesis while avoiding a divided social order.

Hence, the part played by social relations and relationality in shaping anything other than a *divided* society largely make their exit. It is precisely when attention is focussed exclusively upon *heterogeneity,* as Maruyama did (1994), because its intensification fosters more and more morphogenesis that any concern for social integration again disappears. If the consequent distribution of variety is confined to a minority of a given population (those with the appropriate 'mindscape') it would result in finer and finer forms of differentiation between them. They could not even be deemed to be an elite because all elites are held to have binding interests in common—however much these are at variance with other sections of the population. The accentuation of *heterogeneity* alone is always a formula for 'individualism'.

It is so because the differences characterizing each agent so overwhelm any commonalities with others that they increasingly engage in transactions with the system as a whole—detecting, raiding, and exploiting these novelties (Teune and Mlinar 1978).[9] In the process, subjects who can accumulate this new variety are differentiated still further from their peers, prompting a sedulous reduction in what remained of social integration based upon similarities. As these subjects acquire more new variety, their association with other social units becomes less and less rewarding and prompts a multiplication of the number of smaller and smaller social units that follows. For example, the existing number of Political Parties can

[9] In Henry Teune and Zdravko Mlinar, *The Developmental Logic of Social Systems* (1978), a chapter is devoted to precisely this issue, pp. 127–146.

no longer represent the extent of differentiation in the population.[10] This is why 'symbiosis' seems to be a restrictive concept for capturing the dynamics of morphogenetic intensification, because not all can participate and 'those among whom no symbiotic combinations can be found need to try different networks' (Maruyama 1992, p. 94). In other words, let them migrate elsewhere. Social integration decreases proportionately as growing *heterogeneity* deprives the ultra-differentiated of those with sufficient similarities to constitute other than 'trading' partners; durable human relations give way to ephemeral transactions.[11]

8.5 Complex Adaptive Systems in Sociology

'The modern systems perspective eschews analogizing, and suggests that it is a morphogenetic system, which simply means that it tends to regenerate or change its own structure' (1998, p. 69). Walter Buckley first wrote the above in 1968 as the prelude to answering his own question, 'what kind of a system is society?' Despite some important continuities with Maruyama (reaching back to MacIver's welcome clarifications of causality in the social domain), his response signaled a break with 'informatics' and a proper introduction of systems theorizing to social theory. In today's context his greatest contribution was to reject the cybernetic *self-governing system* (of explicit goal-seeking controlled by error detecting and correcting feedback), itself an analogue of self-steering missiles in the Second World War. At the same time, he did so while *refusing to endorse* the contrary characterization of the social as a *self-organizing system*. As will be seen, his avoidance of both analogues was deeply rooted in his respect for the distinctive nature of the social order, deriving from the consciousness of its human agents, the tension between its competing interest groups, and the dual role of culture in ideational coordination and ideological manipulation.

As far as I can discover, Buckley never gave a formal definition of 'variety' to parallel those discussed above, but contented himself with referring simply to 'the continuous introduction of "variety" into the [morphogenic] system (new ideas, novel ways of doing things)' (1998, p. 239). He undoubtedly included science and

[10] A 'transaction' on the part of the super-differentiated subject may involve no one else and entails no human relationship. Already this can be seen in the development of investment supermarkets where individuals no longer follow their hunches about the likely success of specific products, or in the erection of apartment buildings with no particular inhabitants in mind and no consultation of their particularistic preferences. In such cases, the investor already transacts with systemic 'market trends' rather than with a market made up of human buyers.

[11] The suggested use of 'Heterogenistics' as the basis for a Social Policy bringing about marriages of symbiotic convenience (such as the lone old ladies as baby sitters) is to take a systemic view of human relations and to neglect the human characteristics precluding or potentially stymying such relationships; some old ladies wish to retire early, detest the children's music and feel threatened by bands of teenagers hanging out on the streets. Such manipulated and dehumanizing fixes are no solution to the deficit in social integration.

technology, revisions and additions to meanings and symbols, political and economic thought and practical action, but warned that 'variety' also included 'deviance'. In other words, it was not an unalloyed good thing. Through morphogenesis the social system is: 'continually generating variety by virtue of its normal dynamic interrelations of parts and selectively mapping it against the variety of its external environment and internal milieu' (1998, p. 69). As he goes on to state, this involves assessing the 'sources of variety and change' in a manner different from in the homeostatic systems (of functionalism) that view variation as abnormal, external, and potentially disruptive and hence always counteracted by a system whose viability hinges on maintenance of a given structure' (1998, p. 71).

Which of these sources of variety come to prove relatively enduring, where and how? Significantly, Buckley talks of a selection process through which 'new behaviours, ideas, meanings, and definitions of the situation act as the bases for new structures.' In other words, the structuring and restructuring of society are the means of institutionalizing new variety, which become the socio-cultural framework from where the next process of change or recursiveness is generated. He is equally clear that these processes are continuously activity-dependent but the actions involved always emanate from prior structural and cultural contexts: 'all the sources of sociocultural change work through the choices and decisions of some groups of people, working within their various social structural and cultural environments' (1998, p. 74). Note that this sketch of a 'structure, culture, and agency model' excludes reductionist 'agent-based modelling', where the state of the macro-system derives directly from agential characteristics and the combinations of individuals. The second respect in which it dissociates itself from any affinity with *self-organization* is that 'social selection has an at least partially reasoned *and directed* quality to it, although often there are opposing or parallel forces directing it in different directions' (1998, p. 73).

The social order is recognized for itself and of its own kind and thus is equally unlike the 'completely opportunistic process' of biological selection as it is unlike goal-seeking missiles and thermostats. Social systems are purposeful rather than goal-seeking because conscious agents, especially working in groups, can form, articulate, and pursue purposes even though they will usually encounter the active promotion of aims contrary to their own. Modeling such group interaction (which does not exclude individual contributions) is social theory's own task and borrowing from other disciplines will not avail. One way of seeing the task set is that its accomplishment would be a fit response to the riddle set at the start of this paper.

One way of going awry would be to endorse the *self-government* model advanced from within cybernetics. 'A simple, cybernetic feedback model of explicit group goal-seeking does not fit most societies of the past and present because of a lack in those societies of informed, centralized direction and widespread, promotively interdependent goal behaviors of individuals and subgroups' (Buckley 1967, p. 206). Another way of putting this is that *self-government* is a form of social organization that requires a centralized structure—one greatly more efficient than any of our historical exemplars—and the active support of those affected by its regulation. Buckley immediately supplies an economical five point

critique (1967, pp. 172–176) of why such a system will not be encountered. At this point in his argument, he clearly anticipates a parting of the ways (not a bifurcation point as will be seen) and asks, 'To what extent, and in what senses, are the existing social and cultural structures the results of the purposeful, goal-seeking actions of men, and to what extent are they the "blind" consequences of the confluence of sociocultural "forces"?' (1967, p. 177).

'Blind' consequences stand for *self-organization* and he no more endorses this than the version of *self-government* examined. Instead, he turns to the struggles between groups, interest-based, and ideational, and the bearing of power, authority, and legitimacy upon them. '[T]he goal-seeking actions of men enter in at every point, except that: 1) these actions are not coherent or "congruent," but interact to produce the accommodations, compromises, and "side effects" producing the overall "blind" configuration; and 2) the goal-seeking actions of some individuals and subgroups ramify but little into the social fabric, while those of others – whether playing official or nonofficial roles – account for important seams and patterns in that fabric' (1967, p. 177).

The development of my own 'morphogenetic approach' has followed the path Buckley laid out, by disengaging three analytical phases of <structural conditioning → group interaction → structural elaboration>, as discussed in the Introduction to this book. What was advocated there is a conception of the social order as what I term a *Relationally Contested Organization*, one in which different material interest groups and cultural interest groups struggle for institutional hegemony, with the outcome at any given time being the product of their power play, their coalitions, compromises, concessions, and unintended consequences.

8.6 From Systems Theory to Complexity Theory

Our one global social system is now coming much closer to a social order that works through social morphogenesis. This means putting temporary brackets around discussing how it came about, which was by the self-same process that underpinning globalization. However, social theorists appear collectively stumped by 'globalization'—their favored way of characterizing the rapid changes taking place in the last two decades—such that they are not even in agreement whether they are talking about cause or effect when using the term. The best known theories of globalization[12] simply seized upon one element of SAC as the leading component. Thus, 'culture' led for those who branded the changing social order as 'Information (or Knowledge) Society'; 'structure' for others calling it 'Globalized Capitalism' or even capitalism's 'Empire'; and 'agency' for the third group,

[12] In the vast literature on 'globalization', a clear distinction is not usually made between how it came about and how it works, the diachronic and the synchronic.

stressing the 'de-structuration and individualization' of the risky, uncontrollable juggernaut—Reflexive Modernization.

Perhaps this disarray among social scientists goes some way towards explaining the attractions of Chaos and Complexity theory to them. In what follows, I have nothing at all to say about the merits of these theoretical developments within their own fields of natural science but only about 'Complexity' as another misleading metaphor applied to the social. If some renowned natural scientists have played at being Red Riding Hood's granny, let us stick with the behavior of the granddaughter.

When his theories began to have influence beyond physics, Prigogine (writing with Allen) defined the system characteristics that were to be taken up by social theorists:

[T]he systems that interest us are large, nonlinear systems operating far from thermodynamic equilibrium. It is precisely in such systems that coherent self-organization phenomena can occur, characterized by some macroscopic organization or pattern, on a scale much larger than that of the individual elements in interaction. It is a structure whose characteristics are a property of the collectivity and cannot be inferred from a study of the individual elements in isolation (1982, p. 7).

Let us focus on the notion of a *self-organizing system*, upon which all the other concepts depend: those of a system in a state far-from-equilibrium, of change not being linear, being irreducible and generating emergent features that are held to be 'evolutionary'. In fact, there is no generally accepted and cross-disciplinary definition of 'self-organization' and various authors have supplied informal stopgaps: 'a self-organizing system is one in which there is no central locus of information and control. Information and control are both thoroughly distributed, and collective behavior is emergent from the individualistic dynamics of components in a manner that produces the illusion of coordinated effort' (Ismael 2011, p. 332). Termite colonies—yes, ANTs—are the best known animate example, along with schools of fish, turbulent fluids, traffic systems, and economic markets. I will return to this last 'exemplar'.

Its appeal amongst certain social theorists was because such a self-organizing system appeared able to deal with rapid social morphogenesis. The following statement is typical of those who enthusiastically adopted it.

'In the last decades, self-organization theory has emerged as a transdisciplinary theory that allows describing reality as permanently moving and producing novelty ("emergence"). The concept of self-organization grasps the dynamic, complex, evolving nature of systems in nature and society. The main motivation for taking up this notion is that contemporary society seems to be inherently complex, networked, and dynamic and that an explanation of its phenomena with this concept is manifest' (Fuchs 2008, p. 8).

In their haste to establish a new orthodoxy about the rapidity of change and evolutionary character of new novelty, the same authors also sought to distinguish millennial society from any tinge of morphostasis. In twentieth century theory, that could only mean theories that were soft on homeostatis, since morphogenesis had

already engaged. Hence, a new round of hostilities towards functionalism ensued, as the only candidate within living memory. This was ironic because some of those now pillorying it (Byrne 1998; Reed and Harvey 1992; Urry 2003; Walby 2009) had never shown the slightest affinity with functionalist thought. There is a double irony, because these theorists made no mention of the simultaneous enthusiasm for 'habit' and 'habitual action' amongst those keeping Bourdieu's memory green, and yet having major problems with the rapidity of *fin de siècle* change (Archer 2010).

What Is a Self-Organizing System?

According to Fuchs, 'Self-organization is a process where a system reproduces itself with the help of its own logic and by the synergistic activities of its components, that is, the system produces itself based on an internal logic. Self-organizing systems are their own reason and cause; they produce themselves (*causa sui*)' (2008, p. 32). Only a decade earlier this statement would have won an Oscar for reification. Let us try to get a proper handle on the concept since it is a matter of dispute if there is any formal definition at all or even characterization that covers each and every intuitive instance of a self-organizing system. As the philosopher J. T. Ismael states:

> There is no generally accepted definition of self-organization. The mechanisms that underpin the emergent behavior of self-organizing systems are complex and in many cases not well understood … It is contested whether there is a general characterization of self-organization, whether there is some dynamical essence that can be distilled out of these examples, or just a cluster of cases, exhibiting a syndrome of properties, remains to be seen' (2011, p. 332 n.5).

Moreover, *how and when* is it claimed that the social order became s*elf-organizing*? After all, from the political perspective, the long history of modernity was one of irregular movements towards s*elf-government*: the establishment of nation states, the accountability of monarchy, parliamentarianism, representative democracy and universal franchise, political parties and trades unions, the League of Nations, the United Nations, and the mooting of global governance. Equivalent points could be made for economics and for all other social institutions, since institutionalization is an attempt to exercise governance in a particular social domain. My claim is not that such historical developments were efficient or effective in societal guidance—Etzioni's *Active Society* (1968) repays re-reading for why they were not. Instead, they are better viewed as part of society's *contested organization*. That is, as the relational products—most relatively enduring—of unfinished historical struggles between structured social groups. What developed at any point bore the trademark of compromise and concession, fuelled further struggles for re-elaboration, and generally conformed to the riddle in never being exactly what anyone wanted, i.e., fit for their purposes.

The point is simply that *contested relational organizations* did not and have not yet disappeared. In most parts of the world groups are still contesting elections, still writing constitutions, still mobilizing in social movements, and overturning governments. Even more importantly, global capitalism organizes new markets and its structured competition produces new winners and losers. What the ongoing financial crisis revealed is the highly structured nature of finance capitalism. That it is in huge need of overhaul is not the point here. What is indisputably the case is that every attempt to return to 'business as usual' is an effort to reinforce and protract this form of economic governance. Similarly, other institutions, education (and health) being at the forefront, seek to govern the market in credentials, the International Baccalaureate, MBA and IMBA being remarkably successful in extending the governance of Western universities. In other words, all that is structurally solid has not melted into air. The social order struggles on as *contested organizations* do, thanks to the exertions of those with vested interests in its institutions—or their transformation. These are anything but exemplary forms of *self-government*, but they are battling on and incorporating greater tracts of the global population. How, then, is it credible to announce that the social is a *self-organizing system*?

Social change always comes from somewhere and that somewhere is the preceding structural context in which, for whatever reasons and by dramatic or less arresting means, interaction generates change. From the point of view of the historic durability of the *relationally contested organization*, as the generic model of modernity's social order, the proponents of or converts to Complexity theory owe us an account of the changes bringing about *self-organization.* It is not forthcoming. They have adopted a paradigm shift and what we are asked to endorse is an instance of the epistemic fallacy in which their change of theoretical framework is taken for social reality itself.

Various forms of social theory are averse to social structures, or more precisely to crediting them with properties that can be exercised as causal powers. Some such theorists unwittingly prepared the ground for conceptualizing the social as *self-organized* by replacing structures with flows, waves and liquidity. This proved helpful to the take up of Complexity theory for two reasons. Firstly, because this replacement entailed the endorsement of 'destructuration' in late or Second Wave modernity, along with the disappearance of 'zombie categoties', such as social classes, until 'institutionalized individualism' was presented as the main 'unit' of the social order.[13] Secondly, Giddens' earlier work (1979) had already broken up the ground: structures had only a 'virtual' ontology until 'instantiated' by agents, with the two clamped together in what I termed the vice of 'central conflation' (Archer 1982). It is small wonder that Giddens is having something of a revival amongst those advocating Complexity theory for analyzing the social order. With

[13] 'Individualization is becoming *the social structure of second modern society itself.'* Ulrich Beck*, : Towards a New Modernity*, London, Sage, 1992 [1986], p. 135.

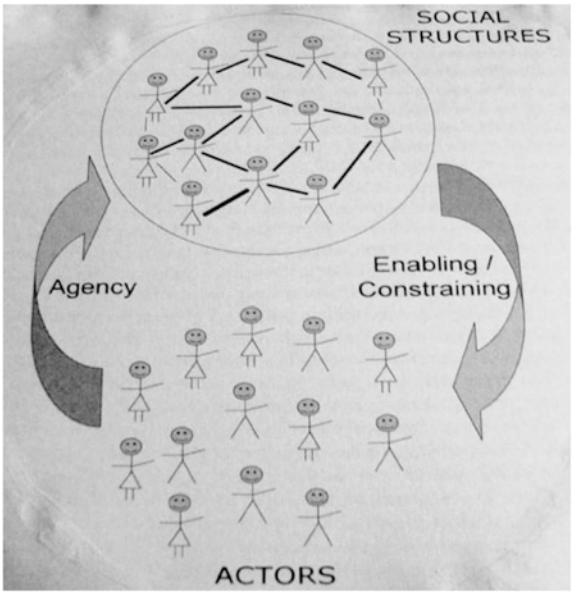

Fig. 8.1 The self-organization of social systems. *Source* Christian Fuchs, *Internet and Society: Social Theory in the Information Age* (2008, p. 52)

the middle ground now cleared of structures, diagrams such as the one re-produced above became common in complexity circles (Fig. 8.1).

Giddens' indefiniteness and indeterminacy about who is responsible for social change, how, why and what they do in relational opposition to others in order to attain transformation, was the main criticism of structuration theory. But it is currently re-presented as its strength.

Although theorists who endorse *self-organization* are rarely explicit, they effectively marry Holism and Individualism: holism (respectable again) for the social system and individualism for social agents. The space between the two is occupied exclusively by 'networks', in the absence of structures. What then flourishes is 'actor-based modelling' using large data sets and powerful software. Why? Because, in Epstein's words: 'Agent-based models allow us to study the micro-to-macro mapping' (1999). Even more directly, 'Agent-based models provide computational demonstrations that a given micro-specification is in fact *sufficient to generate* a macrostructure of interest…the generativist wants an account of the configuration's *attainment by a decentralized system of heterogeneous autonomous agents*' (1999, pp. 42–43). Not surprisingly, this author has difficulty in maintaining that such accounts are not Methodologically Individualist. Thus, complexity theorists 'expect' to be dealing with decentralized systems as part and parcel of *self-organization.* The trouble is that the social order does not always oblige. Structures matter and it is therefore time to get back to those traffic flows and economic markets as supposed exemplars of *self-organization*.

How to Turn a Heap into a Whole

Many kinds of statistical regularities, about both social order and disorder, are are presented as exemplifications of *self-organization* by Complexity theorists. For illustration let us briefly examine how they deal with 'market trading'.[14] As with many different topics, the empirical regularities detected mathematically are greeted with a 'Humean Wow!' Yet, this goes much further because great expectations for social theory are also extended by followers of the Santa Fe school: namely, the capacity to solve the micro–macro issue and the problem of structure and agency (Byrne 1998, p. 37). Let us see how they go about doing so.

The recipe for generating a systemic whole (the finance market) out of a human heap (individual market traders) is very easy to follow. It consists in, first, simply *removing the structural (and cultural) contexts in which action takes place*. Secondly, *relations and relationality* are carefully excised because 'each trader is modeled as an autonomous, interactive agent and the aggregation of their behavior results in market behavior' (Neuberg and Bertels 2003, p. 28). The remaining ingredients are now ready for placing in a powerful computer for cooking.

These two 'preliminary operations' are essential. When the structural and cultural contexts are stripped away what remains is nothing but the *collective behavior* of collections of traders on the stock markets. Once more, the object of sociological study has become the crowd![15] Interestingly, this manoeuvre of eliminating structure by *fiat* in order to address current behavior has considerable similarities to Searle's method (1996, pp. 127–147) of consigning it to the 'Background', although he acknowledges that it has to be wheeled in and out to make sense of what is going on. The removing of human, interpersonal and group relations is equally necessary because 'actor-based modelling' deals in terms of monads who are busy trying to out-guess their fellows and are never motivated by relational considerations. Formally, there are similarities here with Rational Choice theory, except that crowd behavior is not instrumentally rational.

The monadic trading agents make transactions based upon individual risk-aversion and their expectations about future prices together with market information influencing the decisions of each trader (Arthur et al. 1997, pp. 15–44). Traders compete freely on the basis of the common market information with their next decisions determining the next market prices (whether in New York or Shanghai) in a cyclical process where price movements feed-back continually and influence traders' future decisions about whether to buy or sell. In the diagram reproduced above, all that is involved is 'information' and 'aggregation' (Fig. 8.2).

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[14] Neil Johnson, a reputable scientist, produced a popular book, *Simply Complexity*, Oxford, One World, 2010, packed with examples from forcasting finanical markets, war time casualties, marital partnering, avoiding flu and curing cancer. They are examples that give away the game I describe above.

[15] Johnson, 'Complexity Science can be seen as the *study of the phenpmena which emerge from a collection of interacting objects*— and a crowd is a perfect example of such', p. 3–4.

