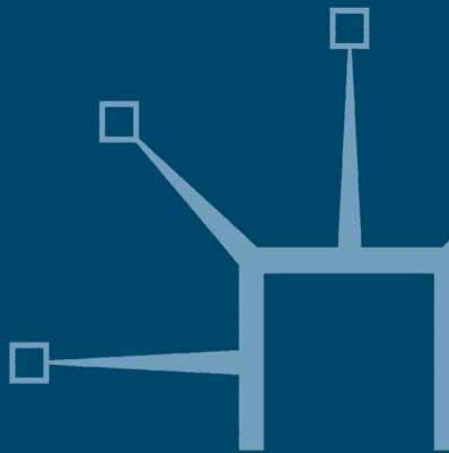# The General Sociology of Harrison C. White

Chaos and Order in Networks

G. Reza Azarian

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For Nadja

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Foreword

The publication of Reza Azarian's treatise is a major event for the field of sociological theory. Harrison White is regarded by many as the greatest living sociologist. But he is notoriously difficult to understand, especially in his later and most important work. White has had a long series of important students, such as Paul DiMaggio, Mark Granovetter, and many others, who have established both sociology of networks and sociology of culture as prominent fields. Yet, none of White's successful students claim to fully understand him. The leading American sociologists, like Charles Tilly, Andrew Abbott, Arthur Stinchcombe, and others, all try their hand at interpreting him. Harrison White is like an IQ test for sociologists. In this respect, he is like James Joyce was 50 years ago: all intellectuals read him whether or not they understand him, and some made careers by expounding the secret meaning of *Ulysses* or by providing *A Skeleton Key to Finnegan's Wake*. Reza Azarian is doing the field of sociology a great service in much the same way, by providing the first systematic, comprehensive explanation of Harrison White's theory.

It should be noted that Harrison White is not a bad writer in the conventional sense. He is not difficult in the way that Talcott Parsons or Pierre Bourdieu could be; he is not grammatically involuted or complicated, nor pretentious or rhetorical and defensive. White's writings sentence by sentence and paragraph by paragraph are lucid and incisive, even full of bon mots. The trouble in understanding lies elsewhere. White is so deeply innovative that the rest of us have trouble seeing how he frames the world. In contrast, Bourdieu once you get through the verbiage is comparatively easy – a synthesis of Marxism with cultural sociology via a structuralist device of quasi-autonomous but mutually self-reproducing fields. White, however, wants to break entirely with the vision of society as stratification, and indeed as permanent structures of any kind. As Azarian points out, White wants a theory of pure process, sheer ongoing making, and unmaking of structural connections, a world in which there are no fixed identities, and no individual essences either on the level of personalities, groups, or organizations. His image for this world of

ephemeral mutually constituting temporary structures is the network. But it is a vision of networks which is so much more ambitious and profound than other network researchers that we have to reconceptualize most of that field too.

In Azarian's lucid account, the primary conceptual elements in White's universe are not individuals (whether human selves or organizations); but neither are they holistic concepts such as culture or social structure. He offers instead networks, ties, and stories. All these terms have conventional referents; part of the difficulty in understanding White is that he gives them new and unconventional meanings. Networks are made out of ties; at the same time, ties constitute the units (or identities) which they connect. White emphasizes that ties, at least in contemporary society, should not be regarded as permanent things, as if modelled on kinship structures in traditional tribes. Ties are emphemeral; they are made and unmade in an ongoing process of attempts at control. The argument can be made in regard to individual human selves; it works just as well on the level of business organizations. What we are emerges out of our ties; at the same time, we manipulate our ties in order to control them, and to escape from being controlled. What White calls *story* is the subjective phenomenology of ties; we tell stories about ourselves, in a plot peopled by others in our networks; in the process we confirm and reconstitute the networks. Another way to say this is that the *networks* that we see are merely a selection from all the myriad social encounters we have, with a few of these brought into focus as especially important and meaningful.

Contrary to the purely formalist model of networks, the content of ties does matter; for it is what flows through the ties in the form of telling stories that enacts some ties as the genuinely consequential ones. One might also regard this as a structured flow of cultural capital, usually localized and particularistic, in contrast to the generalized cultural capital which Bourdieu sees as flowing predictably through a very large circuit of the total society. In White's terms, stereotyped stories constitute the networks, by putting a frame around our own dealings with others, and crystalizing them in a short-hand form in which they can circulate still further in other people's stories which make up our own reputations. This also applies to business firms; a key feature of their economic position is just these stories that they tell about each other as to their linkages, product qualities, and reputations.

In a famous quotation, White says "there is no tidy atom and no embracing world, only complex situations, long strings reptating as in a polymer goo, or in a mineral before it hardens" (*Identity and Control*, 1992, p. 4 [quoted in Azarian p. 54]). As Azarian explains, plastics and other similar materials are glassy, hard and brittle at lower temperatures, but when heated soften and turn into a shapeless goo. White is being a bit of a post-modernist here; he asserts that whatever network models might have been useful for traditional societies (although our image of their static character may well be overstated), in our contemporary world there are no enduring structures, and no enduring identities. Yet there is a science of the "chemistry" of these emphemeral shapes and transformations; that is network theory á la Harrison White.

Ties, moreover, are multiplex; there are different sorts of connections, even with the same individuals, and hence there are many different flows through each node, and many different demands on attention. Thus different kinds of ties compete with each other and drive each other out. The individual (person or organization) follows a strategy of control. White coins terms for three control strategies: "ambiguity" about relationships in order to preserve freedom of action; "ambage," that is using partners to indirectly influence others; and "decoupling", that is breaking ties or obligations. Identity arises from such efforts at control.

The structures that arise from such strategies are kinds of networks, forming patterns of structurally equivalent actors. The most important kinds of structures, the major shapes on the social landscape are called "disciplines" by white, presumably because these are strong networks that impose discipline on their members. Here White indulges in his propensity for coining neologisms, and Azarian does a great service in spelling out what they mean. Rather like Max Weber, White's sociology divides the world into three main parts.

1. "Interface" is a network structure engaging in production. It is helpful to imagine here a group of firms "in the same business," although the category of interface generalizes to art markets, musicians, or indeed to other forms of cultural production. White's key insight is that this is a network structure in two dimensions:

(a) there is a flow of components or inputs from upstream to downstream, such that any particular business is firmly embedded in a

stream of its habitual suppliers and habitual customers. It is worth noting that the usual competitive image of markets does not apply to this downstream flow; for the flow must be quite regular if the various markets within it are to maintain themselves at all.

(b) There is also a horizontal dimension consisting in those who are peers – in comparable places in the blockmodel. In conventional economics, these are competitors or rivals. In White's image, they are networked together by mutual monitoring, seeking relatively safe, non-competitive niches by taking up a position among their peers, and above all in terms of quality. Thus an "interface" is an invidious transitive ordering. In Weber's "class, power, and status" model, this is something like the network organization which underlies economic class; but as we shall see below, it cuts in a very different direction than anything inherited from the ideas of Marxian, Weberian, or neo-classical economics.

2. "Council" is White's term for a network built around dominance and submission. Instead of evaluating each other by quality distinction, its members evaluate by prestige. White does not develop this category to any extent, but it appears to be political, with an emphasis on the network dynamics of alliance. It is Weber's realm of power, but abstracted beyond the specifics of the state and its monopoly on force.

3. "Arena" is a network which is organized around relationships of friendliness or hostility (although "alien" might be a better word); its members evaluate each other in terms of purity or impurity. This suggests, at the extreme, a Hindu caste, or a tribal group à la Mary Douglas with its ritual boundaries of safe insiders and impure outsiders. This fits rather well with Weber's category of status group. But it is important to bear in mind, for all these categories, that they are locally emergent structures, often ephemeral but sometimes relatively long-lasting. White conceives of the task of sociological theory as giving dynamic models of the conditions that cause their emergence and the rapidity of their fading away, or rather their transformation into something else (Remember the "polymer goo," as strands of chemicals wind and unwind into various combinations as the temperature changes).

However, one way in which White does not map onto Weber is that these three "disciplines" do not exhaust the social universe; in

fact, they may be only a small part of it, since most of the network structures are ill-formed and fleeting. White does add, at least, a fourth type: what he calls "exchange markets." This fourth type is in fact pretty much what economists conceive of as "the" market, although White attacks it as an overblown abstraction. An exchange market is sharply distinguished from a production market; as we have seen, a production market is a relatively persistent upstream-to-downstream network, like beads on a string, with each bead consisting of a little community of mutually monitoring peers differing in the perceived quality of their products. An exchange market, on the other hand – White comments rather sarcastically – are only found empirically in such things as lawn sales and country fairs, where relationships are indeed anonymous, fleeting, utilitarian, and unrepeated. This claim of the rarity of exchange markets may be overblown; and the notion of price driven by supply and demand makes its reappearance in production markets as well. White is being polemical in order to get some recognition that production markets are a kind of structure which have been almost totally overlooked by academic theorists although it is the prevailing practical reality for anyone in business – except, perhaps, for those in "edge markets" at the end of the production chain, who market directly to customers; though what he says about cultural production markets tends to undercut this.

The key point that downgrades exchange markets to a lower-level intellectual issue – as White (1990a: 83) says – is that they are places where exchange takes place "where production is not an issue" that is as if there is nothing difficult about adjusting exchanges so that a flow of materials and components (what Schumpeter called "produced means of production" or "producers' goods") can steadily come forth (It is worth noting that of all the economic theorists, White comes closest to the early writings of Schumpeter). In contrast to the interchangable individuals of economics, production markets are made up of a small, stable set from which "producers do not bounce in and out" (White 1993b: 162). Not to say that production markets are static, but they change in systematic ways. In his technical analysis (broached in his famous 1981 paper, "Where do markets come from?" and powerfully elaborated in *Markets from Networks [2002]*), White gives formal models of the mathematical space in which different kinds of markets can be located. Some of these

regions are unsustainable, and change their production markets in various ways. Some markets "unravel," which is to say their niche-defining differences become too large for them to be seen as comparable choices differing only in quality; hence they divide into separate markets which are now seen as making distinctly different products. In the practical world of business, the most important question (above all for a start-up, or during a time of crisis) is: "What business am I in?" – White puts this real-life problem in the center of his theory.

Azarian's work is a remarkable achievement. He gives us the firm contours of White's theory in a way that makes it seem like coming out of the clouds into broad daylight. There are, inevitably, some topics about which more could be said. Cultural production is a species of production market, and some of White's most striking publications have been in this area: his early book with Cynthia White, *Canvases and Careers* (1965) shows how the shift from the system for institutional sponsorship of painters at the official exhibits of the French Academy gave way to a competition among private art dealers, spawning a net kind of painting style and a new way of making an artistic reputation, which was the Impressionist movement. White's book, *Careers and Creativity* (1993), was in many ways a more restricted, and less abstact version of the argument in *Identity and Control* (1992), which sociologists before Azarian have found so hard to grasp. There remain questions as to just how closely a cultural production market resembles an economic production market; though the latter has both a vertical upstream-to-downstream structure as well as a horizontal structure of niche-seeking peers dividing along lines of quality, virtually all of White's analysis has concentrated on the horizontal structure of peers in an art market (or in any other field of cultural production); it remains an open question as to whether there is anything like "producers's goods" in a cultural production field, or whether it is indeed an "edge market" for ultimate consumers.