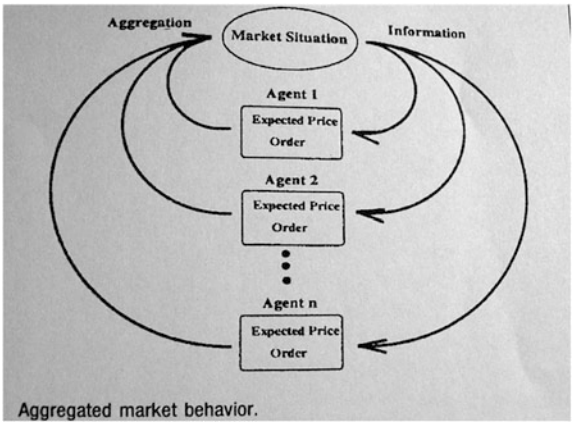

Fig. 8.2 Market Trading explained by 'information + aggregation'. *Source* Luc Neuberg and Koen Bertels, 'Heterogeneous Trading Agents', (2003, 8:5, Fig. 2, p. 30)

The excitement arises because instead of market movements around the world showing a random pattern (where the value of *a* would be 0.5), regardless of market location, many show a typical value for *a* of approximately 0.7, thanks to the feedback effect, which 'provides a wonderful example of how emergent phenomena from a Complex System can have universal properties' (Johnson 2010, pp. 113–127). That is, until the current crisis, strangely not mentioned in the 2010 edition of the book just quoted, when the above fractals 'died' and banks went in quest of bail outs.

I will leave the details of how the house of finance capital came down to those better qualified but, in the spirit of Mandelbaum discussing the referents necessary to understand cashing a cheque, these include unsecured credit, the housing market and its packages of sub-prime mortgages, inter-bank trade in loans, hedge funds, derivatives and so forth. The point is not that these suddenly appeared on the scene (or the Background was wheeled back in) but, rather, that they were active factors throughout, which produced the stock markets that produced the fractals that produced the universals - while ever they got away with these doings. In fact, we are dealing not with a so-called social 'power law' but with power play between groups of economic agents in a *relationally contested organization;* one whose structures became more clearly visible as the house of cards crashed.

Why Agents are not Ants

Human persons and the social agents and actors they become (Archer 2000) show a variety of responses to their environments that are mediated through their internal properties and powers, the most important of which is their conscious mental 'reflexivity'. Reflexivity enables them actively to internalize, employ and elaborate the cultural representations (beliefs, theories, practical knowledge etc.) created by their forebears. Thus, they can add new or modified items of their own

(new theories, new knowledge etc.) to the Cultural System, extending the range of 'intelligibilia'[16] at any given time. Socio-Culturally the ideas of agents (dead or alive) can be used to encourage or discourage courses of action amongst fellow agents, ones that cannot be reduced to *collective behavior* (for instance 'voting', 'church going', 'house buying', 'consulting a dictionary' or 'undertaking research'). Culture and agency thus work together in creating representational loops between themselves and their social environment. In this lies the difference between action and behavior. Human action is more varied and complex than the informational input received from the environment. This is not the case for the ant's response to environmental stimuli, which cannot exceed the pieces of information received. Ants' responses, unlike those of agents, are incapable of much flexibility, of fast innovation, of envisaging changes in their habitats or collectively planning to change them.

In an ant colony, as a *self-organizing system*, 'the link between stimulus and response is not mediated by anything that has the form of a deliberative process involving explicit representation of goals and means-ends reasoning about how to achieve them. To refuse to recognize this difference is to refuse to recognize a distinction that has practical as well as theoretical significance. Self-organizing systems do not exhibit the flexibility of deliberators, they do not adapt spontaneously to changes in circumstances, they do not have goals of their own, they cannot form temporally extended plans' (Ismael 2011, p. 346). Conversely, persons with their cultural representations of their social settings *and of themselves within them* deliberate reflexively about their social environment. They act as what Charles Taylor calls 'strong evaluators' (1985), and exert some governance over their own lives by forming 'projects' for making their way through the social world (Archer 2007). In short, human agents both individually and collectively aspire to *self-governance* and they succeed to some—always limited—degree.

There are those like Dennett who wish to deny any distinction between colonies of ants and competing chess players (2009) and try to do so by demoting human intentions to 'as-if' intentionality. This is complete demotion because an 'as-if' intention does not really exist and thus cannot have causal power. When we treat one another as intentional systems–as friends do–attributing 'beliefs' and 'desires' to them and to ourselves in our interactions, to Dennett we are merely 'finessing our ignorance of the details of the processes going on in each other's skulls (and our own!) (1987, p. 5). Dennett wants to annul the properties and powers of human consciousness in order to remove the dividing line between agents and ants. In this, he relies on the fact that examination of the human brain discovers no equivalent to a Commander in Chief directing activities. Yet there is nothing in his arguments or in neurological evidence to exclude the conscious mind being emergent from the brain's hardware.

[16] Intelligibilia refer to all items possessing the dispositional capacity to be understood, whether or not they are at any given time. The corpus of intelligibilia is lodged in the Universal Library or Archive. (See Archer 1988).

In my trilogy of books on reflexivity, although I have indeed talked a lot about 'people exercising some governance in their own lives', this is far from considering agents to be paradigms of *self-government*. Granted that the majority of agents do have unimpaired powers of reflexivity, used in mental activities (such as planning, decision-making, budgeting, clarifying, self-monitoring), this does not make them *self-governing*. They are not because their autobiographies (singular or collective) are never made in circumstances of their own choosing. Structures constrain and enable, and what constraints and enablements work upon are agential 'projects' (Archer 2003). But structures also motivate, with subjects enlarging or contracting their projects in the light of the circumstances they confront. When balked by them, they do not behave like an ant which discovers its hole has been blocked. Human agents reflexively deliberate about circumvention and subversion (which significant numbers pursue) or they think out a second or third-best project that they believe can be carried out. Yet, the circumstances will never be of their choosing.

In exactly the same way as was argued for the social system at the end of Sect. 8.3, where agency is concerned we are also dealing with a *relationally contested organization.* Persons and groups can neither be reduced to *träger* of social forces or cultural discourses that work from the 'top down', nor be portrayed as free-wheeling monads who combine and recombine from the 'bottom up'. All human agents are born into social relations, live in relationships and through relationships. Nevertheless, this is a fundamentally *contested* way of life: socialization is not simple internalization but the receipt of 'mixed messages' (Archer 2012); subjects have to make conscious decisions about which relationships to prioritize and which to subordinate or eliminate, and agents have to deliberate about what relational goods matter sufficiently for them to invest something of themselves in them. All of these reflexive activities are internal to human agents but without them the social order cannot be understood or explained.

8.7 Conclusion

If 'structure', 'culture' and 'agency' are involved in every instance of social change it is futile to set up a two cornered fight between whether the social order is *self-governing* or *self-organizing*. (In any case, the more sophisticated commentators conclude it to be a 'mixed type'). In the physical sciences the changing nature of far-from-equilibrium systems is held to derive from 'external perturbations'. However, as Reed and Harvey openly agree, the 'questions of agency raised by the symbolic production of humans is quite another matter, for in human societies we confront the possibility that the locus of perturbations in certain instances maybe internal to society itself' (1989, p. 370). Let the last word go to Nicolis and Prigogine, who do allow that 'internal perturbations' deriving from human values and actions mean that social systems may differ radically from the analogue of natural systems. The social order

> [I]s an interplay between the behaviour of its actors and impinging constraints from the environment. It is here that the human system finds its unique specificity. Contrary to the moleclues, the actors in a physico-chemical system, or even the ants or the members of other animal societies, human beings develop individual *projects and desires* … The difference between desired and actual behaviour therefore acts as a constraint of a new type which, together with the environment, shapes the dynamics. A basic question that can be raised is whether, under those circumstances, the overall evolution is capable of leading to some kind of global optimum or, on the contrary, whether each human system constitutes a unique realization … In other words, is past experience sufficient for predicting the future, or is a high degree of unpredictability of the future the essence of human adventure, be it at the individual level of learning or at the collective level of history making? (1989, p. 238).

The two authors suggest that they lean towards the second alternative. My own conclusion is that the more morphogenetic the social becomes, the more we will need to examine social morphogenesis on its own social terms—of increasingly complicated interplays between structure, culture and agency, their emergent properties and causal powers. Analogues from natural science would only prove more and more misleading.

It is by coming to terms with these complicated interplays—ones that cannot be assimilated to a mindless and aimless complexity—that the outcomes of social morphogenesis do not becomes matters of complete contingency. Simultaneously, however, we have to forfeit the consolations of an equally automatic and non-conscious 'adaptation'. In our structural, cultural and human relations, we—as agents and actors—still have to take responsibility for both the proximate and distant effects of our doings and deal with their unintended consequences.

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Part III
Social Networks: Linkages or Bonds?

Chapter 9
Network Analysis and Morphogenesis: A Neo-Structural Exploration and Illustration

Emmanuel Lazega

The goal of the Morphogenetic Society project[1] is to develop an account of social stability and change at the macro-level in late modernity. It is thus different from the Morphogenetic Approach, as an explanatory framework presented as appropriate for analysis at all levels from the micro- to the macro-level and at all times (Archer 1988, 1995). According to this perspective, three elements are always involved in any social transformation—big or small: 'structure', 'culture', and 'agency'. The challenge is always to specify their interplay as the basis of explanation for the stability or change of any social phenomenon chosen by the investigator, when using the Morphogenetic Approach or in exploring the notion of Morphogenetic Society.

This chapter sketches one possible methodological and theoretical contribution to this project. An initial summary presents network analysis, in combination with other methodologies, as a technique that can help develop and specify the morphogenetic project by exploring some of its preliminary ideas about morphostatic and morphogenetic processes in relation to the meso-level of social reality. The present chapter initiates a dialogue between the neo-structural framing of network analysis and the Morphogenetic Project, based on an empirical illustration, in order to suggest that social processes driving the co-evolution of structure, culture, and

[1] Its main theoretical aim is to conceptualise a 'Morphogenetic Society' characterized by a historically unprecedented situation of 'Morphogenesis Unbound'. In this situation, historic social formations disappear and—given accelerated and perhaps synchronized changes in 'structure', 'culture' and 'agency' for humanity as a whole—new formations, as new variety is introduced through generative mechanisms that remain to be fully specified.

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agency can be further specified and understood within such a dialogue. As will be further specified below, neo-structuralism[2] is defined here as a sociological approach that uses network analyses, combined with other methods, to jointly enrich both theories of individual action (based on specific definitions of social rationality and judgments of appropriateness) and organized collective action (based on modeling of social processes—such as solidarity, control, socialization, and regulation—that help members manage dilemmas of such collective action) (Lazega 2003a, 2011a).

As a first and necessary reflection on the link between network analysis and some of Archer's morphogenetic ideas, it is useful to remember that sociological network analysis has developed during the twentieth century as a method that describes and tests for simple and complex relational structures: simple ones formed around the actor (ego-networks) and the more complex at the 'global' level of the collective in which the actor is a member (whole networks). A distinct kind of structuralism has emerged in the 1960s from the systematic use of this method. This structuralism (for a summary, see Wasserman and Faust 1994; Wellman and Berkowitz 1988) maps and analyzes the systems of interdependencies that characterize individuals' relational life by looking at their structural characteristics (centrality, autonomy, constraint, etc.) and at the collective's structural characteristics (cohesion, and especially structural equivalence as theorized and measured by H. White and his students such as Scott Boorman and Ronald Breiger).

One of the advantages of this method is that its formalism is sufficiently flexible to allow sociologists who look for patterns at the level of the structure not to lose sight of individuals when using statistical aggregations. Recently, network analysts, especially methodologists who created 'network statistics' during the last 30 years, have been able to develop a dynamic and multilevel perspective on social structure. In this approach, the main focus is on the co-evolution of structure and behavior (see for example Snijders 2001; Snijders et al. 1999, 2007a, b). This development is independent but strikingly similar to the attention given by social realists such as Archer or Donati (2010) to structure and agency and to the principle of emergence in the (preliminary) idea of a morphogenetic society. In both approaches the two remain separate but co-constitute each other over time, thus exerting intertwined causal influences on each other. The main issue for network analysts today is to find robust methods for analytically disentangling these causal effects so as to measure, model, and understand them in real-life settings and to account for social phenomena, over time and across levels.

Such a method can be useful to the Morphogenetic Project if it is able to provide at least one possible and partial empirical measurement of the difference between morphogenetic versus morphostatic processes. In order to illustrate this programmatic perspective, I will use an example based on a network study of a

[2] The prefix 'neo' is meant to differentiate this brand of structuralism from that developed in France between the 1940s and the 1960s, for which individual agency did not matter much in explanations of social phenomena.

450-year-old French institution of social control of markets: the Commercial Court of Paris. The focus is on the surprising resilience of this institution as seen through the dynamics of the advice network operative among its lay judges and their judicial decisions based on normative, cultural choices. This case in point raises the question of when a change of network should be considered enough of a change to constitute a case of morphogenesis: Network dynamics can be both morphogenetic and morphostatic because changes in the structure observed can be real—thus discounting pure morphostasis—but also partly homeostatic, i.e., cyclical, driving the structure, after a strong perturbation, back to a state that has structural similarities with the point of departure—which also discounts pure morphogenesis. This illustration thus raises the need for further specification in theorizing morphogenesis.

9.1 Network Dynamics and Institutionalization

Network methods of analysis have been used by several theoretical approaches in sociology. As an example, a dogmatic program was started by H. White (whose contributions enriched network analysis well beyond Jacob Moreno's sociometry) in the 1960s as a form of structuralism for which—in strong reaction against Parsonian sociology—social norms and culture did not matter much in social life. In H. White's *Chains of Opportunity* (1970), a seminal book on vacancy chains in the labor market (i.e. models from which measurements and interpretations of the concept of 'structural equivalence' were later derived in the 1970s), culture is not included in the description and modeling of the labor market and access to job opportunities. But in a spectacular development, White's (1981) network model of markets brings culture back in. Culture re-emerges and plays a central role again, as the language in which quality schedules are created to evaluate resources exchanged. A cultural turn is thus initiated from within American structural sociology by White himself, developing original combinations of new forms of structuralism with forms of neo-institutionalism. For example, social roles in the division of labor regain a cultural dimension, even when defined endogenously, i.e., in a way that is specific to the social setting that is network analyzed. Breiger (2010) in particular (for example 2010) has explored the structural implications of this cultural turn and created new lines of research on the relationship between culture and structure. In many ways the developments of this form of structuralism converges toward a theory that mirrors Archer's analytical dualism.

Another recently developed neo-structuralist perspective (Lazega 2003a, 2011a) uses this method, combined with others, to contextualize actors' behavior by describing the structures of opportunity and constraints that emerge from regularities in relational choices by these actors. Its goal is also to further combine the existence of these relational structures with individual attributes (position of actors in the wider meso- and macro-levels of society), culture (in particular language and normative choices), and agency (opinions, decisions, capacities,

achievements, etc.), over time and across levels. Its specific focus is on modeling *social processes* facilitating coordination by helping members explore new solutions to the dilemmas of collective action. Such processes include solidarity, exclusion, and exploitation; social control and conflict resolution; learning and socialization; regulation and institutionalization; and many others. All social processes and phenomena have a relational dimension and, as such, are amenable to network analysis from this perspective.

Neo-structural sociology is based on a theory of 'social rationality' that is meant to articulate individual and collective action by combining identity, culture and authority in actors' judgements of appropriateness (Lazega 1992, 2011a), i.e., the main elements of agency identified by symbolic interactionism (Stryker 1980). As in Archer (2007a, b), actors are endowed with reflexivity, creativity, reasoning, and a constrained capacity to choose. They are also endowed with a capacity to endogenize the structure, that is, to perceive power relationships, social differences, and inequalities, and act based upon these perceptions. Here, relationships are defined as indicators of resource interdependencies (both symbolic and economic) as well as commitments to exchange partners that are framed by cultural norms. Judgements of appropriateness also structure actors' relational choices and, as such, trigger and drive social processes mainly at the meso-level. They shape collective action in the organizational society—a society where private corporate action has become a key level of exercise of power and influence (Perrow 1991).

Given such proximities between them, further dialogue is thus possible between morphogenetic and neo-structural perspectives on the emergence of social order or social formations. For example, it may be worth focusing on concepts common to both perspectives, such as that of institutionalisation. In the empirical illustration given below, social structure and discipline emerge 'initially' (analytically speaking) from the collective choice of norms, local and global, in a context defined in terms of power asymmetries inherited from previous structuration. This emergence can indeed be seen as the outcome of the combination of at least two dimensions of the same regulatory processes. On the one hand, the creation of individual task-related routines based on normative choices made at the local level; members of a social milieu make their own normative choices and follow their own practices without trying to impose them on others. On the other hand, the creation of explicitly collective norms, based on normative choices made for the more global or collective level; here members, as institutional entrepreneurs, seek status in order to participate in power games and try to control a political process imposing a hierarchy of norms, i.e., forms of bottom up and top down institutionalization transforming precarious values into priority rules for the collective (Selznick 1957; Lazega 2001). In other words, institutions emerge from two competing, intertwined, and eventually co-evolving normative choices in a dynamic regulatory process: locally created routines and globally imposed rules.

The combination of the two dimensions is an adaptation, by members, of their routines to the normative choices imposed by members with social status (i.e. elites with power), for example, as a resistance to their top down normative choices, or as forms of alignment with such top down choices. Collective level

normative choices also adjust to local routines, as in the case of laws that are modified because they are too far removed from the local routines—the archetypical case being the Prohibition. New practices emerge as the combined result of (1) new exploratory routines created by individual members, and (2) a new hierarchy of norms at the level of the collective. Creation of local routines and creation of global norms applying to all, are partly an effect and partly a cause of structural change, i.e., morphogenesis. Co-evolution of norms and routines is both driven and mediated (analytically speaking) by changes in the structure. The main assumption here will be that morphogenesis in a social milieu is better accounted for when taking into account this crucial and complex co-evolution.

This can be illustrated by an empirical study, which tracks the conflictual emergence of a common norm among judges in a courthouse. First, normative choices are observed as the outcome of a controversy among these judges. Second, the 'struggle' between competing normative choices is tracked by identifying the most influential judges in the court and in the controversy; this is done by measuring each judge's respective centrality in the 'complete' advice network of this institution. Indeed for a majority of members of the collective, choices of norms are not immediate. They are driven by 'deliberations' that can take many forms, including routine peer influences. In our example, these influences will be approximated by regular advice relationships in the organization. These advice relationships reflect exchanges of appropriate information at the dyadic level and are themselves created by individual choices of advisors in an overall opportunity structure of access to advisors, i.e., a network. Changes in this opportunity structure, i.e., morphogenesis in this network, both at the dyadic and overall levels, can thus have an effect on changes in the regulatory regime of this milieu, as a reflection of the institutionalization process. The partly morphogenetic evolution of this network shows that structural changes, at both overall and dyadic levels, favor a minority of these judges (and the normative choice that they promote against routine choices of the majority), who can be seen as institutional entrepreneurs in the regulatory process, by increasing their centrality over time in structural dynamics that tend to be cyclical (Lazega et al. 2006, 2008, 2012).

9.2 Empirical Illustration: Network Dynamics and a Normative Controversy at the Commercial Court of Paris

The empirical case in point that is used here to examine the regulatory process and to illustrate these ideas on the relationship between morphogenesis and emergence from a neo-structural perspective, is the case of the Commercial Court of Paris, a 450-year-old 'consular' institution for 'joint regulation of markets' (Lazega and Mounier 2003) that handles 12 % of commercial litigation in France, including very complex cases. Its judges are not career judges, but rather experienced

businessmen and women who exercise their function as voluntary and unpaid lay judges mobilizing both the law and the customs of their business sector in order to find judicial solutions in these cases. An electoral body composed of sitting judges and the delegates of business sectors from the local Chamber of Commerce elects/co-opts these lay judges for 2- or 4-year terms, for a maximum of 14 years. Twenty general and specialized chambers, which deal with a great variety of commercial litigation and bankruptcies, make up the Court. A formalized rotation rule requires judges to change Chambers each year, a formal obligation that is meant to lower the risks of corruption, conflicts of interests, and institutional capture that plague this consular institution (Lazega 2011a, b).

An explanation of the term 'consular' is in order. The *consulat* was a mode of urban government practiced in the Middle Ages in the southern part of the Kingdom of France by cities with a right to self-administration and self-defense. 'Consulatus' is formed from 'consul', meaning 'council'. The word referred to a community's ability to deliberate together in an assembly also called the *consulat*. Urban communities governed by a consulat could call themselves cities. All had markets and many had fairs. In a *régime consulaire* the community governed itself by way of consuls, who varied in number and qualifications. Merchants organized into socially distinct guilds occupied an important place in this *régime consulaire*. On the basis of the *lex mercatoria*, they managed to negotiate with the State a new (and theoretically unlikely) form of joint regulation of their business activities within the *consulat* framework. A major component of the 'consular regime' became the *tribunal de commerce* or commercial court, a private court that was turned into a truly judicial institution after this negotiation (in 1563), and whose content evolved over time. The merchants' local self-regulation was thus to be founded on the State's sanctioning power. The State, meanwhile, whose own administration was as yet embryonic, may paradoxically have seen this co-optation by local merchants as a means of further extending its central control over the country. This institution is an example of how Market 'exchange relations' and State 'command relations' have long been managed at the meso-level by institutions of joint regulation, i.e., participatory social forms based on both instrumental rationality and social engagement. It is one of the rare institutions from the sixteenth century that even the French Revolution tried, but was unable, to change.

In this first level judicial institution, judges add normative choices and interpretations to legal reasoning in order to make fast, pragmatic judicial decisions. They perform tasks that are multifaceted and that require multiple skills and bodies of knowledge, for example, legal, economic, and managerial. Indeed in the domains of both litigation and bankruptcies, judges often deal with very complex legal issues in which they have a large amount of discretion. Further, conflict resolution often depends on detailed knowledge of the business and specific industry in which the conflict takes place. In order to cope with such needs for specific knowledge, judges tap into the expertise and experience of their very diverse set of colleagues, by seeking out each other for advice intensively. The uncertainty inherent in the cases creates the need to call on numerous competencies and, in fact, many judges in large commercial courts justify this lay

institution with the argument that it brings together very diverse forms of expertise. The heterogeneity of judges, who come from a large array of businesses, is said to create a shared capital of knowledge and experience insofar as each can draw from the others' experiences and expertise.[3]

According to justifications for this truly judicial but lay institution, the selection of lay judges should produce a very diverse representation of economic sectors, particularly in large commercial courts such as that of Paris. At the time of the study, the judges indeed represented very diverse sectors in which they either had worked or were still working. Thus, in complex cases, information relating to a specific industry could be accessible to the court through judges from that field. Nevertheless, certain sectors and/or enterprises invest more than others in 'judicial entrepreneurship' and shoulder a greater share of the cost of social control of business because it is in their interest to do so. Theoretically all sectors can present candidates to the election of lay judges, on an annual basis, in order to fill the vacant posts resulting from a turnover rate of 10 % of the Court's personnel. But analysis shows that, in fact, all the sectors do not. Some participate more systematically than others; the largest is the banking/finance sector, contributing 29 % of the judges on average. In addition, a very high proportion of bankers have a legal education (unlike judges coming from other sectors, few of whom have a law degree). Yet the overrepresentation of finance amongst the lay judges does not represent an unchallenged dominance of that institution. In fact, a majority of judges coming from industry, construction, non-financial services, or other sectors do not always appreciate this dominance. As stated by a banker with legal education (quite dismissively), '*shopkeepers hate bankers'*.

From the perspective of the Morphogenetic Explanatory Approach, this context is the starting point, an instance of 'structural conditioning' of the social control of markets for what could be labeled an interesting case of 'homeostasis': an unbalanced form of morphostasis waiting to become morphogenesis, or structural dynamics that are not sufficient to trigger irreversible transformations. It permits observations of endogenous and cyclical transformations in this institution, and shows how both structure (here: network pattern), culture, and agency could be formally combined to understand a transition from morphostasis to morphogenesis.

The first type of data used in this illustration and associated analyses are a set of normative choices in a controversy that emerged among these lay judges in 2005. The observed controversy was about the extent to which they should be punitive in their judicial decisions on matters of unfair competition between companies. Indeed one of the areas in which judges have wide discretion is that of the assessment of damages, i.e., the assessment of the loss in monetary terms, notably when the loss is caused by unfair competitive behavior by the offender. This

[3] An extensive report on our study of this institution and more in-depth description of the organization of the Commercial Court of Paris can be found in Lazega and Mounier (forthcoming).

description necessarily leads to inequalities in awards. Indeed, the fundamental question of the very meaning of restitution arises in business as elsewhere, insofar as the economic actors are often businesses, i.e., corporate entities. In business, is the essential, or indeed sole, purpose of damages to compensate for actual losses incurred by the plaintiff? Or are damages intended, at the same time, beyond compensation, that is, for a punitive effect—one usually reserved to criminal law?[4] The story presented in this case is that of the emergence of non-punitive norms promoted by structural changes in the network of judges. This is a case of normative struggle in an informal regulatory process.

In order to approach the normative attitude of lay judges in this domain, we used a jurisprudential approach based on the case presented in Appendix 1. Pragmatically, being punitive means—in French law—awarding the injured party not only 'material' damages (i.e. amounts of money that make up for the actual economic losses incurred due to the unfair business practices of the offender), but also awarding them 'moral' damages (i.e. amounts of money that are meant, as a pecuniary punishment, to teach a lesson and dissuade the offender from involvement in such practices again, given that these practices break the 'natural' circuits of markets).[5]

Judges do not all think in the same way when it comes to the assessment of "moral" damages, which we use as an indicator of their level of punitivity. The punitive approach to damages and the non-punitive approach are both present in the Paris Tribunal of Commerce. The non-punitive approach is popular in business because it suits the ideology of these lay judges of the necessity of re-establishing a link, or maintaining a working relationship between the offender and his victim. Indeed lay judges generally claim that they feel close to their fellow businesspeople, all of whom belong to a big business community with its rules, rhythms, and practices. But the punitive approach also has its supporters. The main idea is that the individual loss suffered in the test case goes hand in hand with collective damages because it implies the destruction of market circuits considered natural from an economically neo-liberal point of view—a conviction certainly held by the quasi totality of judges at the Court of Commerce. The question is posed then in terms of the responsibility of businesspeople. Punitive judges conclude from this

[4] The limits to freedom of competition are inscribed in penal laws which sanction unfair practices such as counterfeiting, false advertising, deceit concerning merchandise, and selling at a loss. In civil terms, unfair competition is notably created by a deliberate confusion between an enterprise and its competitor (the use of distinctive brands belonging to the competitor, the imitation of its products and creations); the effort to disorganize a competitor (stealing clientele, abusively poaching employees, using fraudulent client lists, or confidential documents); slander; or parasitic practices. Counterfeiting laws sanction infringement on property rights, with unfair competition as a particular sub-category.

[5] This case calls for the evaluation of both material and moral damages, and it raises the question of calling in an expert. The judge's decision is notably supported by Article 420-1 (Code of Commerce), and more precisely on the §32 on predatory pricing, i.e., when "a product's unit selling price is less than its variable unit cost." For a detailed presentation and analysis of this controversy about judges' punitivity, see Lazega et al. (2009).

that if blame and punishment are not present, there is a strong risk of 'de-responsibilization' and disorder in commercial practices and the economy as a whole (a view shared by Durkheim in his second Preface to the *Division sociale du travail*). Indeed, they often perceive their own role as a patriotic one: to prevent disorganization and chaos in the national economy.

Data on the normative attitude and punitivity of each judge in this controversy was collected using qualitative interviews about their reasoning based on a real-life case (see the judgment summarized by the sitting judges and presented in Appendix 1, on which each judge had to comment extensively). We found that *a majority of judges was routinely punitive*, but that a minority of judges—particularly bankers with legal education—was non-punitive. Indeed, claims for 'moral' damages often reach very high sums and plaintiffs try to reach into the deepest pockets by involving the defendants' banks and other financial institutions in the case as co-defendants. Bankers with a law degree—whose influence within the Tribunal will be considered next—therefore have a tendency to minimize material damages (rallying to the same decision in the original case presented in the Appendix) and to dismiss punitive claims. As an example, the opposite trend is noticeable among judges coming from the Building and Public Works sector, who are more punitive than the average judge, and especially much less so than bankers (Lazega and Mounier 2009).

9.3 Homeostasis Between Morphostasis and Morphogenesis

After sketching these normative choices in the controversy among these actors (a minority of institutional entrepreneurs trying to impose non-punitivity and a majority of collectively pragmatic members following their own punitive routines), I turn to the identification of the most influential peers among these judges, and thus in the institutionalization process. This is done by looking at the advice network among all these judges, and by measuring their respective centrality in this network.

The judges were interviewed about their advice relationships within the Tribunal. The network section of the study was carried out using a longitudinal design with three measures of the system obtained respectively in 2000, 2002, and 2005. The network was reconstituted using the following name generator: '*Here is the list of all your colleagues at this Court, including the President and Vice-Presidents of the Court, the Presidents of Chambers, the judges, and 'wise-men.' I will ask you a question and you need only indicate the colleagues concerned. Using this list, please check the colleagues whom you have asked for advice during the last two years concerning a complex case, or with whom you have had basic discussions, outside formal deliberations, in order to get a different point of view on the case*.' A very high response rate (87 % on average for the three waves)

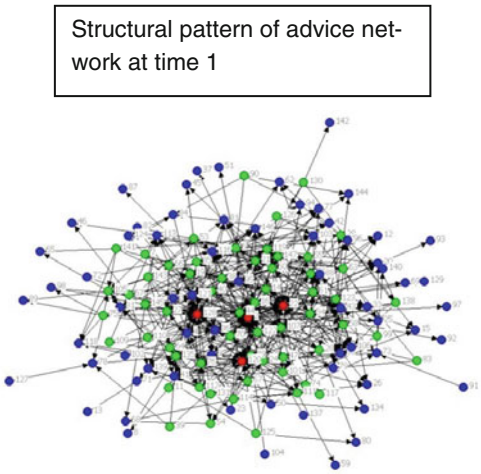

Fig. 9.1 Visualization of successive morphogenetic outcomes (comparative statics) of a cyclical process at the structural level. Colors identify actors based on their block membership. In this figure, network wave 1 measures three blocks: 'core' (*red*), 'semi-periphery' (*green*), and 'periphery' (*blue*)

allows for the reconstitution, at each measurement, of the complete advice network existing between the judges, whose number varied between 151 and 156 from 2000 to 2005.

Using a stochastic block modeling[6] approach developed by Nowicki and Snijders (2001), i.e., looking at the outcome of structural analysis of the network as a whole, we find a morphogenetic pattern of cyclical centralization and decentralization of the network (Lazega et al. 2006, 2011b). Depending on the stage at which observers measure the network, the structure of the following networks is both similar and different. Figures 9.1, 9.2 and 9.3 present the 'best' possible, i.e., clearest, block model for each measurement of the network. The first wave shows three blocks, presenting a clear core–semi-periphery–periphery structure. The core block includes the most central actors in the network.

Over time the structure changes. This analysis shows an evolution of the overall structure from three to four to two positions. The four-position structure of the second wave shows a more centralized structure (with more members in the core than in the previous measurement), although more fragmented than the initial three-position structure. Transition from the first structure to the second shows increasing centralization: a new level of informal hierarchy emerges when the semi-peripheral position breaks down into two levels, one of which is closer to the core than the other. The picture of the two-position structure in the third measurement shows a simpler, less fragmented, less hierarchical, and centralized structure than the previous three- or four-position structures: this is confirmed by

[6] For a methodological presentation of this brand of stochastic equivalence and block modeling in the study of network evolution, see Nowicki and Snijders' (2001) extension of White et al.'s (1976) method, and for a detailed analysis of this case see Lazega et al. (2012). Block modeling identifies and tests at the structural level the outcome of relational processes (influence and selection) examined at the sub-structural level with methods that examine the determinants and effects of relational turnover in the network.

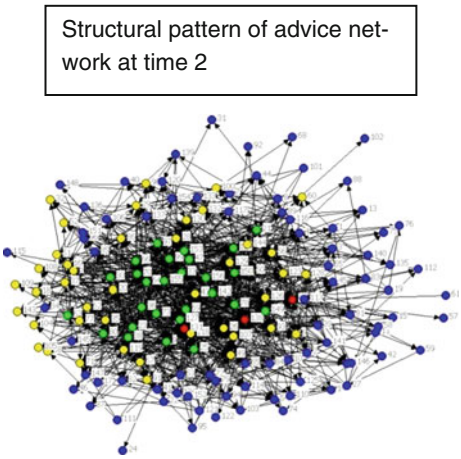

Fig. 9.2 Visualization of successive morphogenetic outcomes (comparative statics) of a cyclical process at the structural level. Colors identify actors based on their block membership. In this figure, network wave 2 measures four blocks: 'core' (red), 'first semi-periphery' (*green*), 'second semi-periphery' (*yellow*), and 'periphery' (*blue*)

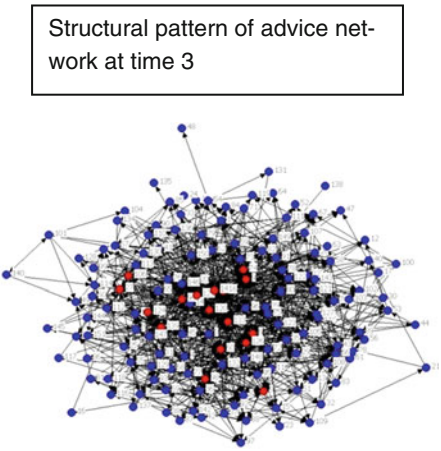

Fig. 9.3 Visualization of successive morphogenetic outcomes (comparative statics) of a cyclical process at the structural level. In this figure, network wave 3 measures two blocks, 'core' (*red*) and 'periphery' (*blue*)

the fact that the core in the third structure contains many more members than the core in the first two patterns. This second transition shows how the former informal hierarchy broke down: two levels of informal hierarchy have disappeared when the semi-peripheral actors now belong either to the core (these are judges who became increasingly central) or to the periphery. This view of the evolution of the structure confirms the existence of a relatively stable core-periphery pecking-order of judges in the courthouse, but also that of a process of centralization–decentralization of the advice network that reshuffles members from one level to the other within this stable core-periphery pecking-order.

What explains these dynamics? On the face of it, this process could be considered a morphogenetic process, representing an irreversible change. However, qualitative interviews and feedback from the judges suggest that this centralization–decentralization is cyclical. We interpret the underlying dynamics as the

outcome of a process balancing the overload of central advisors and normative conflicts between them (Lazega et al. 2006, 2011b). First, the number of members with 'epistemic status' varies over time (Lazega 1992). As stressed by our micro-political perspective on learning and knowledge claims, everyone here seeks status and believes that they will reach a higher status; access to advisors higher up in the ladder becomes in itself a sign of relative status. This implies that a member highly sought out during time t1 becomes even more intensively sought out in time t2. Judges themselves can think of several reasons for why this number oscillates, i.e., increases and decreases over time. One reason is that members tend to choose advisors that they perceive to be the most popular (i.e. already chosen by a large number of colleagues). Senior judges—who are already central—tend to become ever more central in a form of Matthew effect. Increasing centrality of already central judges is the main effect produced by the formal dynamic force behind relational turnover in this organization between 2000 and 2002. Members sought out by many other members tend to build a reputation; selecting them is perceived to be safe and legitimate.

Second, however, this behavior creates an overload of requests for advice from a small number of highly central advisors with high epistemic status. Measurements of network evolution for the second period capture an oscillation between increasing and decreasing centralization of the advice network. A downward tendency in the second period shows that many central members lose some of their centrality as many new members become more central than they were before, thus joining this elite of judges with epistemic status. According to the judges, this is due to the fact that highly sought out advisors often manage this overload by delegating, i.e., referring the advice seeker to other advisors. But this management of overload threatens the stability of the pecking order in the sense that it brings in new central advisors and requires coordination among the elites in order to avoid destructive status competition and conflicts of definition of the situation between 'too many cooks' (Lazega 2001). In turn, this strategy triggers either formal efforts of coordination among the elites or normative conflicts that are handled not so much by consensus building among leaders but by a new reduction in the number of advisors with high epistemic status through withdrawal of central advisors who become unavailable (due to retirement or delegitimation).

These are not simple processes underlying institutionalization. Centralization of advice networks can either remain stable, or increase over time, or decrease over time to reach a balance between elite overload and normative conflicts among the elites. Thus, although previous work has shown that there is always a pecking order in advice networks, the pecking order is not necessarily stable over time. Stability is not automatic; it is fragile and threatened, by expansion, turnover, or normative conflicts among the elite themselves. Centralization of advice networks oscillates, i.e., increases and decreases over time as members of the elite of advisors either leave (and are 'replaced' by new members) or try to reach a balance between high individual status and overload on the one hand, and consensus on

Table 9.1 Key (most central) players in the advice networks among lay judges at the Commercial Court of Paris in 2000, 2002, and 2005

	2000		2002		2005	
	Parameters	S.E.	Parameters	S.E.	Parameters	S.E.
Intercept	−3,54	1,02	−1,11	1,65	1,08	1,61
Seniority	0,67	0,08	0,80	0,12	0,72	0,13
'Noblesse d'Etat'	1,13	0,90	3,04	1,42	1,67	1,57
Professionally active (vs. retired)	−0,61	0,63	0,12	0,92	-0,26	1,02
Bankers with law degree	1,33	0,71	2,93	1,09	3,14	1,32
Participation in social functions	2,36	0,92	0,23	1,30	1,80	1,31
Seeks advice *from business sector*	1,61	0,62	0,05	0,92	−1,43	1,14
Seeks advice *from career judges* (CoA)	4,49	1,42	5,09	1,93	2,56	1,85
Seeks advice *from district attorney*	−1,72	0,63	-1,70	1,12	−0,25	1,22

Linear regression model measuring the effect of lay judges' characteristics on their centrality in the advice network. For an effect to be considered significant, the associated parameter must be at least twice the value of its standard error (S.E.)

norms on the other hand. Periods of centralization of advice networks are followed by periods of decline in this centralization, then by periods of recentralization. This process is cyclical; it is captured in our 'spinning top' model of advice network evolution (Lazega et al. 2006). This cyclicality questions any morphogenetic trajectory in this case. It suggests a homeostatic process fuelled by normative conflicts and kept in check by the role played by key actors in the structural or network dynamics.

This cyclical view of the evolution of the structure is confirmed by the characteristics of the relatively stable hierarchical pecking-order of judges in the courthouse. Given the key role of bankers with a law degree in the institution and in the regulatory process sketched above, it is important to locate them in this changing structure. Table 9.1 provides linear regression models (one per measurement of the network) measuring the relative effect of selected attributes of these judges on their centrality in the network, thus confirming that this subpopulation of judges manages to be on top almost permanently.

These figures reveal the informal and indirect influence of senior judges and of bankers with a law degree over their fellow lay judges in this controversy. The effect of 'coming from the banking industry and having a law degree' is significantly and positively associated with being central in all three models. Bankers are overrepresented at this court, and among them bankers with a law degree exercise strong indirect influence through premise setting in judicial decision making. In sum, the underlying social process, collective learning through networks mobilized for normative choice, is driven by relational turnover, centralization then decentralization of the advice network, strategies of stabilization and creation of consensus among the 'elite' of advisors, and the central place of a subgroup of senior bankers with a law degree in this elite.

Table 9.2 Non-punitive bankers with a law degree become increasingly central over time in the advice network of voluntary lay judges at the Commercial Court of Paris in 2000, 2002, and 2005

Effects	Model 1	Model 2
Rate parameter period 1	25.80 (6.35)	25.79 (5.95)
Rate parameter period 2	21.74 (2.37)	21.93 (2.27)
Density	−2.08 (0.04)	−2.1 (0.05)
Reciprocity	0.47 (0.10)	0.49 (0.1)
Transitive triplets	0.19 (0.02)	0.19 (0.02)
3-cycles	−0.29 (0.06)	−0.27 (0.05)
Chamber (centered)	0.62 (0.05)	0.62 (0.05)
Seniority *alter*	0.05 (0.01)	0.05 (0.01)
Seniority *ego*	−0.05 (0.01)	−0.05 (0.01)
Punitive *alter*	−0.08 (0.06)	−0.06 (0.06)
Punitive *ego*	0.04 (0.05)	0.02 (0.05)
Punitive similarity	0.04 (0.05)	0.05 (0.05)
Non-punitive Supercentral *alter*	0.61 (0.08)	0.63 (0.08)
Punitive Supercentral *alter*	0.67 (0.14)	0.65 (0.14)
Banker-lawyer *ego*		−0.31 (0.08)
Banker-lawyer *ego* × Non-punitive Supercentral *alter*		0.58 (0.20)
Banker-lawyer *ego* × Punitive Supercentral *alter*		0.53 (0.32)
Banker-lawyer *ego* × Punitive *alter*		0.25 (0.16)

Two *Siena* models based on (Snijders' 2001) approach to the evolution of network structure, from Lazega et al. (2008, 2012). For an effect to be considered significant the associated parameter must be at least twice the value of the standard error (in parenthesis)

9.4 Network Dynamics and the Promotion of Dominant Norms

Finally I now turn to statistical confirmation of the effect of these cyclical dynamics on the emergence of a normative order, i.e., an invisible distribution of routine choices versus an official and institutionalized norm. Siena[7] models 1 and 2 in Table 9.2 confirm this statement by looking at who are the judges who become increasingly central over time in this network and thus whose normative choices in the controversy (i.e. punitive versus non-punitive) are likely to become dominant over time. Is it the punitive routine of most lay judges or the non- punitive choices of institutional entrepreneurs such as the bankers with a law degree? The evolution of this network is now analyzed by combining the two kinds of data collected in this study (structural and cultural). It shows that changes in this network, at both overall and dyadic levels, favor bankers with a law degree and their normative choice: the 'Non-punitive Supercentral alter' effect, for example, is significant in both models, and so is the 'Banker-lawyer ego × Non-punitive Supercentral alter' effect in model 2. In this case, routine decisions are thus likely to give way to

[7] The so-called *Siena* models (Snijders et al. 2007a and 2007b) test for the relative weight of influence and selection effects describing the co-evolution of networks and behavior.

decisions influenced by institutional entrepreneurs whose increasing centrality over time, in particular in structural dynamics that tend to be cyclical, is a strong indicator of an alignment of the first on the second.