Left unexplored in Azarian's work is the technical side of economic production markets. White situates these markets in regions of a mathematical space (which he calls a state space), in which the two main dimensions are the elasticity of supply vis-à-vis elasticity of demand from different quantities of products, and similarly for the

elasticities of supply and demand for different product qualities. This is truly a visionary work in the fundamental theory of economics, as well of economic networks. It sets forth a series of hypotheses as to the trajectories that markets take across time; that is to say, markets in some regions of this elasticities of supply/demand space are more unstable than others, and hence markets migrate historically from one region to another. In more ordinary terms, White theorizes how different kinds of market structures occur, such as intense competition (which he calls "grind"), crafts-style production, monopsonies, as well as explosive faddish product markets, where the backward-sloping supply curve is actually reversed. White's very ambitious project to reconstitute economics remains to be assessed; we have barely begun to clarify these hypotheses about the historical evolution of various kinds of markets, much less to see how they hold up empirically. Even more challenging is White's project to reformulate the setting of economic prices, not in the familiar mechanism of supply and demand, but in his vastly more sophisticated (but also unfamiliar and mathematically complex) model of price-setting in the state-space location of production markets.

Less technical but also of great importance is the unexplored question of mapping out the entire economy from the point of view of White's network structures or disciplines. White makes it abundantly clear that production markets are one kind of economic phenomenon which are quite different than exchange markets; they have different network characteristics, above all in White's fundamental categories of ties, stories, embeddedness, control modes (ambiguity, ambage, decoupling), and identities. But this does not seem to exhaust even the economic world. What about financial markets? White suggests that they are "arenas" without quality differences, and shift roles as buyer and seller. It is not clear how White's rudimentary theory of "arenas" applies here (which I have interpreted as a version of Weber's status groups). In any case, the powerful rearranging of mental gestalts which White has carried out surely must give new insights, in the future, for financial markets as well as for many other phenomena as yet barely explored.

Azarian does not cover everything, but he gives a comprehensive picture of White's intellectual trajectory. Especially valuable are the listing of his courses at Harvard, and of his graduate students. White

has been at the center of a movement, and anyone who wants to understand the upsurge of network sociology into a forefront of intellectual developments for all of sociology and beyond will find Azarian's work indispensible.

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Acknowledgments

I dedicate this book to my wife, Nadja, without whose support, encouragement and love it would have never been written.

G. Reza Azarian

1
Introduction

"Despite the continuous flow of 'new developments' the social sciences appear to be in the doldrums, suggesting that the foundations of these sciences are not yet right" – so read the very first lines of Harrison C. White's main theoretical work *Identity and Control* (1992). As this initial statement clearly indicates, in this book White launches a rather stern critique of much of the existing social sciences, and aspires to lay the foundation of a new sociology. Indeed, he not only accuses the dominant paradigms of the contemporary social sciences of being flawed and inadequate, but also calls into question their very claim of being scientific. And exhorting us to abandon them all together, he takes upon himself to reground the discipline and start afresh – this time building on a truly scientific foundation. Coming from a man known for his iconoclasm (Brint 1992), this is obviously a bold and provocative claim, coupled with a grand ambition that, if substantiated, will pose a severe challenge with far-reaching implications for sociology, and for much of the rest of the social sciences as well. But the history of sociology abounds with grandiose enterprises that aim to remold the discipline on the basis of some self-proclaimed, revolutionary ideas. And as the disappointing fate of many such attempts recommends caution, one may be justified in asking what makes things different this time.

There are several reasons for a serious and thorough consideration of White's challenge. One is, of course, the credibility of his record of achievement, which according to many has two dimensions. On the one hand, White has made a major contribution to sociology through the role he has played in training a number of recognized contemporary American sociologists (see Appendix). On the other

hand, there are White's own writings. The bulk of his production extends across many research areas and covers a baffling range of diverse topics: from kinship systems and social mobility, to production markets, language, and art. Looking at his specialized contributions, one is impressed not only by the length and breadth of White's bibliography, but also by the originality of his approaches and the fecundity of tools he has developed over the years. And it is broadly acknowledged that many of these novelties have indeed been considerably influential within specific research areas, and have helped reshape the modes of inquiry in several subfields of the discipline, thus rendering him a true pioneer who deservedly enjoys "the reputation of having started many sociological revolutions" (Abbott 1994: 985).

For instance, *Canvases and Careers* has had a pioneering influence in analyzing the effects of the institutional context of art production upon the formation of aesthetic styles and the artists's professional careers. Written jointly with Cynthia White, and originally published in 1965, it is now widely considered to be "a modern classic" (Fyfe 1996: 772–3) in sociology of art and "a precursor of the production of culture perspective" (Riggins 1985: 244). Almost 30 years later, White surprises sociology of art again by *Careers and Creativity* (1993) – a book, which "presents an original, comprehensive, and profound treatise … that puts the production of culture perspective on a firm theoretical footing" (Fisher and Faulkner 1994: 881). To take another example, the well-known notion of *vacancy chains*, which first appeared in *Chains of Opportunity* (1970), has since its introduction been widely used for the study of mobility process within a variety of areas. As some observers have remarked, this notion has "turned [mobility research] on its head" (Coleman 1990: 714) and has "proposed a radically different way of thinking about labor and organizations" (Stewman 1986: 214). Finally, and at the most profound level of his sociological thought, White is indisputably one of the most influential pioneers of the social network analysis, and some of his work are widely recognized as significant landmarks in the process of establishment and elaboration of this tradition (Marsden 2000; Scott 2000; Wasserman and Faust 1994).

In addition to the worthiness of White as a challenger, however, a far more important reason for seriously considering his challenge has to do with the nature of his claim and the value of the general conceptual scheme that he puts forth in *Identity and Control*. As the

present study seeks to demonstrate, this scheme is the end result of an impressively large and sustained synthesizing effort, and is the outcome of an unprecedented attempt to develop a general sociological perspective based upon the basic tenets of social network analysis. Put differently, in *Identity and Control* White embarks upon one of the most exciting projects of contemporary sociology that builds on a different set of theoretical and methodological premises. Aiming to unite the analytical rigorousness of the social network analysis with the substantive theoretical insights won elsewhere, in this endeavor White weaves together much of his previous specialized works and aims for a more general conceptual framework. And starting out from a different point of departure, the final result is a theoretical construction which challenges much of conventional sociological thinking because, due to the novelty of its perspective on social reality, it sheds new light on a number of basic and classical issues, and makes it possible to take a fresh look at them, thus setting the stage for a more fruitful reformulation and reconsideration of these issues.

As many have suggested, the final result of this project is indeed an important intellectual achievement, which despite all its possible shortcomings still offers a number of valuable qualities (Abbott 1994; Boudon 1993; Calhoun 1993; Knottnerus 1994; Meyer 1993; Scott 1994; Tilly 1993). Yet, despite the relatively enthusiastic reception that *Identity and Control* enjoyed initially, the theoretical approach that it contains has not yet received the attention it is worthy of. More than a decade after its publication, what perhaps is White's most significant accomplishment still remains largely unexplored and even unknown to many – an unhappy fact that becomes particularly striking in the face of the enormous rise of the social network analysis in popularity during the last few decades. Given this regrettable void, however, it seems only reasonable to take seriously the challenge posed by White and to examine how his claims are substantiated. And this is what the present study intends to do, that is it aims to explore what White's venture of developing a new foundation for social theory and a novel mode of theorizing has amounted to, and what contributions it may have to offer to some of the most fundamental questions of sociology.

For several reasons, however, the task is by no means an easy one. First of all, there are some formal difficulties associated with White's special style of writing theoretical texts. As many reviewers of his more

recent books have pointed out, White's theoretical writings can be less penetrable, notoriously difficult to understand, and, at times, even impassable, impeding many who have tried their hand at interpreting him (Abbott 1994; Abell 1944; Balfe 1994; Boudon 1993; Calhoun 1993; Crane 1995; Fisher and Faulkner 1994; Fyfe 1996; Jasper 1995; Stinchcombe 1993; Tilly 1993). As a writer, White often appears impatient, more anxious to move on rather than taking heed of his reader. Nor is he particularly inclined to repeat what has been already accomplished elsewhere; and he often leaves out systematic overviews that might give the reader a helpful background. Instead, White tends to offer only passing references to what he assumes to be established stock of knowledge, thus requiring the reader to fill in the gaps pretty much on his own. Furthermore, the numerous references to works belonging to distinct traditions and the juxtaposition of wide-ranging examples taken from various realms make White's theoretical presentations seem unfocused, unsystematic and even incoherent, with ideas only tangentially related and arguments only elliptically pursued. When presenting his substantive insights in non-formal language, his prose therefore often appears too abstract and too dense, as well as obscure and ambiguous, and generally prone to give rise to multiple interpretations.

As if this were not enough, one can also add White's admitted eclecticism. Although the term is often associated with a kind of illegitimate *ad hoc* and opportunistic mixture of ideas and concepts, it may also be understood as a rejection of dogmatism and as a sign of open-mindedness towards ideas, irrespective of the guise that they come wrapped up in. Being in the good company of Andrew Abbott (2001), Pierre Bourdieu (1998), Anthony Giddens (1984), and Jonathan Turner (1988), who all confess their "eclecticist sins" readily, the eclecticism that characterizes White's sociological thinking is of this latter kind, as he mines the classical and current stock of sociological knowledge in a selective way and picks up anything insightful and intelligent from any source where he finds it, regardless of the classificatory labels on its package. While eclecticism of this kind can be a true intellectual virtue, it however makes things much more difficult to handle for the reader who is accustomed with the intellectual comfort brought about by the established traditions in the social sciences and the inflexible and, at times, petrified divisions among them.

A related and yet distinct kind of difficulty stems from White's general reluctance to get involved in purely theoretical discussions, demonstrated by the absence of his explicit and direct engagement in the focal issues of classical and/or contemporary sociology. Partly due to his eclecticism, White's ties to both classical traditions and contemporary currents in sociology remain ambiguous, and this causes some severe difficulties when one seeks to locate his theory within the familiar, established context of sociological thought by relating it to the classical works of the "founding fathers" or to the modern currents of the discipline and their agendas. As long as classical sociology is concerned, it is worth mentioning that during his education, White was never trained in classical social thought, and in his doctoral dissertation in sociology from 1960 there is not a single reference to any of the founders of the discipline. Nor has White, during all his years in the profession, ever taught classical sociology (see Appendix). Moreover, one cannot fail to notice the almost total absence of explicit attention paid by White to the classical sociological heritage, especially when the bulk of his production is compared to the writings of other contemporary sociologists like Randall Collins and Anthony Giddens, for instance, who have offered a number of thorough studies in classical sociology (see for e.g. Aron 1970; Collins 1986 and 1994; Giddens 1971). And if the number of references to the "great masters" is a good measure of interest or influence, it can be added that throughout White's entire oeuvre, Marx is totally absent, and that there are only a few places where Weber, Durkheim, and Simmel are mentioned in the passing.

The same goes for White's relation to contemporary sociology. Apart from a few book reviews, he remains largely aloof from the ongoing methodological and theoretical controversies, and only very rarely takes issue with his contemporaries or engages in what they enthusiastically debate (see Appendix). Nor does White offer any systematic exposition of where he stands on the central issues of the discipline. There are of course many fragments of explicit statements spread here and there in his body of writing, but systematic presentations and elaborated articulations of his ontological position and methodological standpoint are simply non-existent. When setting out to explore the basic premises of White's sociological thought, one finds remarkably few explicit leads which themselves leave one with the impression of a jumbled mix of incompatible positions, lacking

any apparent consistency. Whereas, for instance, he rallies against the false ontology that underpins much of the contemporary social sciences; he never really makes the effort to elaborate his own view in any systematic fashion. And a couple of pages of short, hasty comments in the "Preface" to *Identity and Control* is the closest he comes to a detailed and explicit account of his methodological view. For instance, while he repeatedly advocates a phenomenological approach to the objects being studied, he also aims for the discovery of general species of network processes, mechanisms, and structures. Or, while he has an outspoken ambition to develop a certain version of structural analysis, White (1992a: xii) subscribes explicitly to "an epistemology of middling level, in between individualism and cultural wholism."