In effect, these models take into account the heterogeneities between actors who are bankers with a law degree, the majority of whom are non-punitive, a sub-group at once increasingly more central (attracting higher and higher numbers of requests for advice, including those from judges who are not bankers) and cohesive (with stronger and stronger relationships between members than between members and non-members of this sub-group). The majority of judges' adherence to the norm adopted by the 'elite' super-central opinion leaders reinforces the latter's centrality, and assigns to them a potentially significant role in the determination of a solution that is officially considered legitimate to the controversy about punitivity. Most judges in this system, whom we know are punitive, increasingly turn to non-punitive colleagues for advice; again the latter happen to be mostly bankers with a law degree. Most judges would have granted moral damages in this case, but they also show an increasingly stronger sensitivity to what the Tribunal's elites would have done in that particular case. In our opinion, this sensitivity, and the social alignment that it generates, explains in part the weakening of routine normative choices by concerted changes introduced by institutional entrepreneurs.

Thus, the very high proportion of bankers in this court reflects a presence that can only be interpreted as a form of damage control by the banking industry, if not institutional capture of a specialized jurisdiction by its very 'clients'. Judges coming from the financial sector are clearly potential levers of that industry. In addition, they turn out to be the only group who manages to permanently dominate epistemically and normatively in such an institution. Their leadership relies on their multiple forms of status: including knowledge of the law, centrality in the advice network, and intermediarity in joint regulation and 'shared' government of markets more generally. In short, as long as they are in charge, they are structurally and culturally in a position to convince colleagues hesitating between a punitive and a non-punitive attitude to select the latter. The 'consular regime' thus undergoes homeostatic morphostasis rather than morphogenesis (Lazega 2011b).

This look at the evolution of the relational structure in this case in point helps in understanding the dynamic maintenance of a social order or of a dominant, even discreet, institutionalized form. The effect of structuration (i.e. changes in the pattern of relational structures) on the normative controversy, i.e., the spread of non-punitivity in the Tribunal, is an outcome, in part, of the evolution of epistemic control among peers within the organization. In the case of this hierarchical organization, structural changes end up reinforcing epistemic dominance of the elite and a form of collective learning by a weaker majority via its alignment on the elite's normative choices. These homeostatic, endogenous dynamics may explain, at least in part, the resilience of this 450-year-old institution.

Combining cultural and structural changes show how institutions resist morphogenesis: through inertia created by combined cultural plus structural domination. For this to become morphogenesis, structural changes would have to occur: weakening of the power of bankers with a law degree (i.e. lowering of their

numbers and centrality), perhaps under the pressure from exogenous higher order socio-cultural changes, such as the use of new laws (2009) allowing French citizens to challenge the constitutionality of an institution or the use of 'new' standards such as Article 6 of the European Convention of Human Rights on the basis of which the impartiality of this first level court could also be challenged (Lazega 2003b, 2011b).

9.5 How Much Change is Real Change?

Network analysis, when combined with other methodologies, can help develop and specify the morphogenetic project by exploring morphostatic and morphogenetic processes at the meso-level of social reality. In addition, the use of network analysis—unless it remains at a purely descriptive level—is sociologically fruitful when it is framed by a theory of the generic social processes that drive the co-evolution of structure, culture, and agency, but also that flesh out the content of social change. This is where neo-structural sociology, which looks at networks from this perspective, can contribute to the Morphogenetic Project.

As a case in point, the transitions described in the empirical illustration provided in this chapter do not constitute morphogenesis. They constitute homeostatic dynamics that manage to prevent morphogenesis. More generally, the co-constitution of structure, norms and agency, as measured by models of co-evolution of network and behavior, do not necessarily confirm a priori that social forms undergo radical changes in contemporary societies. But network analysis makes the claim testable. Morphogenesis here might be prevented or slowed down by processes that can be homeostatic as much as an elaboration of a new social form. In our example, the norm that is constructed and becomes taken for granted in these actors' decisions never loses its champions who never lose their position of authority. The sociocultural system of this organization is modeled as the decisive factor influencing whether morphogenesis or morphostasis—elaboration or maintenance—is at work in this institution. Agents are both cultural and strategic in the relational and normative choices that they make in their everyday problem-ridden situations (Archer 2007a, b), whether or not such patterns of socio-cultural interactions lead to slow or rapid change, or no change at all.

This is made visible by the fact that network analysis as a method is used here to look at a generic social process, i.e., the institutionalization of a norm, in an institution for the joint-regulation of markets. The effect of structural changes on various forms of conflict, competition, and sometimes balance, between intertwined and eventually combined dimensions of the regulatory process, i.e., locally created routines and globally institutionalized rules, is key to the emergence and maintenance of social structure and discipline. Unlike theories of emergence that ignore either the invisible creation of small routines or the more theatrical and heroic politics of institutional entrepreneurs, neo-structural sociology assumes that both are needed to understand the regulatory process. Without both dimensions, it

is not possible to understand the distance between the norm and the law, whether large or small, or how actors succeed in promoting their regulatory interests and in transforming precarious values into priority rules (Selznick 1957; Lazega 2001).

Thus, without neo-structural framing of the use of network analysis, co-evolution of structure, culture, and agency can hardly be measured and modeled to account for social stability and change. Even if this empirical case is not a case of morphogenesis it is sufficient to show that network analysis and statistics, when combined with other methods, such as discourse analysis, can bring to light these intertwined and dynamic structural and cultural effects provided that it is broadly conceived from a neo-structural perspective focusing on generic social processes.

Although both approaches are rooted in different bodies of literature, this illustration suggests that further exploration of the relationship between neo-structuralism and the Morphogenetic Approach can be mutually reinforcing. Contemporary work in neo-structural sociology can show how cultural factors find their way into the structural domain, and of how structural factors find their way into the cultural domain (Archer 1988; White 2008). Neo-structural sociology, that combines both interdependencies and conflicts in the definition of the system and its dynamics, is most creative at the meso-level of social reality. One of its limitations lies precisely in the articulation of the meso-level and the macro-level (otherwise called 'politics'). This suggests that network analysis, as framed in neo-structural perspective, provides measurements of both systems and processes. Adding information about actors' attributes, behavior, languages, beliefs, and achievements gives these measurements a dynamic edge by making co-evolutions analytically accessible.

There is nothing mechanical in this articulation. Together with a morphogenetic outlook, neo-structuralism can help bridge this divide between the meso- and the macro-levels. A combined approach would make both theories' assertions empirically testable even if they are not presented at the same levels of conceptual specification and generality.

A.1 9.6 Appendix 1

Moral Damages and Punitivity

With Respect to the Assessment of Damages in a Case of Unfair Competition

An anonymous company whose capital is held entirely by the State (from hereon designated "Company G"), is active in the weaponry sector, particularly in combat tank construction. Company G has been sued by a competitor (from hereon designated "Company M") on the allegation that Company G used "predatory prices" in the market for speed reducers.

In its complaint, Company M asks that the Tribunal fine Company G the sum of 10 762 900 euros in damages. In addition to the subsidiary claim, they ask that an expert be appointed to calculate the loss.

Using its discretionary authority, the Tribunal did not call in an expert to evaluate the loss.

After an examination of the profit rate and the basis for the turnover maintained by the plaintiff, as well as an analysis of moral and material damages and the loss of competitive capacity, the Tribunal evaluated the loss as equal to less than 3 % of the sum initially asked for.

Similarly, on the subject of profit rate the Tribunal declared that "in heavy industries, where competition is fierce, producers apply a profit margin of 10–20 % to the production costs of the materials they order." The Tribunal declared a rate of 10 %.

Concerning the basis for the turnover, the Tribunal stated that Company M did not provide proof of its allegations, and considerably exaggerated the alleged loss.

In the end, the Tribunal declared the absence of all moral damage, notably reasoning that "the risks of litigation are inherent to business and may always arise during the life of a company."

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Chapter 10
Authority's Hidden Network: Obligations, Roles and the Morphogenesis of Authority

Ismael Al-Amoudi

The purpose of this paper is to examine how the morphogenesis of authority presupposes, and in turn constitutes, social roles and relations of obligation. Authority is conceptualised as a relation of power based on legitimacy. The latter is in turn analysed both in terms of rights and of obligations. Such a perspective emphasises the import of identities and, in particular, social identities and social roles in the morphogenesis of relations of authority. Moreover, it will be argued that those relations of authority that are observable in any given organisation are themselves rooted in a wider—and typically neglected—network of (significant) others whose expected attitudes are commonly used as a compass for agents engaging in relations of authority.

The first Sect. 10.1 offers a critical exegesis of the classic works of Max Weber on authority. It also presents the main features of my approach in contradistinction with Weber's. Authority, it is argued, is not merely a situation in which the will manifested by the ruler influences the conduct of others. If anything, it is first and foremost a circular relation of power whose legitimacy is recognised by participants. Section 10.2 focuses on the logical and ontological links between legitimacy, rights and obligations. It questions whether and how legitimacy can be reformulated in terms of obligations and vice versa. Authority thus appears to be a relation of power entailing an obligation to refrain from negating it. This does not mean that authority is unquestionable but rather that a relation of authority will first be questioned on those aspects which seem less unquestionably legitimate than others. Moreover, such questioning of authority must mobilise other, more

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fundamental, obligations which participants recognise. Section 10.3 examines how, at the micro-sociological level, relations of authority typically (though not necessarily) involve social roles. These are not to be confused with the personal identities of those agents who personify roles. Moreover, role occupation itself is best described as a process of personification that involves (while in turn constraining) people's creative powers. Key to this process of personification, are the internal conversations in which agents regularly engage. Section 10.4 traces the implicit, typically hidden, network of relations (real or imaginary) mobilised by internal conversations. It also offers guidelines for further empirical research on authority from a realist, relational, perspective.

10.1 Beyond Max Weber: Authority as a Legitimized Relation of Power

It has become the standard practice, when undertaking a sociological study of authority, to refer to Max Weber's works. Indeed, any undergraduate in the social sciences will have been exposed at some point to the three pure sources of authority (charismatic, traditional, rational-legal). Moreover, Weber's works exhibit, amongst other qualities, a laudable concern conceptual definition. Such ground-clearing facilitates greatly the works of subsequent generations of researchers, both when they follow the founding father and when they attempt to discern alternative paths.

The present chapter does not have space for a detailed critique of Weber's overall approach that combines ideal types and hermeneutics with an actualist ontology. I can, however, analyse Weber's definition of authority and use it as an (adjustable) spring board for my own theoretical purposes.

Weber on Authority, Domination and Legitimacy

In *Economy and Society*, Weber defines authority as *legitimate domination* (Weber 1978, 215). This formulation deserves some unpacking as Weber's use of the words 'domination' and 'legitimacy' is quite idiosyncratic. A short definition of these terms is proposed in the early pages of *Economy and Society*:

'A. "Power" (Macht) is the probability that one actor within a social relationship will be in a position to carry out his own will despite resistance, regardless of the basis on which this probability rests.
B. "Domination" (Herrschaft) is the probability that a command with a given specific content will be obeyed by a given group of persons.' (Weber 1978, 53).

The definition of domination is elaborated further on p. 946. As Weber states:

> To be more specific, domination will thus mean the situation in which the manifested will (command) of the ruler or rulers is meant to influence the conduct of one or more others (the ruled) and actually does influence it in such a way that their conduct to a socially relevant degree occurs as if the ruled had made the content of the command the maxim of their conduct for its very own sake. Looked upon from the other end, this situation will be called obedience (Weber 1978, 946).

Let us note immediately that Weber's definition of domination as a probability or as a situation is questionable. It is not because in a situation of domination the probability of compliance is particularly high that domination is itself a probability; similarly, it is not because there exist situations of domination that domination is itself a situation. Indeed, the rest of the passage indicates that Weber implicitly treats domination as a *relation* rather than as a probability or a situation. Furthermore, this definition of domination is based on a (discursive) opposition between ruler and ruled, and between power of command and obedience, thus obscuring the circularity inherent in relations of power (see below). Note also how domination presupposes an appropriation of the command by the ruled. This appropriation, however, is formulated from a third-person perspective marked by the use of an 'as if' clause. While this definition allows Weber to remain faithful to those positivist standards which he regarded as tokens of scientific rigour, it also casts a veil on the ruled's reflexive powers and on the micro-sociological processes in which they engage whenever they are involved in a relation of domination. More specifically, Weber does not examine the micro-processes through which people get to play and identify with social roles of domination and subordination. Neither does he refer to the network of those actors whose approbation (real or imagined) is sought whenever people make legitimacy claims.

Weber's conception of legitimacy is outlined in the early pages of *Economy and Society,* which offer both an enlightening characterisation and also include a definition:

> An order which is adhered to from motives of pure expediency is generally much less stable than one upheld on a purely customary basis through the fact that the corresponding behaviour has become habitual. The latter is much the most common type of subjective attitude. But even this type of order is in turn much less stable than *an order which enjoys the prestige of being considered binding, or, as it may be expressed, of "legitimacy'* (Weber 1978, 31. Emphasis added).

If we follow commentators such as Bullen (1987), Weber's conception of legitimacy is thought as an obligation rather than as a right. Thus, according to Bullen, Weber distinguishes between actions and states of affairs that are 'legitimate' (that should be obligatory), those that are non-legitimate' (for which there is neither obligation nor prohibition) and also ones that are 'illegitimate' (that should be prohibited). As will be argued in more detail below, such a typology raises a number of concerns: is there not a difficulty in calling 'non legitimate' those actions or states of affairs that are permitted without being obligatory? In other words, should not legitimacy be conceived of as a permission rather than an

obligation? More generally, are rights and obligations radically distinct notions or can each be expressed in terms of the other?

Four Theses on Authority

The rest of this chapter is dedicated to fleshing out a conception of authority that seeks to avoid the pitfalls identified above in the works of Weber: (i) ontological oscillations concerning the nature of authority; (ii) questionable conceptual links between legitimacy, obligation and right; (iii) insufficient attention to the processes through which people personify social roles that structure those relations of authority in which they are involved; and (iv) an excessive focus on the dyad ruler/ruler that obscures the network of (real or imagined) others whose beliefs and attitudes inform participants' claims to authority and legitimacy. For clarity's sake, the revised conception of authority I propose is presented in the form of four theses, each tackling one of the issues mentioned above.

First thesis: authority is a social relation and not a substance or a personal attribute, not to mention a (Weberian) probability. If it makes sense to say that authority *qua* power would not exist without the reflexive personal powers of people, it should immediately be added that the power of authority (as opposed to, say, the power of gathering fruit or fleeing from fire) also supposes a relation to an *alter* who takes account of *ego*'s attitudes and whose attitudes *ego* takes into account in a process of mutual adjustment. As will be discussed below, this other need not be a real, living, person. However, the existence of (a relation of) authority minimally supposes that *ego* be concerned with the plausible attitudes and reactions of that *alter* (real or imagined). Foucault's analytics of power (Foucault 1983) provide an attempt at moving away from a view of power as a substance held by persons. Indeed, he suggests that power is better conceived as a relation in which the actions of one person will influence the actions of another. If authority is a kind of power, then, just like power, it must be circular. In other words, even when relations of subordination exist (e.g., commander/soldier; doctor/patient; teacher/student), both parties are subject to the relation of power. The commander, the doctor, the teacher need the compliance of the soldier, the patient and the student. In this sense, relations of power can be contrasted with relations of sheer violence or passivity. As Foucault maintains:

> What defines a relationship of power is that it is a mode of action which does not act directly and immediately on others. Instead, it acts upon their actions: an action upon an action, on existing actions or on those which may arise in the present or the future. A relationship of violence acts upon a body or upon things; it forces, it bends, it breaks on the wheel, it destroys, or it closes the door on all possibilities. Its opposite pole can only be passivity, and if it comes up against any resistance it has no other option than to try and minimise it. On the other hand a power relationship can only be articulated on the basis of two elements which are each indispensable if it is really to be a power relationship: that the "other" (the one over whom power is exercised) be thoroughly recognized and maintained to the very end as a person who acts; and that, faced with a relationship of

> power, a whole field of responses, reactions, results, and possible interventions may open up (Foucault 1983, 220).

It is clear from this passage that a conception of power that is relational and circular draws attention to agents' attitudes and reflexive abilities. While the frequency of obedience or disobedience to explicit commands can offer one valid point of departure for such a study, it cannot substitute it.

Second thesis: authority is a social relation that parties see as legitimate. This follows logically from our initial (Weberian) definition of authority as legitimate power. However, the legitimacy of authority raises questions relative to what is meant by 'legitimacy', a word that has some ambiguity both in everyday language and in Weberian terminology. As was seen above, Weber defines legitimacy as a form of non-instrumental obligation. But should legitimacy be conceptualised in terms of obligations or in terms of rights (or *authorisations*)? More fundamentally, what is the ontological relation between obligations and rights? Are they fundamentally different sorts of social factors or can the one be reduced to the other? I will return to this question in the second section of this chapter.

Third thesis: the relation of authority is not merely a relation between persons. Rather, it is a relation between persons doing their best to personify a multiplicity of social roles. This point is perhaps where realist and pragmatist approaches to relations of authority diverge most visibly from most Network Theory approaches.[1] The third section of this chapter will discuss how the notion of a social role is articulated within three widespread theoretical frameworks: network theory; pragmatist social behaviourism and realist social ontology. This third section will also trace how different approaches to social roles secrete widely differing conceptions of authority.

Fourth thesis: the legitimacy of a relation of authority itself depends on a network of social relations that is typically wider than the specific organisations within which it can be observed on a day-to-day basis. The contours of this network can be grasped by questioning *whose legitimacy is being sought?* Indeed, unless we are willing to restrict the use of the word 'legitimate' to situations that every rational being would recognise as such, we are left wanting for a theory (or at least some ontological meta-theoretical ground clearing) of authority that would help us account for the common situation in which only some participants recognise a relation of authority while others would rather question it. This issue will be explored further in the later parts of this chapter. At this point, however, a couple of questions can be directly addressed to those network analysts who study the network of relations between agents by seeking correlations between the existence of such relations and the objective characteristics of agents and network.

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[1] The question as to whether Foucault's approach recognises social roles is open to debate. The majority of realist sociologists would rather contrast their approach sharply with Foucauldian studies of power (see for instance Archer 1995, 2000) while a minority of realist authors such as Al-Amoudi (2007a) and Marsden (1999) would argue that the later Foucault was implicitly relying on a realist understanding of society which includes positions and practices whose existence is both dependent on and irreducible to the personal powers of individual agents.

How can network analysis account for those reasons that cause agents to engage in (or avoid) certain relations? And how can it account for agents' adoption of certain reasons rather than others? Answering these questions entails moving from legitimacy's implicit obligations to authority's hidden networks.

10.2 Legitimacy, Obligation and Right

The concept of 'legitimacy' is not devoid of ambiguity. Indeed, when we say that X is legitimate we can mean either that doing X is permitted, or we can mean that doing X is not only permitted but ought to be encouraged, that people engaging in X ought to be looked upon favourably. Weber clearly chose the second of these meanings when he distinguished between three (rather than merely two) basic cases. For him, a social feature can be legitimate, or it can be non-legitimate, or it can be illegitimate (Bullen 1987).