Finally, another source of difficulty in grasping White's sociology has to do with his initial training in physics and the impact of this schooling upon his perception of the social structures and processes that he sets out to study. In 1950, White, at the young age of 20, graduated from the Massachusetts Institute of Technology and five years later earned a PhD degree in theoretical physics from the same university. Though he later shifted to the social sciences and received a PhD degree in sociology in 1960, he has maintained his ties with the natural sciences, especially physics, and never cut these off entirely. This early exposure to, and continued contact with, the world of physics often finds expression in his recurrent reference to, and even borrowing from, physicists's models. His works, especially the early ones, include abundant examples of his readiness to let himself be inspired by a physical imaginary that not many of his readers are familiar with.

On the whole, however, it seems that in his theoretical writings, White mainly addresses a particular, limited circle of sociologists who are already familiar with the premises and frames of his thought, rather than aiming to reach out a wider audience. Therefore, it is easy to feel lost and confused when one, as an outsider, starts right out with *Identity and Control* and hopes for a straightforward and clear understanding of White's general sociology. I believe that one stands indeed little chance of getting a firm grip on White's unconventional approach as it appears in its recent not-all-too-clear and slippery shape, unless one changes strategy, that is, unless one first acquires sufficient familiarity with his main ideas and concepts in their earlier

stages and tries to track closely their gradual development over the years. Adopting such a strategy means no less than going all the way back and trying to retrace White's footsteps through the long gestation process of his abstract and general conceptual apparatus. Although such a strategy places a heavy burden on the reader's shoulders, it appears hardly possible to do the job well otherwise. To my mind, only by pursuing this strategy can one hope to arrive at a somewhat clear and coherent comprehension of the main features in White's sociological mindset, of his critique, as well as his overall thrust, and promise to deliver a novel, general sociological framework; it is only the adoption of such a strategy that can help us embed White's trajectory in a wider sociological context, putting us in a better position to assess the coherence and strength, as well as to appreciate the leverages and potentials of his theory.

This being the strategy, it should also be mentioned what kind of sources have been used in conducting this study. In addition to White's published work, the bulk of material I have used covers almost one half of a century and includes some of his unpublished manuscripts as well as drafts, memos, working papers, pre-prints, working notes, and lecture notes, including White's famous *Notes on the Constituents of Social Structure*, and some other teaching material from the course 'Introduction to Social Relations' – which he taught in the Spring of 1968 at Harvard, together with Roger Brown – and from the graduate course Markets in Networks, given at the Department of Sociology, Stockholm University in February 1999. Moreover, much valuable information about the courses given by White during his years at Harvard (1963–86) has been obtained through research in the Harvard Archives. Among the most useful archival material have been *Harvard University Directory of Officers and Students* (1962–63 until 1978–79), *Directory of Faculty, Professional and Administrative Staff* (1979–80 until now) and, above all, *Courses of Instruction: Harvard and Radcliffe, Faculty of Art and Sciences*. And finally, the doctoral dissertations of many of White's students, kept in the Harvard University Archives, have also provided a great deal of information and insights about the intellectual environment in which White worked for more than two decades.

Further sources also include a couple of tape-recorded sessions of a graduate course, Mathematical Models that White held at Columbia University in May 2000. Above all, however, the material that underlies

the present work are the hours of personal interviews conducted with White himself, as well as with a number of his former students and colleagues. The interviews with White took place in the first two weeks of May 2000 when we met almost daily for about two hours at his office in Fayerweather Hall, Columbia University. Among White's students and colleagues, those who have been interviewed either in person or over the phone are: Karen Barkey, Peter Bearman, Matthew Bothner, Ronald Breiger, Eric Leifer, Peter Marsden, Michael Schwartz, Michael Useem, Barry Wellman, and Christopher Winship. Finally, some others have kindly responded to a questionnaire sent to them through e-mail, and among them are: Andrew Abbott, Ronald Burt, Craig Calhoun, Randall Collins, Paul DiMaggio, Thomas Fararo, Arthur Stinchcombe and Charles Tilly.

The present work is structured in the following way. Chapter 2 is mainly concerned with exploring some of the major characteristics of the foundation that White seeks to lay down for a new sociology. What is particularly in focus here is White's effort to reorient sociology, that is, to make a break with the prevailing practice of dealing with theoretical and methodological constructs instead of empirical social reality. Chapter 3 is devoted to the notion of social tie, that is the main building block in White's theoretical construction. Special emphasis is put on White's reconceptualization of social ties and his attempt to enrich social network tradition theoretically. The chapter also introduces at some length the rather novel description of social reality that he develops on the basis of this revised notion of ties, and explores some of the implications of his ontological stance for theorization of social agency. Chapter 4 starts with an exploration of White's version of embeddedness in multiple networks and proceeds by venturing into some of the key concepts or "primitives" of his theoretical construction. The focal points of this chapter are central concepts such as control, identity, and agency, all derived from his revised notions of social ties and embeddedness. Chapter 5 investigates some of the methodological dimensions in White's approach, with a focus on his network version of structural analysis. Some other notions, like social structure, structural equivalence, and blockmodels are also introduced in this chapter, which also includes a presentation of another key concept in White's scheme, namely discipline, its general species – interface, council, and arena – and the particular

structural properties and maintenance mechanisms of each of these species. The last chapter, Chapter 6 represents a discussion and assessment of White's theory. Here, an attempt is made to reconstruct the main outlines of his approach by putting together the various elements introduced in the preceding chapters. Moreover, some of the possible implications and leverages of his approach, as well as some of the drawbacks of the various theoretical dimensions of his scheme are discussed. Finally, at the end of this work, the reader will find Appendix, which includes a brief account of White's academic life, an updated bibliography of his wittings, a complete catalog of the courses that he gave during his year at Harvard (1963–86), followed by a list of his graduate students there.

Let me now be clear on one point. Given the difficulties mentioned above and the strategy followed, this book contains an introductionary study. It does not cover everything but has a specific objective and a limited scope. The chief purpose of this study is to pin down the main characteristics of a theoretical endeavor that is claimed to have resulted in the foundation of an unconventional and novel approach to social reality. Although this limitation may be disappointing to many readers, I think it is fully justified because, hopefully, such a basic and explorative study fulfills an important function, namely to introduce White's novel effort and achievement to a larger group of readers, beyond the small circle of his former students and colleagues who are already familiar with the characteristic features of White's sociological thought. To repeat what is mentioned above, while White's specific contributions have already received much attention and been the object of a considerable bulk of secondary literature, his general sociological scheme is still mainly unexplored and its potentials remain largely untapped. The present study aims to fill this gap by taking a more comprehensive look at White's whole production, in order to extract the basic features of his broader sociological approach, and to identify the crucial insights that can be of a more wide-ranging relevance and value to sociology and social theory in general. This study is undertaken mainly in hope of setting the stage for the serious and thorough treatment that White's general conceptual framework deserves – a treatment in which the merits and demerits of his theory can be identified, discussed, and assessed by the sociological community at large.

An important part of performing this task is to try to embed White's endeavor in the larger, more familiar context of sociological thought by pointing at some of the similarities and differences between White's theory and other comparable approaches. As this study unfolds, there will be a number of occasions where White's notions are related to comparable ideas; the main purpose being to locate his approach within the familiar landscape of sociological currents. Given the absence of White's explicit engagement in theoretical controversies of the discipline, such an attempt to trace the origins of some of his main ideas is particularly important, and as this study unfolds, it becomes increasingly clear that, far from being detached from what has been occupying the minds of sociologists for decades, White's theory is very much embedded in the larger context of classical as well as contemporary sociological traditions.

However, aiming to explore the very broad features in White's general sociology, this study consequently sets its focus on a selected number of substantial issues and neglects some important aspects of White's work, that is with no exception, all the specific topics that White has studied – such as kinship structures, mobility processes, production markets, art, or language *per se* – are touched upon only to the extent that they have been considered relevant to the main objective of this study. Nor does the present study highlight any of White's technical innovations, such as vacancy chains and blockmodels, or any of the formal models developed by him, as these have been examined adequately elsewhere by other people (e.g. Abbott 1988; Borgatti 1992; Burt 1980 and 1992; Chase 1991; Wächter 1999; Wasserman and Faust 1994; Wasserman and Galaskiewicz 1994). In other words, although this study fully recognizes the centrality of the role that mathematics has played right from the start in White's sociological approach, it leaves out the technical aspects of his writings completely. The main reason for this confinement is that this study primarily seeks a redirection of attention, away from the technical dimensions of White's work and towards the more substantive issues that lie beneath their formalized expressions. Obviously, White's name is primarily associated with the tradition of mathematical sociology (Edling 2002; Fararo 1978; Sorensen and Sorensen 1975), and there are of course very good reasons for that. Yet, it would be unfortunate if his theoretical achievements remained over-shadowed by his immense success in elaborating mathematically modeled analytical

innovations. This in itself offers a rationale for a shift of focus of course, but such a redirection of attention is even more important for a study that primarily seeks to introduce White's sociology to a wider public by highlighting the main substantive features of his intellectual trajectory. And after all, as Richard Crowell and Ralph Fox (1963: 3) put it long ago, "mathematics never proves anything about anything except mathematics." No matter how sharp an analytical tool mathematics may be, it "is not substantive science at all … [and] is not to be mistaken for scientific theory" (Barber 1952: 41–2). That is, although mathematics can be an extremely precise language and a very useful analytical tool, the formalization of social phenomena with the help of mathematics can at best only serve a higher purpose, namely, the search for and arrival at substantive insights about social reality. This point is best formulated by Collins (1984: 353), according to whom,

> words will always be with us. Formalization that takes place in sociology will always be dependent on a larger frame of words that surrounds it and makes sense of it. Formalization is always subservient to the larger purpose of argument. Words are not only more fundamental intellectually; one may also say that they are necessarily superior to mathematics in the social structure of the intellectual discipline. For words are a mode of expression with greater open-endedness, more capacity of connecting various realms of argument and experience, and more capacity of reaching intellectual audience. Even mathematicians must lapse into words to show what are the most important things they are talking about. Verbal, qualitative theory, then, will always be more fundamental in sociology than mathematics is – even if we make progress towards the proper use of mathematics.

As already mentioned, White's general sociology is virgin territory, and in exploring it one faces many risks. The risk that looms the largest is that of simplification, that is, of deforming and rendering into commonplace something highly subtle and original. Moreover, what is dealt with in this study is a complex and multi-faceted theory that, because of its high degree of abstractedness and eclecticism, lends itself to many divergent interpretations, each of which is just one account among many other possible ones (Harrison 2001). It goes

without saying that any claim to have explored and expounded White's theory fully and definitely would be only foolish. The present work represents only an initial attempt, and aims primarily at a more coherent and lucid presentation of the main features of his conceptual scheme. Much work is to be done, and if others embark on this kind of work, the present study has achieved its chief objective.

2
Return to Empirical Social Reality

White as an empirical sociologist

White is primarily recognized as a mathematical sociologist and as a model builder, and for many people his name is mainly, if not solely, associated with the analytical tools such as vacancy chains, structural equivalence and blockmodels. Undoubtedly, this is a well-founded reputation, as formal models – formulated in abstract mathematical language – have always occupied a prominent place among White's academic accomplishments. As the repertoire of his courses listed in Appendix shows, ever since 1959 he has continuously taught sociology students how to model social phenomena. Indeed as the catalog of his writings demonstrates, White's own practice of model making has an even longer history, going all the way back to his very first publications in theoretical physics – "Superlattice Stability" (1952), "Atomic Force Constants of Copper from Feynman's Theorem" (1958) and "Queuing with Preemptive Priorities or with Breakdown" (1958). And showing no sign of decline, this practice of constructing formal models continues up to his recent works, *Markets from Networks: Socioeconomic Models of Production* (2002), "Modeling Discourse in and around Markets" and "Parameterize: Notes on Mathematical Modeling in Sociology," both from 2000.

Yet, neither the prominence nor the brilliance of the mathematical models that White has contrived over the years should overshadow the fact that he is basically an empirical social scientist. His sociological thought is permeated by a strong and deep-seated empirical disposition, which finds a number of various expressions throughout his works and which has far-reaching ontological as well as methodological

implications. As it will be shown later, this empiricism underpins his critique and eventually his rejection of much of the contemporary social science, being criticized for having stopped dealing with real and tangible social phenomena and for substituting them with analyst-made constructs. This empiricism is also a crucial premise of White's ambition to reground social science and of his search for a new foundation, as well as the principal reason for his turn to social networks as the most plausible alternative. In what follows, some of the expressions and implications of this empiricism are explored.

For one thing, although formalized and abstract, White's models are not derived deductively from some dubious axioms, out of the reach of empirical trial. Rather, these models are firmly anchored in solid, detailed empirical investigation of tangible phenomena, combining analytical rigor with realism. As final products these models are of course abstract enough to capture and represent general features and properties of various social phenomena, but they have nonetheless been produced through appropriate empirical work, each of them being underpinned by careful and meticulous examination of real-world phenomena and contrived on the basis of insights obtained through penetrating case studies.

"Good mathematical science talks directly to some aspects of reality," White (1963c: 82) proclaims, and regarding the necessity of careful empirical groundwork prior to the construction of models, he (1995c: 58) asserts that abstract, formal models must be "disciplined by rigorous field investigation." They must obviously be general and abstract enough to permit analysis of different settings to illuminate one another, but they must also be close enough to empirical reality to have validity. It is on the basis of this criterion that White uncompromisingly discards as improperly constructed those models that lack sufficient empirical foundation; and it is on the same ground that he strongly recommends students of social phenomena to maintain continuous, close contact with reality through fieldwork, frequently urging them to "get out and ask and watch" (1993a: 15), "to look at [reality], to study it, and *then* develop imaginative ways to conceptualize and measure it" (1990a: 91) (italics added).

Furthermore, it should also be brought to mind that the bulk of White's works contains not only abstract models, but also some major empirical studies of particular social phenomena. Both *Canvases and Careers* (1965) and *Chains of Opportunity* (1970) are well-known

pieces of work, each resting on a solid empirical base. The former represents a thorough empirical study of the professional lives of a large number of painters in the Parisian art world of the eighteenth and nineteenth centuries. Based on detailed biographical material, the authors of this work follow the careers of individual artists in and around the French Academy, and through meticulous information on training, income, exhibition occasions, and critics demonstrate how each artist's career was intertwined and shaped by those of many others. And the latter, *Chains of Opportunity*, contains an analytically rigorous examination of mobility processes in three American churches – the Episcopal, the Methodist and the Presbyterian – and their priesthoods over five decades where existing official datasets on long time-series of assignments of clergymen to priestly offices are used in novel ways (see later in this chapter). The basic source of data in this study are the annual registers from these national churches, which report on rather frequent mobility of the clergy within each organization. Seeking to obtain analytically fine-grained causal accounts of the mobility process within formal settings, White (1970a: 48–51) explicitly points out that one of the chief reasons behind the choice of these particular organizations is the availability of detailed empirical data, that is the relatively easy and inexpensive access to reliable, regular, and detailed accounts of the assignment of men to jobs for the whole population, which exist in published form, arranged and indexed systematically, and which can be used for inferring chains of movements and series of replacements of the individual clergymen.

Another good example is White's doctoral dissertation in sociology, *Research and Development as Pattern of Industrial Management: A Case Study in Institutionalization and Uncertainty* (1960). In this, perhaps, less known work White sets to explore the impact of uncertainties inherent to industrial research upon the nature and pattern of relations among the managers of various departments within a medium-sized American metallurgical corporation. The focus is the emergence of mutual negative feelings and the establishment of chronic conflicts and strategies to control the flow of information within the top, administrative layer of the organization. The study shows how these conflicts and strategies are fueled by each manager's drive to secure and increase the autonomy of his own department, and how they eventually result in replacing persuasion and rational problem-solving

with bargaining in matters that are vital for the survival of the corporation, namely the future research and development in the organization.

Inspired by the substantive ideas of Philip Selznick (1949, 1948), James March and Herbert Simon (1957, 1958) about informal structures within formal and bureaucratic organizations and the impact of the former upon the functioning of the latter, White's case study is indeed a good piece of empirical work that reports on the results obtained through questionnaires and personal interviews with the upper echelons of the firm, designed and conducted by White himself. The findings are then manipulated and analyzed to map out the relations among multiple abstract categories of choices made by the managers on a set of sociometric questions, revealing the existence of two clique-like groups with disparate views, amounting to opposing ideologies. On this basis, a general, formal model is proposed which is claimed to be useful for identifying segregated informal networks and latent cliques in any given population.

Finally, there are his works on kinship structures. In *An Anatomy of Kinship* (1963), "The Cumulation of Roles into Homogeneous Structures" (1964), and "Models of Kinship Systems with Prescribed Marriage" (1966), White seeks to reveal the underlying logic of these complex and confusing social organizations, or "these amazing feats of social engineering" as he (1963a: 6) calls them. In these studies, White starts out by identifying a few, primary kin roles such as *father, mother, brother, sister*, and others that are normally used to define indirect kin relations such as *uncle* (father's brother), *aunt* (mother's sister), and other compound kin roles. Formal models are then constructed to show how such compound roles can cumulate in long chains and how complex kinship structures can be articulated through the interlocks of such chains, determining the kin relation between each pair of persons within the system. Yet, *An Anatomy of Kinship* contains not only abstractly constructed models for kinship structures but also an earnest attempt to test the empirical validity of these models. Although, White does not carry out any fieldwork on his own, he nonetheless devotes about a third of the book to this test, and uses some major fieldwork reports on several well-known Aborigine tribes to assess the fitness of his formal models to the actually existing kinship and intermarriage systems among the hordes and clans of these tribes.

Hopefully, this brief overview suffices to underline the role of empirical research in the bulk of White's works. However, the statement that White is an empirical sociologist should be qualified through highlighting some distinctive features of his empiricism. The first point regards his long-standing and explicit predilection for case studies and for the production of own data, preferably through in-depth fieldwork rather than relying on statistical data collected by someone other than the analyst and for purposes other than those of interest to him. Case study is preferred because it allows a closer contact with empirical reality; that is, it allows a more intensive and thorough inquiry of the individual phenomenon being examined, and enables the investigator to have a nearer focus and make a more extensive observation. Moreover, case study allows what sometimes is called *naturalistic observation* (Lofland and Lofland 1995), that is it makes it possible for the researcher to observe closely how people in real-world settings live, work, and experience their particular segment of social reality as it appears to them, allowing thus the researcher to get a better grasp of how these people carry on the tasks of their everyday life, how they make decisions, solve problems and employ efficient, and at times complex, strategies to mange their lives.

On a number of early occasions, White expresses views of this kind, heralding the later phenomenological bent of his thought. Already in his first sociological publication, White conveys his ambition to explore "actors's inner world of cognition and perception" (Aubert and White 1959: 2), that is, to penetrate the world of their immediate, unreflective experience, demonstrating thus the first signs of what Bourdieu (1977: 5) calls a "phenomenological desire to restore the subjective experience of the practice." Later on, in his works on production markets, White often speaks of the need of research designs that can venture directly into the micro-space of the actual experience, perception and comprehension of the real business people who, having only partial views and accounts of what takes place around them, try to manage their daily tasks (see later in this chapter).

There are several other points about White's empiricism to be highlighted, however. First, in addition to the reasons mentioned above, case study is preferred also because it permits production of own data – a task which according to White is an elementary precondition of any scientific work and which therefore must be handled with adequate

care and seriousness. Furthermore, closely related to this preference for case study and emphasis on the importance of producing own data is White's advocacy of analytically dense and detailed causal accounts, all derived from his particular conception of social analysis. According to White, the chief aim and task of social inquiry is to provide analytically fine-grained causal accounts in which the relation between cause and effect and the generative process that links these two are specified. The task is thus to penetrate the compound causal machinery that produces the phenomenon at hand, to pin down and reveal the particular mechanisms at work, and to demonstrate exactly how this phenomenon is generated through the complex interactions amongst various causal orders.

From this follows White's disapproval of conventional survey analysis as the scientific method proper – a kind of approach, which is widely used and which is often taken to represent *the* method of scientific research. Although this mode of analysis allows the gathering of large amount of data and thus a broad coverage, it remains largely descriptive, and fails at what is the hallmark of social inquiry. Obtaining detailed causal accounts being the task, social analysis should not, in White's view, satisfy itself with elaborating on statistically constructed entities or categories, defined on the basis of some attributes, which seldomly are not arbitrarily chosen and ascribed. Neither should social analysis be contented with vague, that is unspecified, assumptions about causal relationships between such entities – relations that are fashioned in various ways on the basis of the computation of some arbitrary, statistically designed measures like variance or other inferences.

Nonetheless, this is what survey analysis mostly occupies itself with, according to White. Instead of studying real-world social regularities and actual causal processes that underlie and uphold these regularities, this mode of analysis builds on analyst-made constructs and deal with the statistically created orders in observed populations. Furthermore, this mode of analysis develops and employs a whole arsenal of arbitrarily constructed statistical measures to elaborate on hypothetical relations among these entities. Lacking the kind of analytical strength and sharpness that is needed for obtaining insights into actual, complex causal processes of the real world, survey analysis can only postulate or hypothesize causality among constructed categories. Consequently, whether the statistical relations measured

amongst various categories and variables are genuinely causal remains virtually impossible to demonstrate conclusively. At best, this mode of analysis can only offer a crude summary, that is an abbreviated description of the end-results of such processes, without specified causal accounts of actually how these results are generated.

Launched long ago, this kind of critique of survey analysis constitutes a salient and persistent feature in White's sociological thought, and seems to anticipate the later calls for the analytical specification of the relation between cause and effect in causal accounts (Coleman 1986; Goldthorpe 2000; Hedström and Swedberg 1998; Homans 1967). In White's case, however, this critique seems to have begun with his doctoral thesis, where he (1960: 11–14) expresses his preference for case study, and elaborates on the advantages of this type of empirical research over survey analysis. Moreover, a decisive methodological premise of White's works on mobility is his dissatisfaction with the shortcomings of survey analysis and his ambition to develop an alternative mode of inquiry that can provide more specified and detailed insights into the causal processes at work.