This ternary distinction can be illustrated with an example from the author's ongoing fieldwork with *Occupy Geneva*, a political movement that was formed in October 2011 in Switzerland out of solidarity with the Spanish Indignados and the American Occupy Wall Street movement. Two striking features of Occupy Geneva are its spontaneity (in the sense that it all started with little planning on the part of its core members) and its explicit rejection of the legitimacy of 21st Century society's social and economic order. While formal rules have slowly emerged over the first couple of months, the early days were characterised by a willingness to keep them to a minimum, whilst relying on fraternity and common sense to regulate social interaction. Occupy Geneva held regular general assemblies which were open to all and in which any question could, in principle, have been discussed. During these assemblies, some participants brought a drink with them, such as a can of beer. Up until the day when a formal rule was voted against alcohol in general assemblies, drinking beer was deemed to be an acceptable form of behaviour and thus it was not illegitimate in Weber's sense. However, neither was drinking beer legitimate in the Weberian sense since it was not perceived as an essential, or even a favourable, feature of a binding social order. Since drinking beer at Occupy Geneva's general assemblies was neither legitimate nor illegitimate, a Weberian would have qualified it as a non-legitimate action. As we can see from this brief example, for a Weberian, legitimacy is characterised by obligation; illegitimacy is characterised by prohibition; non-legitimacy is characterised by right.

Intuitively, however, a contradiction can be sensed in saying that drinking during a general assembly is not legitimate although it is not illegitimate. However, this intuitive understanding begs for a theoretical reconstruction of the ontological relations that link obligation, prohibition and right.

When we say in common language that social feature X (say: the practice of drinking beer at a general assembly) is legitimate, we mean primarily that it is forbidden to forbid X. The reverse is also true: upon hearing that it is forbidden to forbid X, it can be concluded that X is a legitimate social feature.

We could thus write:
X is illegitimate (in common language) ⇔ it is forbidden to forbid X.

But the expression 'X is forbidden' also deserves further unpacking. When one says that X is forbidden, s/he means that people should refrain from doing X (if X is a practice) or engaging in actions that involve X (if X is an institution).

Hence: X is forbidden ⇔ one has an obligation to refrain from X.

It follows logically that, in common language:

X is legitimate ⇔ forbidding X is not legitimate ⇔ refraining from forbidding X is obligatory.

Conversely:

Y is obligatory ⇔ refraining from Y is not legitimate ⇔ forbidding to refrain from Y is legitimate.

The idea that forbidding subjects to refrain from Y is legitimate, rather than obligatory, indicates that, under the conception of legitimacy defended in the present chapter, ordinary people have a duty to comply with norms but not to maintain or enforce the social order.[2] Since legitimacy and obligation do not necessarily impede one another,[3] it is easy to imagine situations in which some, though not all, agents have a binding mandate to oblige others to do Y (or to forbid them from refraining from Y). Yet, this binding mandate is not analytical to the obligatory character of Y, think for instance of police officers. Legitimacy and obligation are not denied when people without such a binding mandate turn a blind eye, as long as they maintain a real power to forbid.

This reconstruction of the relation between legitimacy, illegitimacy and obligation helps us in putting the finger on a number of avenues available to those willing to move beyond Weber's categorisation—beyond the trivial fact that everyday language treats legitimacy as primarily a matter of authorisation rather than obligation.

First, the ternary distinction is unnecessary and can be expressed equally rigorously by mere reference to legitimacy and obligation. Second, although legitimacy is immediately a matter of right rather than one of obligation, it is nonetheless possible to reconstruct it as a matter of obligation. Authority thus

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[2] I am aware that this assertion is not uncontentious. In Switzerland, where I wrote this chapter, ordinary citizens often go at great lengths to ensure their neighbours respect their social obligations and that shortcomings are duly punished. I can only leave it to the reader to decide whether such an attitude is an instance of ethical behaviour and exemplary citizenship or whether it involves an unwarranted identification with the roles of law enforcers.

[3] Note that obligation implies legitimacy while the reverse is not necessarily true.
X is obligatory => X is legitimate (in the absence of conflicting obligations).
Yet: X is legitimate $\neq>$ X is obligatory.
This asymmetry is at the root of a number of micro-social games, such as those consisting in hiding behind an obligation to justify an otherwise illegitimate social feature. The first relation explains why people can find it so reassuring to be told what to do. As long as the order is valid, what they do is legitimate. The second relation shows why Weber's terminology is so misleading.

appears to be a relation of power which participants have an obligation to refrain from negating. This does not mean that authority is absolutely unquestionable but rather that a relation of authority will first be questioned on those aspects which seem less unquestionably legitimate than others.[4] Moreover, such questioning of authority will mobilise other, more fundamental, obligations which participants recognise. This point will facilitate our analysis, in the next section, of the link between relations of authority and those social obligations that are constitutive of social roles (Sect. 10.3).

Second, our reformulation of legitimacy in terms of obligations indicates network features that would remain unnoticed from a strictly Weberian perspective. In particular, it indicates that for a social feature to be legitimate for an ego, there must be an alter (real or imagined) who does some forbidding. It is possible to conceive a limit case in which the same person takes the role of authorising and forbidding; for example, when activists of the Occupy Geneva Movement started wondering to themselves whether alcoholic drinks were acceptable at general assemblies. Yet, even in such limit cases, the person's reflection proceeds in turns and the subject must consider herself as an object to herself whenever she authorises herself to do X while, by the same token, obliging herself to refrain from forbidding X. And this is a limit case; the central case is rather that of people imagining either a specific other (say, the General Assembly's convenor in the Occupy Geneva movement) or an abstract member of their community who would express a judgement of legitimacy that reflects the basic principles of the whole community.

10.3 Authority and Social Roles

Obligations and Social Roles

Obligations, like every feature of the personal, social and cultural realms are both structured and potentially subject to change at any moment. Because of this, obligations have a past and a future. They stretch through a certain period of time, variable in length, but only relatively enduring. Thus, if I promised to meet a friend in the pub every Wednesday evening, then I should still be bound by the obligation I had contracted in a week's time. Yet, obligations are seldom eternal and their continuity is relative: some day, I may have good reasons to stop feeling obliged to attend that weekly pub meeting. Exploring these reasons gives us some insight into the articulation of obligations between the personal, social and cultural

[4] Establishing this point firmly necessitates more space than allowed here. An ontological study of how authority is challenged could benefit from such works as those of: Lakatos (1976) on mathematics; of Kuhn (1996) on paradigms (see also Latsis 2005); of Foucault (1972) and Laclau and Mouffe (2001) on the fundamental incompleteness of social forms and the artificiality of their unity.

realms (see Archer 1995 for the distinction between personal, social and cultural properties). For instance, I may decide to quit drinking or to take my own promises more lightly (personal realm); my relation with that friend may get colder over time (social realm); or the practice of meeting in pubs can become unfashionable and other places might become more attractive as meeting places (cultural realm).

This short illustration indicates that the relative continuity of obligations over time presupposes relative continuities in the personal, cultural and social realms. In the personal realm, a continuity of concern (for this friendship), and the values it entails, is presupposed. Indeed, if my (positive) valuation of the pub as a meeting place is transformed, then I may feel inclined to suggest a different meeting place; if my valuation of punctuality is transformed then I would feel inclined to show up late; if my concern for my friend's well-being withers, then I may simply not show up without further warning!

In the cultural realm, a continuity of meaning relatively to the content of our promise is also presupposed. If, say in 20 years' time, virtual meetings become the convention, then I may feel inclined to suggest an internet meeting while expecting a positive response from my friend. Similarly, if the word 'pub' comes to refer to what we currently call cafés, then the obligation might also be correspondingly affected. In short, my obligation is internally related to cultural emergent properties.

In the social realm, obligations presuppose—and in turn constitute—relatively enduring continuities that can be located at the level of social roles and of the relations between them. Back to the example of meeting a friend in the pub; the social roles I personify bear on my being subject to the obligation of attending the meeting. For instance, if it is accepted that friends ought to keep their promises and care for one another, then I would have some obligation to attend and further obligation to let my friend know promptly in case of my not going. I have argued elsewhere (Al-Amoudi 2007a, 2010) that a social rule is actually a particular kind of rule that is characterised by its internal relation to social relations between persons personifying social roles.[5] The same can arguably be said of obligations: not all obligations are social and my obligation towards my friend may not always be social. On the other hand, it becomes a necessarily social obligation as soon as it is internally related to a social role. That is, when my ability to personify a role is threatened by my inability to respect that (social) obligation.

Understanding how obligations and social roles are mutually constitutive is of import for the present study. First, because if roles are excluded from the picture, there is a risk of interpreting the normative commitments of people merely in terms of their personal attributes or in terms of the position they occupy within a network of relations. What would be missing in such a picture is an appreciation of the import of people's efforts at playing their various social roles competently.

[5] See Al-Amoudi (2010). NB: I used in that paper the notions of role and position interchangeably. This is not the case in this chapter.

These acts of personification are irreducible to the patterns of exchange in which people engage and cannot be subsumed under any personal data the inquirer may gather about participants. In other words, if I take my role as an employee seriously and if I am running late on a piece of work, then I may feel obliged to postpone that pub meeting. This obligation, stemming from my social role as an employee, depends on but cannot be explained away reductively by reference to my personal integrity or the fact that I have been meeting that friend every week over the last 2 years. Second, understanding the relation between obligations and social roles opens the door to a study of the morphogenesis of relations of authority that spans beyond mere agreements between two individuals. An ontological study of the links between roles, obligations and authority enables empirical studies of authority that attend to the morphogenesis of social roles and of the relations between them, rather than mere reconfigurations of personal networks linking individuals but without making reference to the roles they are personifying.

One difficulty for such an ontological study is, however, that the notion of a social role is employed with considerable variation in the literature. In the following sections I retrace its meaning, usage and import in two broad bodies of literature: network theory and realist social ontology.

The Notion of Role in Network Theory

Network theorists distinguish between roles and positions. In their language, a position is a set of actors who have similar relations to all other actors in the network (Lazega 2007, 59). On the other hand, a role, or a role set, is the set of those relations as opposed to the individual actors who personify them. Network Theory leaves us, however, with the following questions:

Question 1: Are positions really of the same nature as persons? Approaches reducing positions to those people who occupy them (or vice versa) have been criticised by Archer (1995, 31–163). The gist of the argument is that, although their continuing existence and structure depend on one another, positions, relations and people are different kinds of things with different properties and powers and are therefore subject to differing temporalities.

Question 2: Are roles merely identifiable by the fact that a person engages in regular transactions with a specific set of others? If my understanding of network theory is correct, then a nurse working exclusively for a patient and a cleaner working exclusively for that same individual would be involved in the same roles *strictu* sensu. Conversely, two nurses working with different patients would be playing different roles. This result is not only counter-intuitive, it also casts doubts on the relevance of the use of terms in network theory. More importantly, it again prompts the question of what more robust conception of a role should be adopted by network theorists.

Question 3: Can there be roles without some form of recognition by the person personifying them? In the conception of a role above, it is sufficient for two persons to engage in a similar pattern of relations to hold that they play similar roles. This would imply that they may be personifying a role without even knowing. We shall see below how a plausible distinction between roles and positions might evolve precisely around participants' recognition (Archer 2000). While persons with similar vested interests may occupy the same position, they do not hold the same role until they become conscious of their shared interests, decide to defend them and accept those obligations implied by their preservation. While being poor is a social position, not all the poor feel sympathetic to protest movements. And even fewer amongst them accept to commit time and effort.

Question 4: Are roles immediately occupied by individuals by the mere fact of engaging into relations of exchange with others? Or is the process of playing a role a fragile and incomplete act of personification? And if so, how is this vulnerability exploited within relations of authority?

Actors and Roles in Realist Social Theorising

It is noteworthy that, although the early works on realist social ontology, such as Bhaskar's *Possibility of Naturalism* (1998), paved the way to subsequent realist developments, they also treated social positions and practices as slots which individuals occupy immediately. Such works did not problematize, or enquire into, the subtle mechanisms through which individuals may engage and commit themselves to practices, positions and roles (for a critique from a realist Foucauldian perspective, see Al-Amoudi (2007b). More recent developments, such as those of Archer since *Being Human* (2000, see also Archer 1995, 2003, 2007, 2012), open the black box of role personification. By the same token, they also address the four questions we have directed to network theory above.

Archer (2000, pp. 283–287) establishes a distinction between agents and actors. While the former are characterised by their actions within a collectivity, the latter are characterised by their identification with and personification of particular roles. Since the same person is typically both an agent and an actor, the question is set in terms of the dialectical relation between one's personal identity and one's social identity. Unless we fall back on the contractualist time paradox of would-be actors picking a role with no good reasons, except those they will find good *ex post*, we must admit that would-be actors are already endowed with a personal identity—one that is incomplete and malleable. The pre-existence of personal identity is what accounts, in Archer's argument, for the fact that actors are capable of personifying a social role rather than merely animating it. Agents (*qua* would-be actors) take up a new role by reflecting on their past experiences in the natural, practical and social realms. In turn, once they get involved in a role, they discover

the constraints and opportunities this role imposes and offers for the development of their personal identity. Thus, young Jane who enjoys horse riding may initially want to work in a stable. As she learns more about the job and starts experimenting with it first hand, she discovers that it pays poorly and leaves little time for rest and leisure. This newly discovered constraint is of import for other concerns which she also holds to be important, such as spending time with her friends or dining out expensively. In this light, Jane will have to choose between abandoning some of her personal concerns (relative to her personal identity), or looking for another role (another social identity) or tailoring her investment in that role (thus producing an alignment of personal and social concerns).

This exceedingly short summary of Archer's account helps answering the first and fourth questions I have raised above. Positions are not the same kind of things as persons, though the two are related dialectically. And the occupation of roles is never immediate but is the fragile result of agents' creative attempts at personifying them while considering the totality of their concerns.

A slightly more detailed discussion is needed to answer question 2 (whether roles are defined exclusively by those transactions they entail?) and question 3 (do roles presuppose a prior recognition from part of those who personify them?) If a lead is taken from Archer (1995, 2000), then question 2 might be answered along the following lines: although transactions and relations are vital for the persistence of roles over time, the latter cannot be defined by those regular transactions that they entail, nor by those relations that allow for such transactions to occur in the first place. Rather, roles are characterised as bundles of obligations; vested interests; penalties and rewards (Archer 1995, 187). Archer (2000, 286) also makes an interesting distinction between social positions and roles:

> to take an example from institutional morphogenesis, when educational control was exclusively in Church hands, this created exigencies for a number of groups and where such problems represented a clash of beliefs, an obstacle to a nascent social movement, or the exclusion of a particular category, these could only be interpreted as impinging upon roles by over stretching that concept to turn "believer", "radical", or "nouveau riche" into roles (Archer 2000, 286).

While 'believer', 'radical' and 'nouveau riche' all entail vested interests and obligations, they remain labels for groups of individuals until they are recognised as such by their own members. By contrast, the interplay of these groups led in turn to the morphogenesis of 'an array of new roles—teachers, administrators, inspectors and Ministers.' (Archer 2000, 286). Thus, the answer to question 3 also has to be negative: an observer looking at people from a third-person perspective can identify vested interests, regularities of practices and even commonalities of obligations (for instance by studying the systems of rewards and punishment at play). And participants may well be unaware of their vested interests, or unaware that their practices follow certain patterns. They may also be unaware that geographically distant persons share their obligations. What they cannot ignore, however, is whether they are personifying a role that crystallises these interests, practices and obligations into a social identity that they are willing to embrace.

10.4 Authority's Hidden Networks

Network theory has offered us a point of entry into roles and obligations and realist social theory has offered much needed correctives. The obligations relative to authority are typically, though not necessarily, bundled into social roles. The latter are in turn personified by actors who rely on their own reflexivity in the form of internal conversations that may be carried out in various modes (on this particular topic, see Archer 2003, 2007, 2012). Because the internal conversation represents both a central social process and a key difference between realist ontology and network theory, it is worth clarifying it further. In particular, I want to ask whether or not the internal conversation presupposes a network of social relations and how this can be traced empirically. To this end, I will take a short leap into the past and discuss George Herbert Mead's theorisation of the morphogenesis of reflexivity through a succession of role-taking exercises (Mead 1967, [1934]).

Role-Taking in Pragmatic Philosophy

Mead, one of the founding fathers of American pragmatist philosophy, does not use the notion of role as such. However, he relies extensively on the related notion of role-taking.[6] The latter is a characteristic feature of human interaction (as opposed to interaction amongst insects and higher mammals) and is described as: 'assuming the attitude of the other individual as well as calling it out in the other' (Mead 1967, 254). The particular significance of role-taking lies in the fact that it enhances the individual's control over his own response and improves co-operative activity. Indeed, even criticism—of self and others—is closely related to role-taking: a critique formulated by a person is always addressed from a particular standpoint and with the expectation of certain reactions on the part of those to whom it is addressed. Conversely, a gesture (including uttering a sentence) that would be uttered without taking the attitudes of others into consideration cannot be meaningful, or can only be so for spurious reasons.[7]

Birds give us some insight as to the rudimentary mechanisms involved in role-taking (Mead 1967, 360). Each note they utter stimulates them and others into producing the next one. Yet, contrary to humans, birds do not anticipate the reaction of the other bird, not to mention their own (future) reaction. With humans,

[6] Purists will notice that I dropped the circumflex in Mead's expression. This is due to editorial constraints. It may be worth noting that Meadean 'rôle-taking' does not presuppose exactly the same conception of (potentially unstable and heterogeneous) social communities that is presupposed in Archer (2012, pp. 87–93).

[7] A well-known joke can perhaps illustrate this point. A madman is satisfying a natural, though intimate, urge in the middle of the asylum courtyard. As the warden enters, the madman stops and pulls up his trousers. The warden is pleasantly surprised by this reaction and asks the madman to elaborate on the shame he felt. 'I don't know' responds the madman, 'I just felt I was done…'.

instances of role-taking are particularly visible in children's play. These games (such as play with dolls) reveal how ready most children are for the expression of parental attitudes in situations similar to those they imagine in their games. Through the sequence of interactions with and between dolls, the child stimulates in herself the responses of adults, that is, responses that belong in a certain sense to another. This process of role-taking allows Mead (and other pragmatist philosophers) to account for the relative stability of the social order without recourse to direct imitation of behaviour. There is a process of imitation involved but it is an imitation of attitudes, which allows for improvisations that are truthful to the 'principles' of those serving as role-models.

Mead's notion of role-taking provides a crucial insight into the functioning of the internal conversation. The latter does not merely involve a self (as I) conversing with herself (as Me) but also involves a (Meadean) You towards whom the internal conversation is oriented and whose attitude and plausible reactions are taken into account as the internal conversation progresses. Furthermore, the internal conversation does not necessarily take the form of a conversation of oneself with oneself imagined in front of another. Rather, the central case (especially in the early phases of the formation of the self) takes the form of a conversation of oneself with several imagined others.

The import of role-taking for the present discussion of authority's networks should now be clearer. Social roles are personified by their human actors. Following Archer, this personification necessitates an internal conversation that seeks to align the actor's personal identity (held as an agent) with the social identity provided by the role. However, following Mead, this internal conversation also mobilises countless attitudes which the actor has encountered during her life, both in others and in herself. This prompts novel research questions and associated methodological considerations for a study of the roles and networks involved in any relation of authority. To these questions we now turn.

Retracing Authority's Hidden Networks

Personifying a role presupposes a network of relations of authority that spreads beyond the specific organisation where it is located. In this last subsection I provide a few indications as to how this 'hidden network' can be traced for the purpose of an empirical study of relations of authority.

Network theorists are eminently aware of the philosophical and methodological difficulties relative to specifying the boundaries of those networks they are attempting to analyse. Indeed, we agree wholeheartedly with Lazega (2007) that

> The choice [of a network's boundaries] depends on the process that is being studied *in fine*. Indeed, there is no one-size-fits-all categorization of the world that would allow examining all social processes and phenomena at once. Each and every delimitation at the meso-level enhances the visibility of some processes at the expense of others (Lazega 2007, p. 22. My translation).[8]

Our ontological ground clearing can provide some guidelines as to how the boundaries should be set and as to what aspects of the network should be examined with particular attention.

(i) *Specific attention must be devoted to participants' belief in legitimacy (or illegitimacy).* Since authority is a relation of power that is viewed as legitimate by participants, any study of authority should interrogate the reasons why participants comply with those relations of power in which they engage: is it a matter of calculative interest? Or do they view them as legitimate, and for what reasons? Similarly, since relations can be complex: what aspects of the relation are considered as particularly legitimate and which are less so?

(ii) *Specific attention must be dedicated to social roles.* Observing individuals engaging into transactions is fundamentally insufficient. Similarly, attempts at reconstructing roles on the mere basis of those transactions in which participants engage are likely to be unconvincing. These may at best indicate patterns unknown to participants, however, they cannot account on their own for the normativity of social roles. That is, for the bundle of obligations they carry and, conversely, for their significance relative to relations of authority between actors. Ethnographic fieldwork should be used to explore the various roles in which participants engage. Typically, every participant is committed to a number of (often conflicting) roles. Empirical studies of authority need to explore what obligations and rights these roles entail, what conflicts emerge between roles, how participants accommodate (or otherwise) to such conflicts and how much of their personal identity they are willing to invest in each of their roles.