Reviewing the literature on the topic, White (1963b: 14) finds the existing approaches dissatisfactory, and criticizes in particular the variable-based type of mobility research for lacking specifications with regard to the actual "processes that facilitate or impede social mobility." He (1963b: 14) holds for instance that, despite the existence of much valuable information about the social constraints on mobility, "there is little systematic quantitative knowledge of how these processes work in the lives of individuals of different sorts." And on another occasion he (1970a: 3) maintains that in such studies "generations are a myth, a construct with only the vaguest connection with replacement of observable cohorts of men in actual jobs." That is, according to White, typical mobility studies do provide us with information about the origin and destination in men's career lines and do report on a number of biases in assignment of men to jobs, but these studies often remain mute on the specific causal processes, failing to offer detailed and precise accounts of the myriad influences caused by complex interaction of the various involved factors.

Toughened by years, this critique continues in White's thinking, and characterizes his later works on production markets for instance. Grown in confidence, he in this group of works criticizes mainstream economists rather sternly for their neglect of proper empirical research

and for building instead on statistical constructs such as supply and demand, with little attempt to deal with what is precisely the main research task, that is, to specify mechanisms at work. Supply and demand are, according to White (1981a: 5–6, 1992a: 42, 1993b: 170) "no operational concepts to the participants" in production markets; the perceived match between them "is merely a soothing tautology" that is constructed each time after the fact, omitting the whole array of complexities involved in actual processes. This fault derives, according to White (1990a: 91), ultimately from the fact that mainstream economists either have abandoned empirical research altogether or "think they are doing scientific empirical work when they are massaging some time-series, produced in unknown ways by unknown clerks in some government agencies." What is needed to remedy this flaw, in White's view, is "an operational theory," which can guide and "stimulate field studies" (1979a: 2) and which can "capture the phenomenology of real markets" (1999b: 2), turning the focus on the limited number of known producers in any given actually existing market rather than elaborating on hypothetical relations among constructed aggregates.

Search for general social logics

Needless to say, however, White's emphasis on empirical work is by no means an advocacy of pure or simple empiricism. Nor does his preference for careful case studies, for production of own data through fieldwork and for dense and penetrating causal accounts of particular phenomena imply a neglect of the general features of social life, tending to reduce social analysis to description of singular and idiosyncratic social phenomena. Contrariwise, from the very beginning White voices indeed a stern critique against the kind of sociology that, void of any theoretical ambition and imagination, devotes itself to a mere fact-gathering business. Echoing other outstanding sociologists – such as Robert Merton (1968), C. Wright Mills (1959), John Rex (1961) and Pitirim Sorokin (1947) – who all, before him, regarded this kind of empirical enterprise as a withdrawal from the main tasks of social science, White (1968: 5) on one of the few occasions he explicitly addresses the relation between theory and research holds, "To think data speaks for itself, simple empiricism, is an evasion of [the theoretical] responsibility." And deeply concerned about this

widespread, unfortunate misapplication of the idea of science, he on another occasion (1967: 11) proclaims that what sociology needs in order to advance is "not further developments on statistical techniques" but "substantive theory, out of which only can flow valid directives for handling data."

That is, White has apparently always viewed sociology as a generalizing science, which by definition transcends the mere fact-gathering business. He seems to adhere rather strongly to the notion that the very art of sociology, like any other science, is the discovery of a set of essential dynamics and core properties across realms and levels of its subject matter, allowing thus a more systematic and wider-ranging understanding of social reality by raising our horizon above the fragmentary body of specific knowledge about limited cases and particular situations. Subscribing to this notion, the heart of the sociological enterprise, in White's view, is to unearth and extract a rather limited set of fundamental properties and core dynamics of social reality out of the diversity of their manifestations and occurrences. On this view, the main task of sociology in other words is to mine the numerous particular cases in search for such properties and dynamics, which because of their broad explanatory powers can furnish us with a foundation for parsimonious, causal accounts.

On several occasions, separated in time by decades, White declares explicitly his notion of a general sociology and the generalizing ambition that has lain beneath and connected together his various studies. For instance, he (1968: 5) quite early in his career as a sociologist announces that his prime aim is to develop "a few simple, abstract conceptual models, which are combined and permuted to explain observed systems in all their endless variety." A quarter of century later, he (1993a: xiv) reformulates the same ambition as an attempt to identify "familiar social logics in apparently different situations." And on a later occasion, he, (1995c: 59) speaks of his "general strategy of research" being to transcend the particular instances of social phenomena, arguing that "since observable social organizations and processes are, … , complex mixes and intertwining across scales and levels and realms, one should seek principles of self-similar analysis which hold throughout."

Once White's idea of a general sociological scheme is taken into account, however, some new light is cast on the role that empirical research in general and specific empirical studies in particular have

played in his endeavor of materializing this ambition. That is, although White has repeatedly changed the subjects he has chosen to investigate closely, his particular empirical investigations should not be seen as isolated research projects. In this new light, they all rather appear to be integral elements of the overall enterprise that he all the while has been pursuing, namely the development of a general substantive theory. They are parts and parcels of an extensive and prolonged search for a set of "familiar social logics" or "a few simple, abstract conceptual models" that can lay the foundation for a new, general theoretical approach with claims of relevance to diverse and separated areas of social landscape; and it is this unambiguous ambition that right from the start has fueled his search for social processes, mechanisms and formations that are operative and valid across fields, scopes and levels.

It is not only White's empirical studies that fit into this more comprehensive pursuit of general social properties and logics, however. When White's conception of general sociology and his ambitions to develop one are taken into account, the sustained prominence of formal, mathematical models in the body of his works too gains a particular significance. Whereas each one of these models are widely known and used within many specialized research areas, it often remains less noticed how they fit into and contribute to White's overarching project. But once his generalizing ambitions are considered, it becomes evident that, far beyond their worth as specialized analytical tool, these formal models have been developed to promote the search for the essential, general social properties and logics needed for the fresh start of the discipline. To grasp their significance in this regard it should be recalled that, in his undertaking to reground sociology White tends naturally to see mathematics as the most adequate tool for pulling out and formalizing what is common and general in apparently diverse real-world instances and settings. Mathematics is, for him, a key instrument and a prime aide in mining the common elements and features from an array of particular cases, guiding his empirical research as he bounces from topic to topic. That is, through his continued practice of building formal models, White primarily seeks to tap the generalizing and unifying potentials of mathematics for a systematic inventory of social world in order to identify and extract what he calls "the familiar social logics" across regions and levels. Underpinned by detailed and careful investigation of concrete

and tangible social phenomena, these formal models are thus for White sharp analytical devices that prove enormously useful in mining out and abstracting the essential cores of social processes, mechanisms and formations from their numerous occurrences within various substantive realms of social landscape, allowing thus insights from different instances to inform one another.

Let us take a closer look at the issue. Like many other social scientists (Berger 2000; Coleman 1964 and 1973; Fararo 1973, 1978 and 1997; Feld 1997; Karlsson 1958; Lazarsfeld 1954; Rapoport 1983; Wilson 1984), White regards mathematics as a general and boundary-crossing tool, which due to its precision permits a more rigorous analysis of social phenomena. For one thing, mathematics is useful in exploring systematically the numerous instances of a given phenomenon and in developing "unambiguous typologies" and "complete inventories" of its numerous instances (White 1963c: 82). Moreover, the specification and precision that formal models make possible may help clarify the internal structure of a theoretical scheme and the interconnections among its constituent concepts and ideas, making the validity and consistency of the scheme subject to empirical verification (White 1992a: 15).

In addition to these commonly recognized payoffs, mathematics, according to White, is a "great help in developing ideas" (1975: 73) because it "permits the sort of reconstruction, manipulation and measurement on which productive insights depend" (1997a: 65). And ascribing mathematics a rather decisive role in developing his general theoretical scheme, he (1992a: xii) holds that "it was [his] experience of applying mathematics to develop models for a diverse series of social phenomena which led [him] to search for a consistent and coherent framing in substantive theory." Perhaps the earliest formulation of his view on how mathematics relates to the very essence of the sociological enterprise is also the clearest and most straightforward one. Already in his study of kinship structures, White (1963a: 6) speaks of "fundamental similarities between bureaucracies familiar to us and [the] complex kinship systems," and highlights the usefulness of mathematics in getting us beyond the specific cases of any given social phenomenon and in capturing what is general and common to these cases. To emphasize the generalizing aims of sociology as a science and to illustrate the potential of mathematics to serve this type of purpose, he (1963c: 78–9) compares three species of social

organizations, which although apparently disparate have nonetheless "essentially similar structures":

> What point is there to sociology except as it is able to find and interrelate core properties of, say, a trio like feudalism (in England 1200), decentralization in the TVA (today), and the political pluralism in France (nineteenth century)? … Quite a tangle: feudalism, decentralization, pluralism – different, yet cousins. A historian generous enough to pick up this symposium and read the affirmative articles may be shuddering at the wrenching of a few ideas about feudalism out of context in order to develop these crude analogies. Without context, concepts are not closely related to reality. But in their full context, concepts become descriptions, with little power of unification. It is the art of science to reduce the fullest possible appreciation of events in context to those core elements deemed essential and then to adhere ruthlessly to the abstraction while matching these core elements with those drawn from other contexts. Mathematics is the most incisive technique for such abstraction and matching.

These being the fundamental traits of White's sociological thought, however, one may rightfully ask what all this has mounted to, and what general "social logics" or "simple, abstract conceptual models" have been discovered by following such a research strategy? The two well-known notions of structural equivalence and vacancy chains are the most palpable candidates. Emerging out of years of continued empirical research, these two general, basic concepts and the mathematical models raised upon them, capture fundamental similarities amongst a wide range of social phenomena, and thereby allow for similar types of analysis. The former is basically a network reconceptualization of the central and long-established sociological idea that the observable similarity of actors's perceptions and behaviors derives from the similarity of the social context in which these actors are embedded. This notion constitutes the heart of White's particular version of structural analysis as well as his conception and account of social order. The issue will be introduced and discussed in detail in Chapter 5 and 6. For now, we shall take a closer look at his mobility studies from the mid-1960s and early 1970s and try seeing how White actually goes about to extract the general social logic of mobility

and opportunity from empirical material reporting on men's paths within a couple of career frameworks, which although appear very different but nonetheless share some fundamental features. Such a quick review may also help to underline how this well-known and much-appreciated line of work fits into White's overall project of developing a general theoretical scheme. But before doing that, yet another aspect of White's empiricism needs to be underscored.

Networks as analytical tool

Dismissing the mode of analysis that in White's view has marred social science for too long, he turns to social networks for a remedy, finding it to be a more penetrating research approach and thus more capable of delivering detailed and analytically dense causal accounts of social phenomena. He views social networks as an apt analytical instrument which, due to its more direct approach to social reality, has greater potentials of capturing the dynamics of that reality and of dealing with its complexities. Social network analysis starts up with and builds directly, without the veil of constructs, on the real stuff of social reality, that is, the actual interactions and relationships among the inhabitants of the real social world. Based on actual data, rather than statistical hypotheses about presumed correlations among invented categories, this mode of analysis provides us better with detailed, more densely specific and empirically more valid insights into the causal processes at work. Causal explanations can be obtained because social networks as an analytical tool make it possible to dissect the phenomena under observation and to trace the numerous, uncorrelated chains of cause and effect and the complex interplays among them, offering thereby finer-grained insights into and more precise accounts of the complex, generative processes behind the observable, aggregated phenomena.