(iii) *The contours of the network of authority need to consider role taking.* The visible network of authority is provided by the regular transactions of participants and, once social roles are duly recognised, by those roles that are internally related to them (for an analysis of internal relations see Lawson 2003, pp. 227–228, see also Al-Amoudi 2010). There is, however, a much less visible network that is provided by actors' role-models. If our brief Meadean considerations are taken seriously, then a network analysis of relations of authority should also include role-models, real or imaginary, and specify which attitudes are generalised and transposed by actors.

[8] 'le choix [des frontières du réseau à étudier] est fonction du processus que l'on cherche à examiner in fine. Certes, il n'y a pas de découpage valable pour l'examen de tous les processus et phénomènes sociaux à la fois ; chaque découpage au niveau méso assure la lisibilité de certains processus au détriment de la lisibilité des autres.' (Lazega 2007, p. 22).

(iv) *A diachronic approach is needed to understand participants' socialisation.* Since socialisation is neither immediate nor automatic, this prompts the question as to how participants learned to interact within those relations of authority they must face in their activity. Thus, interviews should probe them about those past experiences in which they were confronted with similar situations. This line of questioning is expected to flesh out past interactions in participants past-professional experiences, in their social *milieu*, in their university training and in childhood experiences of family and friendship (as well as hardships).

Concluding remarks: towards empirical studies of authority's morphogenesis

I have endeavoured to offer a succinct ontological argument about authority. Its purpose is to clear the ground for future empirical studies. It has been proposed that Max Weber's pioneering definition of authority could be improved in several ways: by considering its relationality and circularity; by attending to the subtle relation between obligation and legitimacy; by recognising the import of social roles in the morphogenesis of authority relations; and by attending closely to the micro-processes of role-taking.

These ontological considerations carry implications for empirical studies of authority: (i) investigate the reasons why participants deem certain relations more legitimate than others, and certain aspects of them as more legitimate than others; (ii) attend to the normativity constitutive of social roles; (iii) study the visible network provided by interactions and internally related roles but study as well the 'hidden network' provided by role models; (iv) interview participants in-depth as to their past biographies and study how past relations contribute to shaping present ones.

The realist conception of authority offered in this paper differs from the (interpretive yet positivist) one proposed by Weber in a number of ways. First, it aspires to trace real mechanisms and processes rather than merely to describe configurations of authority through such heuristic categories as ideal types. In a sense, it is perhaps more subtle too as it attends to significant variations within a single ideal type or a combination of them. For instance, while warfare leadership and social activism can both be characterised by their reliance on charismatic authority, their implicit values, roles, networks and dynamics differ greatly. Second, it can account for the frequent situations in which power is so diffused amongst participants that it becomes difficult to discern a 'ruler' from a 'ruled'. Moreover, even in those situations where the asymmetry of power is indubitable, the proposed approach allows us to account for the (admittedly limited) authority of the ruled over the ruler. Finally, it does not assume that groups are homogeneously structured by a single form of authority or a combination of them. Rather, it attends to differences and conflicts between participants within the group.

One last short example from the author's ongoing study of the Occupy Geneva movement might illustrate the difference between a Weberian approach and an ontologically informed study of authority's morphogenesis. A Weberian analysis

would usefully point out that the Occupy Geneva camp displayed elements of charismatic, rational-legal and traditional authority. It would also point out that charismatic authority was prevalent in the early days, although it was slowly replaced (without ever being suppressed) by rational-legal authority and, to a lesser extent, by traditional authority.

The approach offered in this paper supplements Weberian analysis by attending to the evolution of the roles and role-taking attitudes of participants. It studies the evolution, sometimes over short periods of time, of those roles being personified and of those role-models whose attitudes are adopted by participants and whose approbation is sought to secure the legitimacy of their actions. The displacement of charismatic authority by rational-legal authority can be accounted for through a study of the gradual introduction of formal rules within the Occupy Geneva movement and through a study of the discussions and conflicts that followed. While all participants expressed open distrust of 'bureaucracy', some were favourable early on to formalising the basic rules of conduct expected during general assemblies through a written charter whereas others were much less keen to do so. The opposition between both groups is difficult to understand without some reference to the generalised other each was trying to please. Those in favour of the charter were worried about the gaze of the media, the police and those right-wing politicians ready to close the camp. Those against the charter were particularly worried precisely because they believed they ought to combat or ignore, rather than seduce or accommodate, the press, the police and politicians.

One obvious limitation of this proposed approach is that it must abandon any pretension at mapping an entire network exhaustively. Moreover, extensive mathematical crunching is expected to be impossible from the outset. The hope is that such an approach, centred on local networks, will nonetheless provide a thick description of relations of authority in specific social contexts and that it will result in maps that may include surprising rationales and unexpected participants (especially role models).

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Chapter 11
Morphogenesis and Social Networks: Relational Steering Not Mechanical Feedback

Pierpaolo Donati

11.1 Social Change and Morphogenesis

The Topic

Why do we speak of the 'morphogenesis' of society? What is morphogenic society? The concept of morphogenesis (MG from now on) in the social sciences can be traced back to system theory. This concept became problematic once research showed that social networks cannot be treated as (i.e. reduced to) systems,[1] due to their specific relationality. Along the way, the relational nature of MG was revealed ever more clearly. The products of these recent developments are now reflected in all the sciences. In biology the genome is described in relational terms (the very significance of every DNA sequence is relational). In sociology social phenomena—including 'society'—are explained as relations emerging from relationally contested contexts. In this chapter, I wish to emphasize why and how social MG is wholly different from morphogenesis in biology. In sociology, the new perspective involves moving beyond a definition in structural–functional-system terms of the concepts of variety, selection, positive/negative feedbacks, and the stabilization processes that go to realize MG. It is necessary to redefine these concepts from the perspective of a relational paradigm of MG. The task of this paradigm is to explain and understand the production of a new society as a process of MG that, amongst the dilemmas and discomforts generated by

[1] As far as I understand, Buckely subsumed social networks analysis under his system theory: "..the system model has the potential to synthesize the interaction models into a coherent conceptual scheme—a basic theory—of the sociocultural process" (Buckley 1967, 81).

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modernity, tries to manage social change by guiding its outcomes through various attempts of relational steering, whose success is highly improbable anyway. These attempts are characterized not so much by the use of automatic positive or negative feedbacks (which operate, nonetheless) but by recourse to relational feedbacks that generate emergent social effects. In many respects, the emerging society has to look for remedies to the negative outcomes of modernity, to the extent that the latter has been governed by the principle of 'institutionalized individualism', by reversing this principle into a principle of relationality. The incoming morphogenetic society is society that has a 'relational matrix' run by a many-valued and transjunctive logic.

Different Paths of Social Change

Can we distinguish the concept of social MG from that of social change? Some scholars believe that MG is an analytical scheme for understanding any social change. Other theorists think that MG is a special case of social change. MG happens when new forms emerge, and the emergents are stabilized as structures that operate for a certain span of time. In any case, in order to happen, social MG needs time, and time must have a certain *durée* so that the process can generate an organizational form.

If we take into consideration a certain structural configuration X at time T^1 and then follow it over the passage of time, it can evolve in four types of direction Y (Fig. 11.1):

(1) X → YS (Morphostasis): the initial structure X simply reproduces itself into structure Y;
(2) X → YD (Developmental MG): the initial structure X develops according to an autopoietic evolutionary process that leads to a more elaborated structure Y, but having the same system operations (=growth);
(3) X → YI (Purely Interactional MG): the initial structure evolves into interactive networks Y which are not stabilized and have the characteristics of dissipative or chaotic phenomena[2];
(4) X → YG (Creative MG): the initial structure X transmutes into an emergent form Y (elaborated structure), having properties and powers that are different from X, with a certain temporary stability.

The difference among these different directions of social change resides in the ways in which variety is produced and new chances (opportunities) are selected in the T^2–T^3 phase of the morphogenetic process. Here logics for selection, which

[2] 'If the elements [of a set, ndr] are so loosely related that there is an equal probability of any element or state being associated with any other, we speak of 'chaos' or complete randomness, and hence, lack of constraint.' (Buckley 1967, 63).

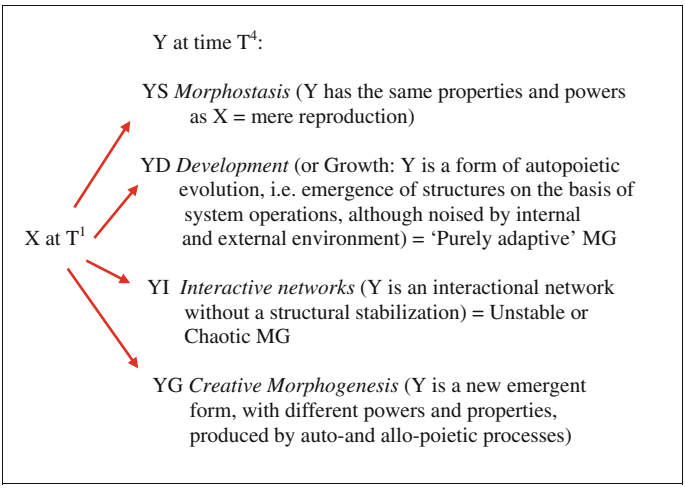

Fig. 11.1 Different paths to social change (from structure X at time T^1 to structure Y at time T^4)

can be of various types, come into play. For example: the choice of varieties follows criteria of compatibility or cooperation among themselves (=organic development), or it relies on competition with one another in such a way as to make the strongest, the most efficient, the most efficacious variety the winner (Darwinian selection). Often, however, the increase (enhancement) of opportunities does not follow a precise logic, but only specific, local and particular goals without an overall logic other than the 'creation of variety for the sake of variety'. In any case, selections are conditioned by a context ('surrounding conditions') which always leaves margins of freedom to the agents/actors.

Organic development (as in Durkheim) belongs to the world of the past. The logic of competition is typical of the market in the modern sense. What emerges after the modern is the logic of selection on the basis of situational needs that require the creation of new opportunities.[3] What does this mean?

To speak of an emergent logic of opportunities in hyper-modernized societies does not mean merely to see the individual confronted with his/her possibilities of choice because, if choices are the fruit of subjective choices alone, the nature of social processes remains completely indeterminate. Certainly, the individual makes his/her choices and creates social relations. But he/she does it within a life course that obliges one to use distinctions. How are these distinctions made? We can identify different logics for distinctions depending on which choices of opportunities are made: (i) *competitive and non-competitive logics*; (ii) *individual logics and relational logics*; (iii) *instrumental logics and expressive logics* (and so on).

[3] On the 'situational logic of competition' and the logic of opportunity, see Archer (1988, 1995, 2012, *passim* and conclusions).

The logic of late modernity is that of competition based on 'equal individual opportunities' (for example, between men and women, among young people who come from families of differing social status, etc.). Is this still valid, or is there space for non-competitive, relational, expressive logics? The passage from modernity to after-modernity is conspicuous for its orientation toward competitive, relational, and expressive logics.[4]

The latter operate in what Gustafsson (2011) calls 'swap framework', in which the choices (relations of preference) are made by continually exchanging one alternative with another, without privileging any one of them.

We can ask: does a methodology to assess the emergence (and, later, the institutionalization) of morphogenetic discontinuity exist?

I suggest a possible scheme of analysis (Fig. 11.2) based on five conditions.[5] What distinguishes the different outcomes of the MG process varies greatly in the figure's cells when read as rows. In particular, it should be observed that adaptive MG's outcome (development understood as growth) is not an open-ended sequence, but the reiterated dynamics of a blueprint: the recapitulation is for the process, not its actualized elements or products of distinction (Brown 1994, 561–562).

According to most theorists, a process of effective MG is realized if and only if the outcome (elaborated structure) is a 'whole'. This makes sense if we look at it from the viewpoint of the system paradigm as parts/whole. But if the latter does not apply, does it mean that there is no MG? In other words, if the outcome is a dynamic network that differentiates itself through operations that do not follow criteria of system differentiation, should we say that the process of MG is ineffective or a failure?

Here the theory of social networks comes into play. System theory and the theory of social networks must contend with each other.[6]

Dirk Baecker (2009) has compared the two theories, asserting that the focus of system theory is on the problems of difference and reproduction while network theory addresses problems of identity and control. The former privileges communication, the latter, action. In his view, while system theory is linked to the

[4] I use the term *after*-modernity to mark the deep discontinuity with modernity, while the term *post*-modernity indicates the outcomes of late modernity. In my perspective, to say that we are moving 'from modernity to morphogenetic society' means that MG is becoming the form (the directive distinction) of the next society, i.e., its principle of social change, in so far as the unbound pluralization of opportunities and choices becomes the predominant value. The social becomes 'normatively morphogenetic', in radical discontinuity with the basic features of modernity, such as the ideology of linear progress and what is termed 'institutionalized individualism'.

[5] The scheme has been constructed keeping in mind the five conditions proposed by Elder-Vass (2005) and critically reviewed by Archer (2011).

[6] Most system theories absorb social networks into the system (because they treat networks as stemming from systems and as the modalities through which systems change), while the opposite is true for most social network studies (to them systems are a peculiar aspect or a temporal phase of the non-systemic dynamism of social networks).

	Different path to the process from X at time T1 to Y at time T4 (YS = morphostasis, YD = developmental MG, YI = purely interactional MG, YG= creative MG)			
Conditions (criteria of distinction between the initial structure X and the outcome Y)	*Morphostasis* YS	*Development or System Growth* YD	*Purely interactional networks* YI	*Creative Morphogenesis* YG
i) what are its constitutive characteristic parts?	Parts are simply reproduced as they were previously	Parts change in accordance with the 'blueprint' of system structure X	Parts change without establishing new stable relationships	Parts are changed because they are defined by new relationships
ii) do social relations make a whole or an unorganized heap (pile, bundle)?	The whole remains identical to itself	The whole is produced as a new evolutionary plan	The whole collapses into an arena of interactions	The whole is generated as an emergent outcome
iii) how can we explain the generative mechanism upon which its properties and powers are based?	The generative mechanisms are self-reproducing, so that structures cannot be changed	The generative mechanisms are devices inherent to the blueprint	The generative mechanism are network mechanisms	The generative mechanisms are inherent to the relationality of each emergent effect
iv) morphogenetic account of the production process	No MG	System adaptive MG	Dissipative, unstable, chaotic MG	Creative MG or Relational MG
v) an account of how it can be sustained and be relatively enduring (capable of stability)	Stability is the *raison d'être* of the structures (homeostasis)	Stability is delegated to an interplay between positive and negative feedbacks	Stability cannot be achieved (or is only 'local', not for the whole, or is a temporary side-effect)	Stability is delegated to relational feedbacks (relational steering) with the presence of positive and negative feedbacks

Fig. 11.2 Different paths of MG as a process (not as an outcome)

epoch of computing's formative years, the latter theory was developed in the internet era. He hypothesizes that today a network is emerging that rests on three systems (communication, consciousness, life) which are able to reproduce themselves. In this way, in his opinion, system theory and network theory can be integrated. But I wonder: is a network society made of communications, but lacking concrete social relations, possible?

Jan Fuhse (2003, 2009) combines the theories of Luhmann (on communication) and of Harrison White (on social networks) and asserts that networks are phenomena emerging from processes of communication that constitute themselves as structures of meaning. Social norms are expectations that are formed in narratives ('stories') from which social relations emerge that structure interactive episodes. His thesis is that relational stories create social networks through the reiteration of communications (in which the 'utterance' has the greatest influence). However, it

must be observed that it is not at all clear how the structures of meaning that 'make' social networks can be stabilized.

These scholars are emblematic of how, when a constructivist perspective is adopted, the sense of social relations is hollowed out and distorted. The convergence between system theory and the theory of social networks takes place along a sequence [Parts/Whole (organic-biological, Buckley 1967, etc.) → System/environment (Parsons 1961, 1978) → Theory of communication (Bateson 1972, second cybernetics) → Autopoiesis (Luhmann 1995, 1997) → Network theory (network analysis, Latour's ANT 2005)] in which sociological knowledge loses sight of the properly human qualities of social relationality.

In my opinion, in all versions of system theory, human relations appear deficient in one or more of their components.[7] Human relations need these riches; otherwise, they degrade into something else (because they are reduced to communications, to stimuli, or noise, etc.). Thus, it is necessary to revisit the convergence between system theory and network theory in light of how the social relation is understood.

Rethinking Social Relations Beyond Functionalism and System Theory

My critique is addressed to Luhmann above all, who denied that sociology can be based on the concept of social relation. I would like to clarify Luhmann's principal fallacies, which are at the origin of the fallacies of system and network theories in much of contemporary sociology.

In the first place, Luhmann (1995) uses the concept of social relation in a way that is ambiguous and lacking adequate theorization. In order for system theory to be sensitive to interactions, it is necessary for the social relation to be described as a reality that emerges from a structured set of interdependent interactions, something that Luhmann does not do.

In the second place, Luhmann is also ambiguous when it comes to the concept of network, which is absorbed into the concept of system. Bommes and Tacke 2007 have shown that Luhmann uses two meanings of the concept of network. The first concept is understood in a broader sense. It grasps a central feature of the self-reproduction of social systems via communication, i.e., their network-like mode of operation. According to this understanding, it is not social systems themselves that are conceptualized as networks. In his second use of the concept, Luhmann supposes the existence of *social networks*, limiting their scope, however, to regionally

[7] By components of the relation, I mean the organic components (*bios*) that sustain the relation, the situated goals of the relation, the norms that regulate the relation, and a value pattern that orients the relation. See the relational theory of AGIL according to Donati (1991, Chap. 4) against Luhmann (1988a).

restricted, particular phenomena within world society and omitting the inevitable theoretical consequence: that a social network can only reproduce itself by drawing boundaries, i.e., by operating as a social system itself. The two concepts of network used by Luhmann are irreducible one to the other, and both demonstrate an insufficient understanding of the notion of social relation.

In the third place, Luhmann erased the importance of the cultural component in social relations, what he called, in a deprecatory manner, the Geist, the spirit that human persons express in symbolic creativity. For him, culture is only a by-product of communicative interactions; it is not a reality of its own kind but is only a dependent variable. Instead, it is necessary to notice the difference between the MG that occurs within a cultural tradition (as understood, for instance, by Alasdair McIntyre or Charles Taylor) and the MG that occurs without a cultural tradition (in a context that is wholly culturally unbound). Luhmann supposes that future society will sweep away all cultural traditions in their entirety, but this has been proven wrong by innumerable empirical studies which show that cultural traditions are 'finite provinces of meaning' that retain a fundamental importance, have their own inner dynamic, and are not static. Empirical investigations demonstrate that life-styles are always potentially influenced by the theological and 'religious matrix' that every culture carries within itself in an explicit or implicit manner (Joas 2010); welfare regimes are different because their cultural matrices are different (Oorschot et al. 2008).

Conversely, one theory that asserts that culture has a determinant influence on MG is Maruyama's (1960a, b, 1998, 2003). Without doubt, this author—to a greater extent than Luhmann—understands the importance of the cultural factor, which generates one or another type of MG. Above all, he takes into account the fact that the epistemology of MG can be analyzed from the cultural point of view. Nevertheless, the mindscapes theorized by Maruyama are debatable in several of their aspects as they do not take into account the mediation of active subjects, because his mindscapes are psychologistic.

Let us ask: what alters in the definition of MG if we adopt one or the other of the many versions of system theory? To my mind, it is evident that there are at least two crucial points in the differences among the various theories of MG.

The first consists in the way in which the 'form' of an emergent social reality is defined. For Luhmann, the form (even the social relation is a form for him) is conceived of in informational terms and is defined by the re-entry operation,[8] which uses a binary code. For this reason, the relation is always an excluded third and never an included third. Thus, for Luhmann, social forms—i.e. distinctions—are 'not relational' (in the sense that they do not consist of social relations); they exist only as communicative systems. But how can a social form lacking relations

[8] The operation of re-entry is the way in which systems evolve by re-entering their own directive distinction (difference, form) into what has been previously distinguished. Systems that operate at the level of a re-entry of their form into their form are non-trivial machines (in the sense of von Foerster). They cannot compute their own states. They use their own output as input. They are 'autopoietic' systems, and that means that they are their own products.

exist? It cannot exist. For this reason, Luhmann believes that networks can only be contingent, interactive, and 'local', with continual problems in defining boundaries, which generally remain vague. The fact is that MG, for Luhmann as for all proponents of system theory, comes about only through automatic positive or negative feedbacks, and no alternatives are offered. Both the logics of connection (Varela 1984) and, more generally, relational logics[9] are ignored in the morphogenetic sequence that goes from the creation of variety, to selection, and then to the stabilization of a variety of social relations.

The second point has to do with the conception of time that is used in defining MG. There exists a profound difference between Western and Eastern notions of time. The Western notion uses a linear conception of time (which we find in the first cybernetics, in Parsons, and in others) (called isotropic: Brown 1994). The Eastern notion, instead, uses a nonlinear (circular) conception of time (for example, in Maruyama) (called anisotropic: Brown 1994).