White's mobility studies come to mind immediately as a good example. As mentioned above, in undertaking his mobility studies White is incited by his deep dissatisfaction with the conventional modes of analysis, which fail to deliver precise and fine-grained causal accounts. According to White (1970a: 2), common descriptive studies of mobility

> may observe and trace moves [of individuals] only when they
> cross the boundaries of large strata or categories, measuring the

corresponding rates of and correlating changes in them with other variables. Such an approach, however, ignores all move within strata and is unable to trace sequential dependencies. Few studies, even traditional economic studies, of mobility in labor market, reach the level of the individual jobs; even in them, the moves are studied as isolated events and not in connected sequences.

In his own studies of mobility, on the other hand, the common analytical focus is the aggregate outcome or the "indirect structural effects" (White 1970a: 2) of the process. These effects are produced by the erratic arrivals and departures of the entities (e.g. people and jobs) in and out of a given career system, as well as by the pairing processes in which people and jobs are being matched. But such effects cannot be analyzed and accounted for satisfactorily unless the process that produces them is dissected and broken down into its constituent elements, that is moves into and out of individual jobs. Therefore, the main and challenging analytical task at hand in all these studies is to keep track of the long and devious chains of cause and effect that are initiated by arrivals and departures and that unfold within the system. The task, in other words, is to show precisely how some initial moves set off a whole train of interdependent subsequent events, and how the long chains of cause and effect produced thereby crosscut each other, intertwine and influence one another in ways that are often intractable.

It is precisely to perform this task that White reconceptualizes mobility as a stochastic network process. In addition to their specific merits, what is important to recall is that one of the main underlying ideas in these studies is that mobility should basically be seen as process "enmeshed in a network of contingencies" (White 1970a: 1), that is as a complex network process that is generated by erratic arrivals and departures of people and jobs. Whereas variable analysis proves unable to examine moves of individual men within career systems and to trace the sequential dependencies among their career lines, such a network reconceptualization of mobility makes it possible to get beyond the constructs and penetrate deeper into the actual causal machinery that produces observable, aggregated effects. For him, "the causal sequence of [such] moves cannot be analyzed without examination of mobility into and out of individual jobs" (White 1970a: 2), and it is "only through examination of the networks in

which people are imbedded can valid models … of replacement and mobility processes be developed" (White 1968: 15). That is, only such an approach can help us trace how strings of events chain together, crosscut one another and generate compound unforeseeable effects at the macro level; and what is "the core idea behind" developing the concept of vacancy chain is precisely to "trace social processes at microscopic level of social structure to obtain valid causal theory" (White 1970a: 328). Here, the notion of vacancy chains and the stochastic model based on it are the analytical devices that eventually are developed to serve this purpose, that is to trace the continuous flows and the subsequent causal chains that while running through the system can intertwine in quite complex ways.

White's mobility studies

Soon after concluding his doctoral research White turns to social mobility, and devotes a considerable amount of time and interest to study closely one of the major social processes of our time or "the most conspicuous characteristic" of contemporary societies, as Pitirim Sorokin (1959: 381) puts it in his original and ground-breaking work. For more than a decade, White examines various aspects of this issue in separate studies, and produces a chain of works on the topic. Among these studies are, of course, *Chains of Opportunity* (1970a) and some other related papers such as "Cause and Effect in Social Mobility Tables" (1963b), "Control and Evaluation of Aggregate Personnel: Flows of Men and Jobs" (1969a), "Stayers and Movers" (1970c) and a less noticed work, "Multipliers, Vacancy Chains and Filtering in Housing" (1971a). Of particular interest here are a couple of earlier writings on the French art world, namely "Institutional Change in the French Painting World" (1964) and *Canvases and Careers* (1965), known primarily, if not exclusively, as empirical works in art sociology and not as mobility studies.

It is worth mentioning that in his mobility studies White starts with applying a couple of conceptual models borrowed from natural sciences which, by providing a sort of basic images or rather rough analytical analogies of social interactive systems, not only yield detailed analytical insights into the cases under observation, but also facilitate the extraction of fundamental similarities amongst various cases of mobility. By permitting a more meticulous penetration into

the casual machinery of the mobility process, such an approach makes it possible to discern more precisely the crucial mechanisms and dynamics that, being operative in the various studied cases, can represent the general "logic" of mobility.

More concretely, the notion of *natural open systems* is what initially guides White in his dealing with mobility issues. As one of the main conceptions associated with system theory, this notion was imported from the world of physics and became fashionable in the mid-1960s in the study of organizations to emphasize the importance of the wider environment that penetrates, shapes and constraints internal organizational processes (Buckley 1967; Eisenstadt and Curelaru 1976; Fararo 1989; Scott 2003). Without going too far into technical details, it can be mentioned that unlike the isolated and/or closed ones, open systems are characterized by the exchange of both energy and matter back and forth across the boundaries between the systems and their surroundings. They, in other words, are linked to the environment through their channels so that flows of various entities can enter and leave the systems. Furthermore, open systems typically consist of a loosely coupled assembly of interdependent parts, which allows a more flexible response to the embedding environment. Within this perspective, the interaction of an organization with its environment is essential for the functioning of the organization, and indeed its capacity to maintain itself is dependent on the flow of resources from the environment.

Although not always explicit, this notion is fundamental to White's mobility studies, present in all of them and tying them together. The notion appears for the first time in White's writings in an article from 1962, "Change Models of Systems of Casual Groups," where he discusses several alternative approaches to, and develops a stochastic model for, the study of random and unstructured arrival, clustering, and departure of people in casual, social gatherings. Some years later, this notion serves as the basic image that underlies his works on mobility, and he explicitly speaks of the particular segments of the social landscape under observation as natural, open systems of men paired to jobs. Such a segment or "chunk of reality" – as he later would label it – can be a large bureaucratic organization, a certain type of job across a whole economy, or a collection of prestigious positions within a given field.

With the help of this image, any such segment is seen as an open system of fixed positions, which although maintaining its

boundaries is nonetheless in constant transaction with its embedding environment. This observed segment is, in other words, seen as an open system, which is subjected to continuous in- and out-flows of entities that keep entering this system, moving from one position to another and eventually leaving it. Within any career systems, normal circulation of individuals and matching them to compatible jobs or positions is a crucial issue. Change of this kind is the norm within such systems, which would be frozen without circulation of individuals. Mobility, that is a continuous influx and exit of jobs through creation of new positions and abandonment of existing ones, and of men through recruitment, reassignment and retirement, provides "an essential component of circulation and a requisite for simply maintaining the system" (White 1970a: 321). In any given such system, however, there may or may not be a central, coordinating agent to direct these flows, but in either case any such system must continuously respond and adapt to two erratic streams imposed from the environment: the flow of men and the flow of jobs, out of and into the system. Or as White (1970b: 97) puts it,

> The departure of men from the system is treated as an exogenous process, partly dependent on the age structure through death and retirement, and partly on the attractions of careers in other systems. Jobs, like men, are identifiable individuals, which are constantly entering and leaving the system. The entry of jobs is a second exogenous process which may reflect the state of the economy, technological change, plans for growth, and so on.

The first case in which this notion is actually employed is White and White's (1964, 1965) classical study of mobility within the career framework of the Parisian art world at the dawn of the modern era. Although in this study the analysis is carried out without explicit reference to the notion of open systems, it is nonetheless easy to discern how this image underlies the study. The rather distinct segment of the art world in early modern French society with its clear boundaries is implicitly envisioned as a natural, open system in which the entering professional painters from outside are ordered, forwarded and matched into the available positions, according to judgments made by a central arbiter of taste and quality, namely the Royal Academy.

What is particularly interesting in this case is how the collapse of the system is accounted for. The study contains a detailed analysis of the development and functioning of the academy, that is the organizational and economic career framework, which was designed through and supported by state art programs. Yet, the authors pay special attention to the decline of this system and its replacement by a new kind of institution. In doing so, White implicitly uses a model that he had just a few years earlier developed for the analysis of delay and congestion processes. In "Queuing with Preemptive Priorities or with Breakdown" (1958), he and Christie put forth a formal model for specified analysis of priority assignments, congestions and delays in situations, where the items or entities that arrive into an open system and that differ in importance are categorized and processed within the system according to a specific, hierarchical order of predefined priorities. According to White (1963c: 87–9), this model is capable of opening a new avenue to the analysis of similar delay and congestion processes across various settings like "suits arriving at a court" or "traffic flow on highways." Now applied to the French Academy, this institution is implicitly conceived as a malfunctioning open, processing system hit by, and unable to survive, a congestion crisis that is caused by too strong streams of paintings and artists into the system.

In other words, what the authors report on in this study is basically an institutional failure. The case illustrates the breakdown of a traditional order, that is the collapse of the old career system, which according to the authors proved unable to cope with the enormous pressures caused by too large a flow into the system. During the examined period, the academic system, that is the organizational and economic framework, which was designed to handle only a few hundred painters, was faced with a constantly increasing number of professional painters. "There were simply too many painters in Paris for those organizations, planned earlier when the number of students and exhibitors was small, to function efficiently" (Riggins 1985: 252). Due to its inherent inability and resistance to change, this traditional art institution proved unfit to deal with the dynamic forces of the new era, and was eventually replaced by a different, more flexible institution, which could handle congestion fluctuations better. This nascent institution was a kind of open market for art – an invertebrate network of dealers and critics, which directed the growing flow

of painters and their paintings into new channels and which eventually "coagulated … into a few competing nuclei, stable enough to serve as efficient substitutes for government patronage" (White and White 1964: 267).

The insights won from applying the notions of open systems and queuing situations in this early study of mobility, however, are sharpened and elaborated through further research. Studying mobility and membership renewal within several American churches in his famous *Chains of Opportunity*, White develops the concept of vacancy chain to analyze in detail the complex intertwining of the sequences of cause and effect that vacancies generate within the system, as they move from initial entries to their final destinations in the system. Such a train of moves is set in motion when an initial vacancy is created in the system, due to the death or retirement of a senior clergyman, for instance. This vacant position is then filled by another church member who, in his turn, leaves a vacant position behind him. He thus creates a new vacancy and a mobility opportunity for the next man who is qualified and mobile enough to move in and fill the vacancy. Such a chain, often created at the top layer of the system, can end either because a new-comer is called from outside the system to fill its last vacancy or because this job is abandoned and leaves the system. As men and jobs are processed within the system to match one another, they will produce long interacting sequences of cause and effect, which faring through the system, keep it in constant change and need of adjustment, with delay and congestion problems sometimes as a possible outcome. Or as White (1970a: 16) describes it,

> The chain of movements of men is a series of pulls of a man out of one job into a more attractive one. It is natural to call this pull chain a vacancy chain: the vacancy is moving from the job appearing earliest in the chain to the one appearing last, whereas the dual series of men change jobs in the direction opposite to the flow of cause and effect. The beginning event – creation of a vacancy as through death of an incumbent – causes the chain; it generates the opportunity to move seized by the new incumbent, whose departure in turn generates a new opportunity, and so on.

This line of work eventually results in the identification of a general mobility mechanism or conceptual model called vacancy chains, the

specific merits of which are well known. With the help of this model mobility can be conceived and analyzed in a new way. In this new approach to mobility, people and jobs/positions are treated as two distinct types of entities that constantly enter and leave the open career system under observation. Such a reconceptualization of the phenomenon allows novel analytical insights into the phenomenon. Within any specific context, mobility can be seen as a process of sequential dependencies, that is as a series of interdependent moves making up chains of cause and effect that are produced whenever a man fills the vacant job left by the move of his predecessor to still another vacant job. Consequently, mobility within any given segment can be dissected, analytically broken down into, and more precisely accounted for, in terms of its constituent elements. In other words, it can now be conceptualized and examined closely in terms of flows that consist of arrivals and departures of the mobile units that move from one point to another within a natural, open system of fixed positions. Denser insights about the essential dynamics of mobility processes can be gained, as such a conceptualization makes analytically, more accessible the causal effects of flows to and from the environment that surrounds the segment under observation.

The vacancy models are, according to White (1970a: 318) "applicable to a wide variety of systems of men and jobs," and "a little thought or perusal of newspapers suggests a variety of possibilities. Jobs, as a category, could be replaced by offices in formal organizations – political parties, honorary societies, and so on." But job mobility and the matching of men to occupations or positions is only a particular case of mobility, which is a general and pervading process of contemporary social life, not confined to people and jobs. Indeed, many segments of social landscape can be viewed as a natural open system, constituted of matching entities, which is in constant exchange with its embedding context, subjected to erratic in- and out-flows of various types. Movements of many other kinds of entities too may be conceptualized as a series of stochastic arrivals in and departures from natural open systems, that is as a series of connections and disconnections, or matchings and decouplings, as these entities fare through the system. Such entities may be men and women entering in the so-called marriage markets, families and houses in urban settlings, paintings and exhibition in the art worlds, or athletics and titles.

For instance, marriage and housing markets represent, according to White, other examples of dynamics of the social world that, while

belonging to different realms of social reality, can be regarded as instances of mobility process, following the same kind of "social logic" and thus analyzable with the help of same analytical devices. As he (1970a: 1) puts it, "marriage provides a convenient paradigm [of mobility]" which when viewed as a matching process made up of initial choices to make, and decisions to terminate a union, and "a society in which frequent divorce and remarriage is institutionalized would have a pattern of mobility parallel in form to that in a system of stable jobs." Or, regarding residence mobility in metropolitan areas he (1971a: 90) argues, "many of the details and much of the argument must be recast, but the essential dynamics of the systems seem the same. Men correspond to families, jobs to houses, and vacancies in jobs to vacancies in houses."

Put differently, vacancy chain is a conceptual model that represents a general social logic of wide-ranging validity. It is, as White (1970a: 17) highlights, "an abstraction, a theoretical construct," the "remarkable feature" of which is that it is "able to show the interrelations of a wide range of social phenomena." When loosened up for the particular context in which it was developed, this model can be generalized and applied to many diverse cases, promoting detailed insights into causal processes at work. The more general use of this model, as White (1990a: 81) puts it, is to "get at the nature of opportunity structures and how contingencies of opportunity fit together." It can be used to examine in detail the logic or the "grammar" of opportunity in general, as White later calls it. That is, it can be used to study the emergence and circulation of opportunities, the congestion problems and the conflicts among individuals over opportunities, as well as the complexities of crossing and interlacing various causal orders induced by independent arrivals to and departures from opportunities – all irrespective of the specific types of these opportunities. In this sense, vacancy chains capture one of the major, essential dynamics of social life.

To summarize what has been said so far, although White is unarguably a model builder, he is nonetheless also a sociologist with a strong empirical disposition and a firm commitment to the fundamental premises of empirical science. Among the expressions of this disposition, as shown above, are his preference for case studies, his emphasis on the production of own data through field observation, and his quest for more detailed and analytically dense causal accounts. Moreover, White conceives of sociology as a generalizing science, which is inseparably fused with a quest for identification of

a few but general, essential features that govern social reality. For him, the development of a general theoretical perspective starts by identification of a limited set of general "logics" and "conceptual models," which have sufficient generality and which thereby can function as "principles of self-similar analysis," that is as guidelines for the analytical study of apparently different phenomena at larger and smaller scopes and across various substantive realms. And given White's strong and deep-seated commitment to proper solid empirical research, these few "logics" are of course to be mined empirically rather than stipulated hypothetically.

However, White's empiricism has still other dimensions, which mostly concern the validity of theoretical concepts used to describe social reality. That is, for the same reason that White finds unspecified causal assumptions among constructed entities inadequate, he also questions the validity of empirically unfounded concepts and theoretical schemes that build on such concepts. Applying the same criterion of validity, theoretical concepts must, in his view, be made clarified and specified, provided with empirically determined referents. Just as causal accounts should rest on tangible and specified empirical evidence rather than building on hypothetical assumptions among constructed entities, theoretical concepts too should be empirically concretized and underpinned, and thereby made subjected to empirical test. It is out of such a general quest for concretization and specification that White not only recasts some of the most fundamental sociological concepts such as social structures and roles in network terms, but also formulates all the basic notions in his own theoretical scheme – *control, identity* and *discipline* – in terms of network ties and processes. This network translation is primarily intended to remedy the vagueness of key sociological concepts, providing them with concrete and empirically tangible substances and meanings that are derived from in-depth, real-world observations made in terms of actual interactions and relationships. To explore these dimensions of White's empiricism, however, we need to see how he conceives of social networks not only an analytical tool but also as a theoretical paradigm, and this takes us to the next chapter.

3
Ties and Networks

Social networks as theoretical paradigm

As is known, the most distinctive feature of the social network approach is its focus on relationships among social entities and on the patterns and implications of these relationships for social action. This tradition proceeds from certain basic theoretical premises that, although not always systematically presented or universally embraced, are acceptable to most of those who identify themselves with this tradition. As summarized by some of the leading persons of this current, social network approach of today is characterized by taking as its basic tenets the following:

1. actors and their actions are viewed as interdependent rather than independent, autonomous units; 2. ties between actors are channels for transfer of resources of various kinds; 3. social structures are conceptualized as lasting patterns of relations among actors; and finally, 4. the structural location of a node has important perceptual, attitudinal and behavioral implications and has significant enabling, as well as constraining, bearings on its social action (Berkowitz 1982; Emirbayer and Goodwin 1994; Knoke and Kuklinski 1982; Wasserman and Faust 1994; Wasserman and Galaskiewicz 1994; Wellman 1983; Wellman and Berkowitz 1988).

As one of the pioneers of, and major contributors to, the contemporary social network approach, White obviously shares the fundamental assumptions of this tradition. He, in other words, subscribes to the basic notion that relationships and networks are central elements in

the constitution of social reality, and that connectedness through ties and embeddedness in the tangible and concrete networks of relations are the most realistic assumptions to start with, because they represent the fundamental conditions of human social existence. This adherence, however, is never announced in programmatic declarations but is manifested through a number of brief and hasty statements that are spread across White's writings. In some of these early statements, for instance, he maintains that, "the main reality … is the networks of interrelated social ties. Sheer connectedness, in Barnes's sense of network, is a prime aspect" (1986: 10); and that "natural networks of interrelated ties of kinship, domestic economy, neighborhood, age groups, friendship and the like" (1986: 3), which are the "by-product of chance linkages in a whirlpool of people and events" (1963c: 94), which "continue indefinitely" (1965a: 1), and which have only "naturally vague boundaries" (1986: 9), offer the most apt representation of "[the] basic facts about men's social environment" (1968: 15). Despite the shift in terminology, some other and more recent proclamations convey White's continued adherence to the basic assumptions of the social networks approach. For instance, expressing the general validity of these assumptions, he asserts with confidence that "ties between persons, and how they chain together and spread out in social networks, always prove the key, in [all] social formations" (1993a: 14) and that "all social actors and processes can be construed in terms of nodes and transactions and their mutual patternings as networks over time," making network a universal "key which continues to turn across very different scales of action" (1995a: 59).

Obviously, what these quotations suggest is the centrality of networks of relationships in the constitution of social reality as White perceives it. They, in other words, convey the familiar view that network is not only an apt analytical tool or an illustrative metaphor but also a key concept of fundamental importance to the description of social reality. Yet, although this in itself is a common view within the social networks tradition, White does not stop here but takes the matter further by problematizing the very basic unit of analysis within this tradition, namely the concept of social tie. Rejecting the static and mechanical notion of social relationships, White instead tends to conceive of social ties as dynamic constructions that emerge

out of the interactive processes among real social actors, and from this revised notion of tie he eventually derives a new image of social reality. Let us now take a closer look at the way White, inspired by theoretical insights developed outside the social networks tradition, conceptualizes and uses the basic unit of the social network analysis.

Social ties

As an analytical entity, a social tie is a theoretical construction, abstracted by the analyst from the bulk of largely erratic streams of affections, encounters and interactions between a pair of actors, be they human beings, informal groups, formal organizations, or others. As White (1968: 16) defines it, a social tie "is an abstraction from the total, erratic confrontation of a pair in various contexts [and] its basic parameters are timing, intensity, symmetry and topic." Consequently, network, that is an observable pattern of ties, is a theoretical abstraction too. As White (1992a: 71, fn. 13) admits, any sociometric network – a set of nodes with connecting lines each representing a tie between a pair of nodes – is only an analytical abstraction that "is no more than an observer's coding or recording of a set of relations between pairs of people."

The abstract character of the concept of tie means independence from the particular content of any social relationship of course, and allows for a formal treatment of all types of connections and networks that may evolve among social actors of all kinds and at all levels. Yet, the construction of ties as analytical units is not entirely unproblematic. Like many other social network analysts, White remains silent or at least vague as to what distinguishes a relationship from the sheer encounters and unrepeated interactions among strangers. That is, we are not told whether a certain minimum degree of durability, intensity, frequency, regularity or reciprocity of interaction is necessary to decide whether there exists a relationship between any given pair of actors. Although the necessary conceptual distinctions in this regard remain underdeveloped, White (1992a: 71) nonetheless does admit the difficulties involved in the subtle but crucial task of deciding some threshold value or "some cut-off … on strength or persistence of relations in a dyad," pointing out also the risk that in doing so "one can get obsessed with measurement

problems and prospects. Eye movements can be as reliable as utterance … as indicators of ties."

Furthermore, according to White the "abstraction of relations as ties in a network is a commonplace" (1992a: 66) and "has always been true in reckoning kinship, as in 'meet my cousin's wife'" (1993a: 3). That is, he seems to mean that the decision concerning the very existence of a tie in a dyad is not an analytical matter only but also a practical issue for social actors in the sense that in their perception about the existence of a tie they too require some minimum degree of frequency and strength of interaction. That is, in order to find it justified speaking of the existence or continuation of a tie between him and another party, any social actor too must constantly make judgments about some practicable criterion of minimum interaction. Thus, just as much as the contents and conditions of a relationship may be an object of disagreement and negotiation between the parties, the very existence of a relationship can also be a tangible controversial issue in social life, subjected to divergent perceptions.

At any rate, a relationship may be perceived by the connected actors and/or it can be defined by the observer, on the basis of the existence of some sentiments and attitudes between the actors. It may also be perceived on the basis of some ongoing activity, making the actors and/or observer to conceive the tie as a channel of exchange and/or diffusion, through which anything material or non-material like directional steams of goods, capital, information, rumors, and so on can flow. With regard to content, social ties obviously show an enormous variety. Depending on what is being transferred or exchanged in ties, these can reflect cooperation as well as competition, friendship as well as hostility, love as well as hatred, or "conflicts as well as solidarity" (White and Lorrain 1971: 78). Moreover, a relationship may be simple and uni-dimensional. Yet, more often than not, a social tie is of a composed character with multiple dimensions. For example, a multi-dimensional tie may exist between two actors who are not only work partners but also friends. Cultural definition of social roles, such as the role of parent, includes in many cases both an authoritarian and affective aspect. Or, to take yet another example, any conjugal relationship consists of and demonstrates several distinct dimensions such as emotional, social, economic, and so on. It is a familiar fact of everyday life, however, that many ties that are initially one-dimensional eventually grow

wider or thicker, so to speak, as new layers or dimensions are added to them.