This difference is decisive for the characterization of a system theory of MG. System theories based on second or third order cybernetics appear to be stronger on the explanatory level because they use a conception of time that abandons linearity. They use registers of time that include circularity and thus avoid the fallacy according to which MG must necessarily be linear. Since they adopt a purely interactive (evenemential) register of time, they make it possible to see how MG can be wrapped around itself in certain temporal phases. In other words, they explain cases in which MG occurs in a temporal sequence so that, although it has a direction, evolution can stop or turn around. Luhmann mostly uses an interactive and circular notion of time (see his essay, 'The Future Cannot Begin'), even if he does not exclude the possibility of 'spiraling' time on a limited scale at a local level. The sociology that results from this removes or erases Western culture—the culture that has its roots in the so-called Greco-Judaic-Christian tradition—as regards the linear development of social relations expected over time.

Therefore, social change becomes circular, and MG is flattened onto the interactive phase. Distinctions (analytic and empirical) are lost between the various transitions of the MG process. In short, there is conflation between MG from above (the structures that influence the interactive forms) and from below (the interactive forms that create the structure), which become fused together without the possibility of being distinguished.

Against this version of MG, I propose a relational vision of emergence.[10]

[9] Relational logics conceive of distinctions as relations and not as binary oppositions (Donati 1991, 2008). These codes include the many-valued and transjunctional logic theorized by Gottard Günther (1962).

[10] Emergence is a relational process *per se*. The phrase 'relational vision of emergence' is used here to mark the difference with those theories of emergence that are non-relational (i.e. structuralist or mechanicist).

For relational sociology, emergence is an 'act of composition (*syn-thesis*)' (ontologically, it is an act of coming into existence)[11] that combines elements that previously were separate into a new entity. Such an entity presents (possesses) *sui generis* properties and powers that cannot be reduced to the sum of the properties and powers of the elements that have been combined with each other, nor can they be explained on the basis of these properties and powers because the latter belong to a new relational structure (the relational network in which the basic elements have been combined). How does this—apparently mysterious—'synthetic act of composition' come about? The question arises: do the elements (for example, the subjects of the social relation) create the composition, or does it come about due to other causes?

Let us examine the causal process (Donati 1986, 103–126). The elements are the material causes of the emergence process which could not happen without them. The final cause is the generation of an entity that, otherwise, could not exist as a reality of a different and new order with respect to the order of reality of the constitutive elements. The efficient cause is the vital force that produces (alias 'brings out', 'brings forth', causes to *ex-sistere*) the emergent effect. The formal cause is the sustainability of the reticular structure that combines the elements and causes them to subsist in an emergent effect endowed with its own autonomy, relative though it is (the more exact term is 'relational' autonomy' in that it is the possibility of self-forming, contingent upon the material and non-material causes, that generated it).

I said earlier that the concept of MG requires the generation of a form: but what happens if the process is anomic and refuses to assume a shape?

Let us take as an example the case in which the emergent effect is a social relation, such as the case of friendship between two people. The elements to be combined are the two people as subjects who are autonomous in themselves. They are the material cause of the relation. The final cause is their intentionality to generate the common good that exists in the bond of friendship (the bond is the sociocultural structure constituted by expectations of trust and cooperation that are reciprocated and able to be reciprocated over time; it should be noted that reciprocal expectations define a web of fiduciary relations). The efficient cause is the energy that is located in the bond, which exists, in reality, as the 'attraction' that the bond of friendship exerts on the two individuals (they feel attracted by the energy of the friendship relation, which is external to them as individuals). The formal cause is the sustainability of the bond, i.e., the fact that the bond consists of (is 'made' of) and consists in (has as its purpose) a relation that responds to the expectations of the two subjects, not by giving rise to specialized and predefined performances (as stated by functionalism) but by providing performances that are

[11] From the etymological point of view, the term synthesis means 'composition'. It is formed by *syn* (=with, together) and *thésis* (=action of putting something). Thus, to synthesize means to unite together in a (new) composition. Such a composition is not a 'dialectical synthesis' in the manner of F. Hegel, nor is it the result of interactions that arise from dualism between structure and agency (as in the paradigm of emergence theorized by Sawyer 2005), but it is the begetting of a *sui generis* reality created by the relations between the elements.

potentially not localizable, not specific, open to interactions, not pre-definable, not discrete, all of which makes the emergent phenomenon (in this case, the friendship relation) a supra-functional social fact. Supra-functional means that it has a wide (uncountable) spectrum of potential operations that are not determined by an overarching system structure that includes it, and, thus, it does not have functional equivalents. For this reason we say that the emergent effect is a *sui generis* reality precisely because it has its own properties and powers that cannot be traced back (reduced) either to its components (individual subjects) or to a prior preordained system. This is 'the relation's order (of reality)' whose ontological reality is situated in the being that is in/of the relation (being in relation): in other words, in the connecting network's relationality.

What is a Social Relation?

A social relation is an emergent effect of a reciprocal action (ego-alter inter-action) between actors/social subjects who occupy different positions in a societal configuration (a system, a network, or other arrangements). These positions can be translated into an algebraic matrix (Tam 1989) [i → j/j → i]. The actors are presumed to realize exchanges between each other (via means and norms: A-I of AGIL)[12] within a certain relational context of power (which may or may not have a value pattern of legitimation for the situated goals: L–G of AGIL). If stabilized over time, such reciprocal action (inter-action) produces an emergent effect that consists of a structure of interdependence (relational configuration, in Norbert Elias's terms: Elias 1978). The latter can be more or less 'new' in relation to the prior one. It can be a relational good or a relational evil depending on its effects on the actors and on the social networks to which they belong.

Crossley (2012) has proposed a relational sociology that does not meet these criteria. Let me point out the main differences between the perspective put forward by Crossley and my relational approach. Both relational sociologies aim to overcome three central sociological dichotomies—individualism/holism, structure/agency, and micro/macro—since neither individuals nor 'wholes', in the traditional sociological sense, should take precedence in sociology. Rather, sociologists should focus on evolving and dynamic networks of interaction and relations. The difference starts when Crossley conceives of relations as transactions. Crossley argues that social worlds 'comprise' networks of interaction and relations while a relational sociology would assert that social worlds 'consist' of networks of interactions and relations. He claims that relations are lived trajectories of iterated interaction, built up through a history of interaction, but also entailing anticipation of future interaction. Of course, social relations are built through interactions, but they do not consist only of interactions. For him, social networks comprise

[12] On the *relational* redefinition of AGIL in respect to Parsons and Luhmann: see Donati (1991, Chap. 4).

multiple dyadic relations that are mutually transformed through their combination. It is certainly true that dyadic relations are the basis of networks, but Crossley ignores the triadic nature of social relations and relations as emergent effects.

11.2 Morphogenesis and Social Networks According to System Theory

It appears clear, from the discussion so far, that attempts to theorize MG today are mainly directed toward a convergence between system theory and social network theory. Most of the time, these are conflationary convergences. This defect can be overcome only by configuring a more analytical framework of MG than those that are currently available so as to avoid all types of conflation. Starting with Archer's scheme (2011), I propose to make it more complex and articulated by means of an analysis of the intermediate phase (T^2–T^3) in terms of social networks.

Let us begin with the formulation of the morphogenetic scheme according to system theories that are sensitive to network theory (see Fig. 11.3). At time T^1 we observe a configuration A of the conditioning structure, which can be described as AGIL-1 in terms of a network of relations among N social actors who are interacting among themselves. At time T^4 the new elaborated configuration B is stabilized (or not). It can be described as AGIL-2. What has happened between T^1 and T^4?

If MG is to be generated, according to the system approach, during the interactions one or more positive feedbacks are to be produced that generate variations that are seen as new opportunities. Variations in what?

The variations can concern actors and their relations. (a) The number and type of actors: the number of actors can change because some can disappear and others can come into existence; moreover, their identity can change over the course of the interactions. (b) Relations can change in terms of their components: variations in resources (material or not) available to the actors and variations in their distribution; variations in relations of power among actors (modifications of interdependencies); variations in norms and values that allow for new behaviors and stabilize them in the emergent structure.

The examples of MG offered by system theory make reference to discontinuities in societal differentiation: in the first place, the passage from primitive (segmentary) societies based on reciprocity and equality, to stratified societies based on asymmetrical relations of power and the acceptance of social inequality and, then, from stratified societies to the functionally differentiated society. We notice that accounts of these morphogenetic shifts privilege (give priority to) variations in resources and in their distribution. In this respect, Luhmann's version of MG is no different from that of Karl Marx. All system approaches are characterized by the fact that, in them, 'culture is subsumed under structure' (Zeuner 1999). On the other hand, non-system approaches offer other explanations that privilege either the actors and the culture of which they are the bearers (norms and values, i.e., cultural identities), as Max Weber proposes, or relational dynamics, as Bearman (1993), for example, proposes.

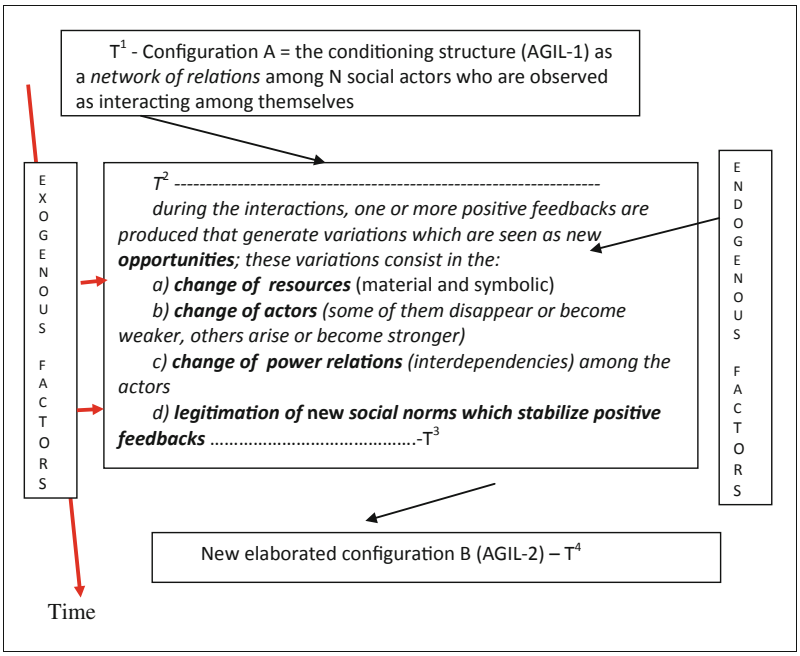

Fig. 11.3 MG according to system theory. N.B. AGIL here means an analytical system depicting the (conditioning and elaborated) structure having four dimensions: (*G*) Goal/s (performance); (***A***) means of adaptation to the goal/s G; (*I*) normative rules concerning its internal working; (*L*) cultural value-pattern. A structure is a kind of social relation (for instance, a couple, a work relationship, etc.)

In the system paradigm, variations are essentially the product (i) of positive feedbacks in the instrumental dimension (A of AGIL) and (ii) of endogenous factors. Exogenous factors can function as stimulus and catalyst of transformative processes (for example: the plunder of a victorious war, a conquest, etc. can confer greater resources on certain social strata, and this fact alters power relations and the acceptability of new social norms; today we might think of the Internet's advent, which has fostered revolts in societies of Islamic tradition in North Africa and the Middle East). However, external factors are considered 'random', not planned or determined by the constraints of the initial social structure, while factors internal to the system are those that actually carry out MG.

The system approach, moreover, entails precise conditions in order for MG to obtain in the intermediate phases of Fig. 11.3: the first condition is that there be a structural equivalence of individuals in the networks (Lorrain and White 1971); the second is that, in order for MG to be produced, the time must be linear, in the sense that, at least in the long term, a progressive 'evolution' is achieved.

If read within the system approach, the motto 'From modernity to morphogenetic society' ends up seeming like one more step in the process of functional

differentiation. The neo-functionalist approach supposes that each societal subsystem encounters the logic of re-entry and self-reference. In particular, it supposes that:

(a) the MG of the market (the economic system) comes about according to the logic of maximization of profit (money);
(b) the MG of the state (the political system) comes about according to the logic of the maximization of political power;
(c) the MG of science comes about according to the logic of the maximum search for knowledge;
(d) the MG of third sector organizations comes about according to the logic of the maximum possible compensation in terms of social solidarity in response to the failures of the Market and the State;
(e) the MG of the family comes about according to the logic of the maximization of love in intimate relations, therefore, producing a differentiation of forms beyond the traditional family (free unions, one-parent families, reconstituted families, gay families, blended families, colored families, etc.).

With reference to Fig. 11.3, I wonder: does what happens in the T^2–T^3 interval really respond to a functionalist logic in each of these spheres and between them? It is doubtful for many reasons.

The functionalist logic may be suited to economic and political systems (market and state) but becomes problematic when applied to science and technology, and it certainly has very little applicability to the third sector and to families. It is quite difficult to interpret the morphogenetic changes of the family, of the third sector, of civil society, but also of scientific and technological research, according to the logic of functional differentiation. The functionalist logic may be suited to the area of interests (Market-State) but is totally unsuited to understanding the MG of lifeworld identities, as well as the MG of that scientific and technological research which strives to serve people's needs and not exploit them in an instrumental way.

As a matter of fact, by now even the market and state no longer respond to the functionalist logic. In the dynamics of emergence of the configuration B to T^4 (Fig. 11.3), the functionalist logic is only one of the possibilities, and certainly not the most probable. If we apply the scheme in Fig. 11.3 to social matters (to the entire 'society'), the problem becomes how not to remain prisoners of the functionalist system approach.

11.3 Social Morphogenesis in a Relational Perspective (Relational Steering)

Redefining the MG Framework

The relational paradigm distances itself from the functionalist one because it redefines according to a relational perspective the keywords of the morphogenetic process and the sequence that leads to emergence.

In particular:

- variety is seen as the product of variations of relations, and not only of individual motivations or of 'things' (elements); relations have their own internal structure (not only form) based on components of purposes, means, norms, and models of values;
- distinctions are drawn not only on the basis of binary codes but make use of relational codes, above all;
- selections address contradictions and incompatibilities by means of the creation of new sustainable relations between choices via the modification of expectations;
- reflexivity is inflected (articulated) in a relational manner;
- differentiation proceeds via relational distinctions and coordination;
- stabilization takes place according to sustainable relations between the parts;
- norms are defined and managed in a relational manner;
- emergent output is a new relational structure.

Social time follows a register of a relational-historical type; if the register of social time is merely interactive or merely symbolic, the passage to configuration B (Fig. 11.3) does not come about, i.e., MG is not produced.

In the phases between T^2 and T^{z-1}, variations can be produced in other ways with respect to what is envisaged by system theory, which minimizes exchanges with the outside and privileges internal factors because it holds that meaningful variations are produced by positive feedbacks within the system, even if they are stimulated by external factors. Instead, new elements (exogenous factors) can make an entrance. Moreover, variations can be quantitative (inequalities) or qualitative (diversities). The entry of exogenous factors and the characteristics of quantitative–qualitative variations make it necessary to introduce distinctions that are not the product of internal (autopoietic positive or negative) feedbacks. These distinctions, however, must be confirmed as positive by internal feedbacks (if MG is produced). If confirmed, the distinction becomes a new form of differentiation (of the entities at stake). It must then be reflexively and recursively stabilized as a norm. This is the point at which social interaction produces social differentiation. Here, *social* MG is generated in that it is completely distinct from biological MG.

In society, as well as in biological life, there can be a mutation. There are mutations that are not destined to survive and others that become stabilized. The difference lies in the non-generative versus generative character of the mutant (emergent).[13] If mutations become stabilized, we speak of bound morphogenesis, which is characterized by the fact that, in it, the constraints are not imposed from outside the interactive networks, but are generated from within the networks.

[13] Generative here means that it has the power to cause an emergent. It is not equal to a generic 'productive' mechanism.

Networks are an expression of social integration, but of a social integration that operates in synergy with system integration.

In any case, mutations are rare. The creative character of MG usually corresponds to what Buckley calls 'adaptive' with reference to complexity theory. Among the adaptive kinds of *social* MG emerging in what I call an *after*-modern society, I want to look to those ones that are produced through processes of relational steering in coping with social issues. Relational steering is here conceived as a way to produce MG by means of those operations (relational mechanisms) which I call 'relational feedbacks'.

Relational feedbacks can be defined as those feedbacks which: (i) are non-automatic; (ii) are generative in the sense of giving birth to a new, relatively stable, relational configuration; (iii) they are special positive feedbacks, which operate according to a many-valued and transjunctional logic, not according to a mechanical binary (positive/negative) logic[14]; (iv) imply a social network of agents (partners); (v) so that the feedback loop is regulated mainly by redefining the goals and/or rules of the network step-by-step.

It should be emphasized that the reflexivity implied in relational steering pertains not only to the people involved, in terms of their own personal internal conversations, but inheres also in the network of relations activated by the people (Donati 2011a, 17). All social feedbacks are certainly reflexively reviewed by human subjects (as a matter of fact, in the social order feedback is never automatic, given human consciousness), but relational steering implies more than that. Relational steering connects the feedbacks activated and reviewed by agents/actors with the feedbacks operating in the reflexive dynamics of a social network. Relational feedbacks have their own reflexive operations and dynamics (Donati 2011b, 138–156). For instance, when a group of families meet together in a Family Group Conference,[15] the welfare intervention sought for children is based upon the stimulation of the personal reflexivity of the people involved by activating a better reflexivity (possibly meta-reflexive) within (the network of) their relations. The

[14] The term 'mechanical' (or 'mechanicistic') refers here to those views holding that natural wholes (principally living things) are like machines or artifacts, composed of parts lacking any intrinsic relationship to each other, and with their order imposed from without and/or determined by automatic (autopoietic) self-reference. The expression 'social mechanism' reflects the transfer of concepts from the mechanical to social order. Therefore, I use the term 'mechanism' as synonymous with a causal sequence by which overall social change occurs. Due to the complexity of the social realm, social mechanisms can be mechanical or relational.

[15] A Family Group Conference (FGC) is a decision-making and planning process in which the 'wider family group' (parents, kin, friends, neighbors, other families) makes plans and decisions for children and young people who have been identified either by the family themselves or by service providers as being at risk and in need of intervention that will safeguard and promote their welfare. It is possible to define an FGC as a *relational service* because it is based on a participatory approach in which social services work together with parents, children, and other important relations to find the right way to care and protect the child by stimulating the reflexivity of the people involved and their relations.

generative (causal) mechanism of the relational welfare service lies first and foremost in the reflexivity of the social network through its relational feedbacks.

Many examples of relational feedbacks can be found in a variety of social phenomena. Simmel (1972), for instance, dealt with many social phenomena where people do not choose according to the yes/no alternative (i.e. accepting or refusing variability), but related to other agents in terms of 'both-and' or 'neither-nor', leaving out the 'either/or'. Among these phenomena are role-playing, exchange, conflict as an integrating process, dyadic encounters, circular interaction, and reference groups. It could be argued that postmodern culture *stays on the borders of the relations*, where agents relate to each other by adopting a kind of relationality which keeps different opportunities open, rather than simply choosing between accepting or refusing a possible variation. Variance is produced relationally.

Today, the theory of the 'reflecting network' and the theory of 'preference relations' help towards understanding this, although a proper theory of relational feedbacks remains to be developed.[16] These new modes uncover, select, reshuffle, combine, and synthesize the existing relations in a given network (Andersen 1991). People feedback by changing their minds and redefining their goals and/or rules so as to create relationally a new set of opportunities that are not the result of positive or negative feedback, as in a machine, but of a reflexive network.[17] As to the latter, Gustafsson (2011, 101) claims: 'the range of possible preference relations in the traditional framework for dyadic preference relations, according to which preferences are analyzed in terms of pairwise choices, is exhausted by preference (in either direction) and indifference. Hence, there is no conceptual room in the framework for preference relations that hold when neither preference nor indifference do'. In order to account for non-traditional preference relations, such as choices between incommensurables and uncertainty, we need to develop a new framework for preference relations that works through relational feedbacks. In the end, relational feedbacks are 'dialogical' and 'conversational' in kind.

The features of MG depend to a great extent on the agential power of a social network's units. If we apply the concept of 'centrality' (agential power)[18] of the social network's units (Tam 1989) to a multifaceted X (single actor or network), what happens? My answer is: a relational subject, i.e., a subject that defines its own personal and social identity through relations (Simmel's circles) due to the fact that it is acquired and exercised through ego-alter relations.

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[16] As to the former, Andersen (1987, 416) observes that 'if the relationship between the parts [of a system] is 'safe' enough, nonintrusive enough, interesting enough, the mutual exchanges that carry new ideas may trigger new modes of relating'.

[17] Field practices can be found in the work by Seikkula and Arnkil (2006).

[18] In network analysis, 'centrality' is the concept that gives a rough indication of the social power of a node based on how well it "connects" the network ("betweenness," "closeness," and "degree" are all measures of centrality).

With respect to the system paradigm, it should be noted (Fig. 11.4):

(1) that exchanges with the outside are not random but happen on a dialogical basis;
(2) variations are subjected to distinctions that are not binary, but relational, instead;
(3) the process is not merely functional but comes about through the activation of new relations within and between the various social spheres;
(4) the structure that is elaborated (configuration B) is itself also a social network that distinguishes its internal structure from the environment and defines its boundaries, even if only temporarily.

What Fig. 11.4 seeks to highlight is the autonomous role of social networks with respect to system logic. Social mechanisms that generate the emergent phenomenon have a relational character. For this reason, the proposal of some (for example, Sawyer 2004) is partial and inconclusive when they recommend that we study the mechanisms of social emergence by means of multi-agent-based computer simulation. Computers do not have and cannot address social relations.

The theory of social networks alters the fundamental concepts of system theory, particularly in its informatic and cybernetic versions, for the following reasons.

(i) Variety not only pertains to elements but also to relations, which is not contemplated in Ashby's (1956, 1958) theory of statistical variety.
(ii) The structures inherent in network dynamics can be of four types:

- public bureaucracies, which use negative feedbacks.
- for-profit markets, which use positive feedbacks and face outcomes of addiction (Teubner 2011),
- the organizations of civil society, which do not act either on command or for profit, and which use a type of feedback that is not automatic (either negative or positive, although it is compatible with them), which I call 'relational feedback', proper to relational steering;
- mixed networks of some, or even all, of the other actors (various forms of partnership, forms of open coordination such as in the E.U., etc.); for example, they can be for-profit and not-for-profit, with or without public institutions, etc.; the types of feedback that they use are, in any case, never purely positive nor purely negative.

One could examine this subject more in-depth at this point, analyzing in more detail and with practical examples the type of networks that have to do with civil society, such as: extended family networks; the neighborhood; friendship; voluntary networks (civic associations), which can be for advocacy, services, opinion, or social networks on the Internet; social promotion associations; family associations; social cooperatives; social enterprises; civic foundations; networks of self and mutual help; community networks of various types.

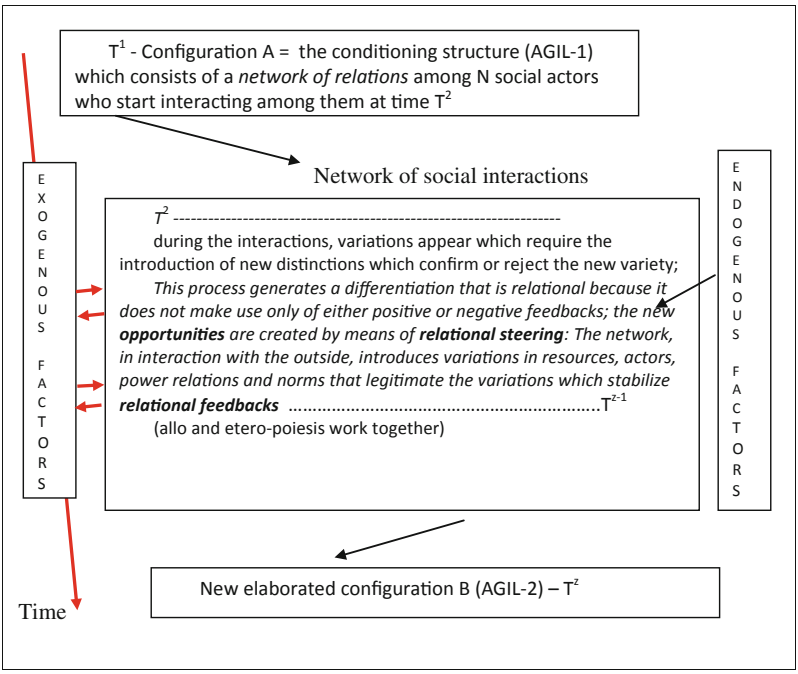

Fig. 11.4 Social morphogenesis in a fully relational perspective (as it emerges in an after-modern society)

In these social entities, feedback is treated as an open relation. This means that whatever is changed is negotiable: it is not a matter of a mechanical choice between accepting or refusing, between passivity (or stasis) and its opposite. There is always—power related—compromise and concession, which is precisely what motivates ongoing interaction. We can think, here, of forms of social partnership. There are forms of partnership with a vertical structure (as in public administrations in which the networks are dictated from above), partnerships with purely horizontal interaction (in which there is the risk of central conflation between actors and their networks), and spontaneous partnerships from below (which run the risk of inefficacy in achieving shared objectives because they lack coordination between the partners). So, to speak of relational feedbacks means being able to detect and accentuate those forms of social partnership that we can call 'generative relational partnership' in that they are able to combine principles of horizontal and vertical coordination, avoiding conflation (from below, from above, and towards the center) because they orient themselves on a 'relationally' configured AGIL compass (see Fig. 11.5). The process is that of creating a 'relational subject' which is neither an individual nor a collective entity overshadowing the single agents/actors.

The realization of the partnership (G) may or may not be the avowed objective pursued. Sometimes it is the declared way of organizing welfare or environmental policy interventions (Vaughan 2011), sometimes it is the latent goal of people

getting together in an informal network to organize a possible protest, an advocacy action, or a mutual aid group (Donati 2004).

(iii) Emergence is not only due to the fact that the context of the network consists of contradictions within and between differentiated and stratified entities (as Bhaskar 1989 thinks), but is caused by interactions in a relational network that produces emergent effects (as in the case of new third sector forms: Donati 2004).
(iv) If a new network is to appear, the selection must be stabilized in terms of the sustainability of the opportunities accessible in the network.

A useful exercise would be to apply Figs. 11.3 and 11.4 to two different logics in order to compare their different ways of operating:

(a) The logic of free competition ('achievement complex'); a competitive relation (such as the pursuit of profit in a capitalist market) has its own AGIL-1 which must produce a more profitable AGIL-2. Examples are: the stock exchange; a for-profit organization, etc. There are winners and losers, laggards and early adopters, etc.;
(b) The logic of opportunity (amplifying possible choices); the creation or increase in the number of choices which were not allowed, available, or foreseeable at time T^1 in configuration A; are these new opportunities the result of the positive feedbacks generated during the interactions? Can they be stabilized? Do they change structure A? Examples are: peer-to-peer production, epistemic communities, etc. Here there are no winners or losers, but rather a range of greater opportunities for the participants.

Relational Steering

Luhmann (1988b) holds that the social systems of the future will be increasingly less capable of steering due to the explosion of the world of communications. We know that, for Luhmann, the social is communication and only communication, and that communication is synonymous with information in the sense that to communicate means to 'give form', to in-form. In-formation, in his thinking, gives a form to organizations and social systems, but not to interactions and social networks because the latter are characterized by a high level of contingency and, therefore, by a high improbability of being stabilized.

Conversely, in Veld et al. (Eds. 1991) and many others (Termeer 2007) hold that, from the empirical point of view, it is possible to ascertain the fact that many social phenomena, including interactions and networks, can be directed (governed) by creating societal configurations able to manage the growth of complexity by means of a convergence on values and shared practices that render diversities compatible with each other. These authors indicate various modalities of steering,

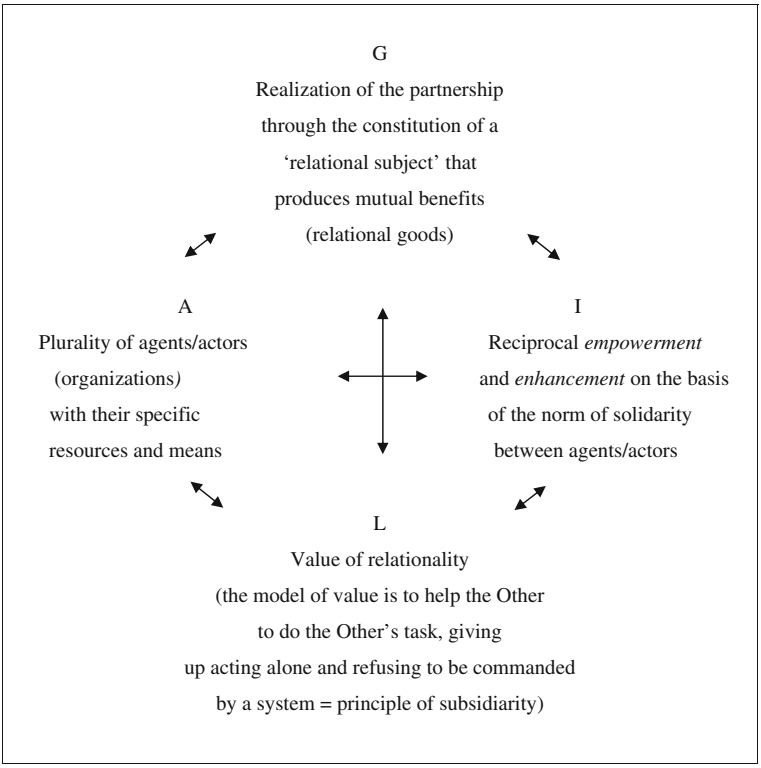

Fig. 11.5 Governance based on generative relational partnership (as a way to produce MG in an after-modern society)

which is understood in a generic way, i.e., as the capacity for finding solutions to problems by means of reciprocal adaptations among actors.

Termeer (2007) recommends that we investigate those modalities governing society that rely on the creative capacity of social networks to generate efficacious configurations for facing challenges. Such configurations are conceived of as follows:

> Patterns come about in the social process of sense making, patterns that in turn influence the subsequent processes. I use the concept of configurations to describe these patterns. *Configurations are social relationships between people who together determine the meaning of what they do*. They can be characterized *as a connection between a social structure consisting of stable patterns of interaction ("who") and agreed-upon rules of interaction ("how") and a cognitive structure that consists of shared meanings ("what").* Configurations usually don't coincide with existing arrangements like organizations, departments or regions. Configurations come into being because when interacting with each other people develop shared meanings and because people especially take to people who give the same meanings as they do. *Value judgments, rules of construction and routines are nested and formed in configurations and then have a structuring effect on subsequent interactions, without determining them*. Social and cognitive structures

> strengthen each other in the process of configuration formation, spinning around each like a kind of double helix (Termeer 2007, 8).

These authors attribute the capacity for societal steering to the fact that agents/actors (the nodes) create stable interactions with shared meanings. They do not analyze the way in which the relational dynamics (the relationality) of networks operates. They attribute the capacity for steering to the formation of patterns and habits shared by the agents/actors, rather than to processes of reflexivity. They ignore the inner reflexivity of single agents/actors, the reflexivity of subjects in relation to each other, the reflexivity of relations that make the networks, and the structural reflectivity of networks (for a critique see Donati 2011b). The way in which the social network is able to generate new stable configurations is said to be due to the stabilization of values and reciprocal expectations via negative feedbacks, while we know that, to produce a real social MG, such a stabilization is highly improbable.

My hypothesis is that for stable configurations to emerge, they need what I call relational steering. The crucial point that distinguishes the relational form of steering from other forms is the fact that it is based, not only on automatic positive or negative feedbacks, but rather on relational feedbacks. Relational feedbacks consist in reciprocal action between agents/actors that does not opt for the automatic negation or amplification of variations but manages them as options that are always open and negotiable in a network having relationality in common between agents/actors, but not necessarily the same values, habits, and intervention styles. Both ontologically and epistemologically, relational feedbacks are a particular case of positive feedback. Relational steering consists in sharing the relationality of the network as a common good (a relational good) among subjects that intend to accomplish a project open to new opportunities.

An Example

Let us consider a couple consisting of the partners Ego and Alter. The two partners have a relation that must continually confront the problem of accepting or rejecting variations (in respect to the goal-state of producing a relational good), but normally there is negotiation. If feedbacks are always (or routinely) negative, the couple's relationship is morphostatic, and quite easily it can become 'stuck' there. If feedbacks are always (routinely) positive, the couple's relationship is morphogenetic, but in such a way as to run the risk of dissolving. Relational feedbacks are the way in which the couple tries to develop its relationality in a steered fashion, so to be 'creatively adaptive' but at the same time to avoid getting stuck or becoming chaotic. The partners seek to steer their relation through feedbacks that are relational because they are reversible and can be questioned by both parties.

If a couple (Paul and Laura, Ego and Alter) decide to have a child, with the birth of the baby (the Third) a network with three nodes is created. Ego no longer

has only one relation (with the partner), and not even two relations (with the partner and the child), but three relations (Fig. 11.6), i.e., with the partner, with the child, and with the relation existing between the partner and the child. The same thing holds for Alter and also for the Third, so that going from two to three nodes means having not three relations, but six first order relations (relations between nodes) and second order relations (relations between a node and the relation between the other two nodes). In addition, one could consider the relations between the two-way relations (third order relations), which would bring the diagram to nine relations (as illustrated in Fig. 11.6).

The system (family) with three members is a rather complex business when seen as a reality of a relational order. It must reproduce itself with negative feedbacks that stabilize it, but the negative character is, at least in theory, increasingly improbable the more the number of nodes grow. How does such a complex relational system succeed in surviving since it is evident that it must also continually change itself in order to survive, i.e., that it must use positive feedbacks? This means that it must coordinate the two types of feedbacks at the same time, positive and negative. However, it cannot act in a contradictory way, using them at the same time. It can use them on an alternating basis, using one in one moment and the other in another moment. But it has undoubtedly to combine them with each other if it does not want to become paranoid. This means that it must find feedbacks that allow for the acceptance or rejection of possible variations in terms of open and negotiable articulations of the relations in flexible circuits of reciprocity. Such circuits do not operate with automatic positive and negative feedbacks; a family cannot simply adopt the rule of 'take it or leave it': otherwise, it would not survive a week. I call these feedbacks relational.

If it does not adopt relational feedbacks, the relational system of the family faces rigidification (morphostatic structure) or breakdown (unstable or chaotic MG), that is, two outcomes that do not allow for the necessary adaptations. Couples become rigid, incapable of reflexivity, blocked, or they face a limitless increase in alterations (unbound morphogenesis) that will make the system explode (severed couples). There can be many other outcomes, obviously.

The couples that succeed in surviving apply relational feedbacks that rely on explicit or implicit forms of relational steering. Alternatively, couples implode or explode.

As difficult as it is, the relational regulation of a couple (or a family) as a social network has to carry out three operations. It must:

(a) select what can be preserved and what can be changed;
(b) select new elements and/or relations to introduce with recourse to the outside or to activate with internal resources;
(c) stabilize the network with a new relational system (AGIL-2 of the emergent network) endowed with situated values, norms, means, and situated goals different from the preceding arrangement (AGIL-1 of the couple relation).

An analogous line of reasoning holds for civic associations (which are constituted on a voluntary basis in more informal or more organized networks).

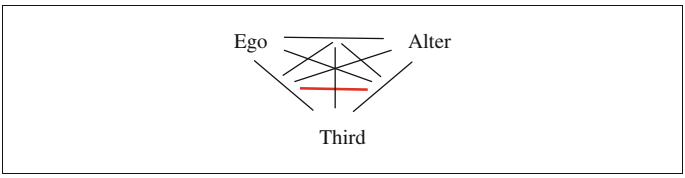

Fig. 11.6 In a network with 3 nodes (for example, father–mother–child), there are not only 3 bonds, but 9 relations (first, second, and third order)

Continuity/discontinuity is a property of contexts of reference that foster, respectively, the fact that the couple will have either communicative or autonomous reflexivity. When the couple experiences incongruity between life contexts, the most typical relation that emerges is meta-reflexivity, but we must be careful. Without a suitable context, meta-reflexivity can run the risk of being obstructed or diverted in its efforts and end up in a state of fracture or blockage. Many people live a life of consistent self-dissatisfaction, and most of them are able to find creative, adaptive solutions when they look for a 'better' life. But the capabilities to bear stress and failure are not available to an increasing number of them, unless the social context provides them with aids and opportunities to avoid capitulating to depression. In highly modernized countries social and health statistics show that the relationships of couples are becoming more and more problematic because, among many other reasons, the partners lack meta-reflexivity or their meta-reflexivity cannot rely upon a social context in which they can find the opportunities to pursue a positive relational reflexivity. Of course, to strive for a 'better' relationship as a couple is normal and increasingly desired all over the world. Meta-reflexivity becomes an enabling resource on condition that the couple uses a relational, rather than a functional-system, approach in connecting to the social environment (i.e. supporting social networks) during its life course (Donati 2012).

11.4 Conclusions: Why Social Morphogenesis

The theory of the MG of society (or of social phenomena) was initially formulated within a system theory with a biological character which, in its various forms, ignored the relational perspective. It had its first expression in the social sciences with Parsons' organicist theory and a second version in Luhmann's autopoietic theory derived from the biologists Maturana and Varela.

Subsequently, MG system theory took on an informational-communicative character. The paradigm of networks acted as an interface between the biological and the social sciences. Along the way, the relational nature of MG was revealed ever more clearly. The products of these recent developments are now reflected in biological and social theory. In biology, living organisms can be described in relational terms. The genome, which acts on the development of the living, is fluid;

it is a complex reality: 'The very meaning of any DNA sequence is relational.'[19] In parallel fashion in sociology, social phenomena—including 'society'—become describable as relations emerging from relational contexts.

The structuralist paradigm of networks must be subjected to a critique that cuts it loose from system theory, which has condemned it to a scant or distorted relationality. Even the movement from morphogenetic robotics to epigenetic robotics[20] confirms the necessity of taking more into account the relationality of phenomena, limiting the dominance of non-relational mechanisms.

The new perspective is that of moving beyond the concepts of variety, selection, feedbacks, and stabilization defined in a functional-structural-system sense. It is about redefining these concepts by adopting an appropriate relational paradigm. In particular, in order to understand how the social fabric is made, it is necessary to move outside a mechanical view of positive/negative feedback and to see how emergent social realities are the product of relational feedbacks as the innovative arrangements proper to an after-modern society.

In conclusion: the expression 'morphogenesis of society', or 'morphogenic society' has sense within a generalized theory of the social change (the genesis) of social forms. The concept of MG should be articulated and specified in various realms, for example, in biology and in sociology, based on the following operations:

(a) how variety is produced (the production of variety is different in biological and in social phenomena);
(b) how the selections of the varieties that are accepted and of those that are rejected (denied, repressed, expelled) come about; selections occur with different mechanisms, and only some of them lead to the emergence of new relational networks;
(c) how the stabilization of emergent forms (networks of relations) comes about; the institutionalization of emergent forms is a different problem from that of the process of emergence.

The 'system' and the 'network' have properties with powers and qualities that are different in biological and in social phenomena. Moving from the field of biology to that of sociology increases the degree of contingency in all three phases of MG.

In any case, the decisive regulatory element is feedback. The direction of MG depends on the type of feedback that prevails.

[19] Many are aware of E. Fox Keller's (2000) critique of the structuralist approach to the study of the gene. More recently, she went so far as to claim, "The most important lesson we have learned is that virtually every biologically significant property conventionally attributed to the DNA—including its stability—is in fact a relational property, a consequence of the dynamic interactions between DNA and the many protein processors that converge upon it. The very meaning of any DNA sequence is relational" (Fox Keller, 2005, 4).

[20] This passage is illustrated by Stevenson and Greenberg (2000).

At the level of social phenomena, variety, selections, emergences, and stabilizations have to do with social forms, i.e., with relational configurations. The possibilities are infinitely more numerous in social than in biological reality. This can be explained by the fact that, while in the biological realm the functional system character of phenomena prevails, at the social level, instead, the reticular character of processes prevails. In social networks many and diverse modes of relating are possible. The fact that the network is structured as a system is only one possibility, with a low degree of probability. Likewise, there is a low degree of probability for the type of MG that collapses operations (b) and (c) into each other, i.e., that makes the selections of accepted varieties and of emergent phenomena 'always possible otherwise' (always possible in a different way on the basis of the principle of functional equivalence between social forms, i.e., the substitutability of the forms which can fulfill the same function), as Luhman claims. Luhmann believes that the most probable direction of the global society of the future is a sort of perpetual recursiveness between the three operations (a, b, c) of MG, i.e., what I called chaotic MG. Conversely, relational sociology believes that, if society is to continue to have an integration of its own, it will come about because the three phases (a, b, c) remain distinct and operate relationally.

In short, relational sociology helps us understand the fact that, by moving from biological to social phenomena, MG acquires an increasingly relational character in its presuppositions and outcomes. In order to understand social MG, we require a relational paradigm that integrates system approaches (based on a mechanical view of positive and negative feedbacks) with network approaches based on relational feedbacks.

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