In particular cases, each of these dimensions may belong to a specialized, if not separate, sphere of life, and its formation follows a distinct logic. Often having a greater strength, a many-stranded tie represents the extent to which the connected parties are bound to each other in different social arenas and with a multiplicity of interests. A multiplex tie, as Max Gluckman (1967) used the terms for the first time, is an overall pair relation or an all-embracing kind of connection between two actors where undifferentiated connectivity or blurredness of dimensions is the issue. Such a tie "sums across some scope of specialized relations" (White 1992a: 79), and is often a complex and indefinite amalgamation that is generally characterized by the complicated, uneasy and ambiguous interplay among its various dimensions. And, of course, as George Homans's (1950) classic study of the men working together in a bank wiring room reminds us, it is relatively easy to imagine how complex the interplay and mutual dependence among various dimensions of social relationships may be, so that what happens along one dimension affects, and at times determines, what goes on in other dimensions. At any rate, the compound character of social ties in the real world and the potential ambiguities and complexities involved in the interplay among the various dimensions of these ties are widely recognized (Barnes 1979; Lorrain 1972). Or, as put by one of White's early graduate students, Ronald Breiger (1975: 9),

> it has for long been a basic assumption of anthropology that where relations are multiplex, that is where the relations between two persons derive from their activities in several institutional fields, the different types of relations impinge on and influence the actors in the various roles they play. Indeed, it is a basic assumption of those subscribing to the network approach that behavior cannot be explained in terms of any one single activity field.

The multi-dimensionality of social ties and the interdependence of their various dimensions raises another issue which has largely been neglected. That is, to make analytical distinctions among the various dimensions in a tie represents yet another delicate and largely

unresolved matter, partly because the determination of types of relations in general poses a particular difficulty and requires some familiarity with the larger societal context within which the ties occur. Once again, without taking any further step White shows his awareness of the problem and the difficulties involved when he (1965a: 2) on an early occasion addresses the issue by holding that "there must be a common culture to define a type of relation sharply and clearly, if there is to be a net defined by the presence or absence of that relation between pairs of persons." And, postponing the question to some undetermined future time, he (1973b: 57–8) maintains on another occasion that

> "types of ties" has been used as a basic concept without further explication. This development of relational [i.e. network] models has from the beginning been carried out in conjunction with specific analyses of data sets, and the "types of ties" chosen by the observer have had to be accepted as a basis, perforce. Valid choice of types of tie is a subtle problem in any case and the observer's intuition is as good a beginning point as any in what must be a slow evolution playing back and forth between types of population, types of models, the institutional aspect of the social structure of interest, and so on. Some obvious points can be made. Like and dislike are not only a reasonable starting point for getting at some aspects of informal organization, at least in our culture, but also are so deeply imbedded in our culture that many ostensibly different types of tie, if interpreted by the actors themselves in responses to sociometric questionnaires, are all at least partly reduced to these two kinds.

The apparent difficulties involved in determining the types of tie in a given population raises a more general, and by far more important issue, which till now remains unresolved and even unnoticed by most of those who subscribe to the social network approach, namely the question of the general grounds of connectivity among social actors – an issue which will be taken up for a brief discussion in Chapter 6. For now, let us proceed by asserting that ties are not only often multi-stranded, but they also tend to concatenate and chain together, involving more actors than just those directly connected. They almost always entail other relations, and generate and warrant

further ties to the degree that it is often unrealistic or at least implausible to consider a dyad in isolation. While kin ties are a good example in this regard, another familiar case of this natural tendency of ties is the emergence of relationships among parents due to the ties among their kids as playmates or classmates. What matters for the purpose at hand however is that from this natural tendency of ties to concatenate comes the infinite character of strings of ties and networks. It is also from this property of ties that the problem of boundary demarcation arises, both for the analyst and the actors (Laumann *et al.* 1989).

Sometimes, however, these secondary ties may grow strongly and find a rationale of their own. As in the case of kinship, any indirect tie of this kind, "might," as White and Lorrain (1971: 54) put it, "happen to be quite strongly institutionalized in its own right, so that if *x* [a middleman between *a* and *b*] left the system in one way or another, *a* would keep his … tie to *b*. This is important and relates to our argument that a relation involves more than just two persons (or three, for that matter)." It is worth mentioning that such concatenations often give rise to new, indirect social ties that are no less real than the original direct ones and, in fact, "everyone recognizes the reality of indirect ties, ties to one's boss' friend, or to one's roommate's relative, or to one's ally's enemy" (White and Lorrain 1971: 53).

An important implication of this, as indicated above, is that any given social relationship is practically never isolated but, rather, is embedded in a larger system made up of other ties, so that what occurs is one relationship may spill over into the other ones. In this sense, any tie is more than a connection between the two participants in the sense that it may, and often does, involve other actors as well. One important effect of this embeddedness, to quote White (1968: 15), is that "one man's tie to another is always contingent on the ties each has to still others, and thence to latter's ties to others at a further remove …" Consequently, "types of relations contingent upon relations to third parties may be recognized: for example, boss' secretary. In the case of kinship roles, contingent relations may also be recognized in their own right – father's brother as uncle – and become the basis for new roles independent of third parties" (White 1971b: 3). In other words, given the natural tendency of ties to concatenate, the nature of a given tie between two actors may be dependent, at least in part, on the relationships that each of these two have

to other actors, meaning that the tie between two focal nodes is not independent from each party's ties to other nodes. The point can be illustrated by an example. In her classical study of urban couples, Elizabeth Bott (1957: 93) observes how the creation of a new mother–child tie affects the mother's network, and concludes,

> after children are born, the wife will see less of her former girl-friends and more of her mother and other female relatives. The wife becomes deeply embedded in activities with kin. Her children bring her into a new and even closer relationship with her own mother, who now becomes the children's grandmother.

This dependency of the nature of a tie on other, neighboring ties is a very important issue and has some far-reaching implications for the conception of tie as a medium of action. Later in this study (Chapter 4), it will be discussed how such a dependency calls for some kind of buffering or decoupling whenever an actor, let it be A, desires to keep his relationship to another actor, B, free from the influences that may come from the latter's, that is B's ties to others (C, D, etc.). The reverse may also be intended, for instance, when A uses B's ties to C and/or D in order to influence his direct relationship to B. This dependency becomes even more significant once its contingent character is realized, that is when it is realized that the relationships that connect an actor indirectly to others are seldom, if ever, predetermined, regular and predictable. In short, any direct tie of an actor is *contingently dependent* on his indirect relations.

Let us be more explicit. As said above, the relationship between A and B is in part dependent on the ties that A and B respectively have to others, for example A to C and B to D. Now, if the latter ties, that is A–C and B–D are institutionalized and known to A and B, the impact of these ties on the direct relationship between A and B will be relatively predictable. Both A and B are familiar with the kind of expectations and obligations that A–C and B–D entail. Now consider the case when these ties are not conventionalized in any substantial way but are mainly contingent with regard to their content and conditions. In this case, the direct A–B relation becomes contingently dependent on A–C and B–D in the sense that the influences from the latter on the former become irregular, unpredictable and, thus, hard to handle. Both the contingent nature of ties and its implications for

the actor's understanding of his overall situation, as well as for his agency potential will be discussed later. Before doing that, however, another property of social ties must be considered.

Among the various properties of a social relationship, reciprocity is perhaps the most fundamental one. A tie is by definition reciprocal, and this reciprocity is built into every social relationship, be it a relationship of opposition, subordination, competition, cooperation, or any other. Like durability or intensity, reciprocity is an indispensable feature or attribute of any relationship, irrespective of the content or type of that relationship. Reciprocity is the tangible aspect of the matching of perceptions and actions between parties in a relationship. It means the existence of some measure of mutual interaction or at least mutual perception by which the parties in a relationship are tied to one another. It also implies that there is some mutual orientation towards each other and some mutual understanding on the part of the participant actors of the significance of each other's perception and behavior. Often this reciprocity takes the concrete expression of mutual expectations, that is the expectations that any of the connected actors has of the other one. These mutual expectations, which need not be necessarily symmetric, concern primarily the kind of treatment that an actor feels entitled to receive from the other in return for the treatment that he feels obliged to deliver or is willing to offer to the other one. As such, these expectations are, to quote Erving Goffman (1971: 266), the "perceptions regarding mutual treatment, the obligations of one end being the expectations of the other."

This reciprocity of expectations, however, is a crucial constituent element of connectivity and, indeed, a necessary condition for a relationship (Gouldner 1960; Mitchell 1969; Rex 1961). And of course the matching of these expectations is the core: what is a tie if not a match between two distinct sets of perceptions and actions? Indeed it seems justified to speak of the existence of a relationship between two actors only to the extent that there exist reciprocal expectations between the two in the sense that each one, in his action, takes into account the other party's perception of, and reaction to, that action, and plans his own action on the assumption that the other will act in a certain way. Without this reciprocity, that is without mutual transaction or orientation of the nodes, there is no actual enactment of the relationship between them, nothing shared or held together by

them. Proof of this is the fact that the continued existence of a tie between two actors requires some degree of sustained interaction between the two, which has to be actualized and materialized in one way or another. Although sometimes necessary, cultural prescriptions, formal descriptions, or even biological rationales in themselves never provide a sufficient basis for a tie to exist and persist. It is an only too familiar experience of everyday life how dependent the well-being of a tie is on such materializations and how a relationship must be continuously maintained through various activities, no matter how sporadic these may be. It is also a familiar fact of life that any relationship, irrespective of its basis, fades away gradually as such maintenance ceases. Apparently, it is familiar observations of this sort that Goffman (1971: 100) has in mind when he writes

> parties to a relationship may engineer a coming together because business, ceremony, or chance has not done so recently enough to guarantee the well-being of the relationship. It is as if the strength of a bond slowly deteriorates if nothing is done to celebrate it, and so at least occasionally a little invigoration is called for.

Dynamics of ties

Another important point regards the dynamics of ties, stemming from the negotiable and thus contingent nature of the expectations, claims and demands invoked by the parties. Being essential for the very existence of a tie, reciprocal expectations are hardly static and invariant parameters, given once and for all. Contrariwise, these expectations are almost often a matter of negotiations between the parties involved, particularly in the case of social ties in contemporary social contexts. It should be recalled that what is often assumed to be the benchmark of modern societies is the cultural heterogeneity and diversity of perceptions that emerge, as the old and largely uniform value and belief systems weaken, and as the stiff resistance of traditions against change softens. It is widely held that what melts away during the course of the historical transition to modernity are the neatly arranged structures that in traditional societies envelop social relations and interactions. What dissolves, in other words, are the tidy and all-inclusive systems of prescribed social roles generated by a few partition principles such as kinship and status. Indeed, what

is most often taken to be the key expression of the historical transition is the dissolution of traditional social categories coupled with fixed sets of obligations and expectations, together with a weakening of the authorities that endorse the traditional order of things.

Although this historical change and the constitution of the kind of social contexts that emerge out of this transition is never a focal issue for White, he nonetheless seems to take into account the impact of such a transition upon extension of networks and, above all, on the nature of social ties. What appears to be of prime interest to him, in other words, is to determine what this societal change means, not as expressed in abstract words or vague notions, but rather in terms of the concrete, fundamental changes that it causes in the nature of actual social relationships and networks. However, in one of the few explicit references to this historical transition and the subsequent changes on the nature of social ties White *et al.* (1976: 732–3) argue that

> perhaps *the* major thrust of classical social theory was its recognition of the historical dissolution of categorical boundaries for social relations, whether the change was perceived as a transition from status to contract (Maine), from *Gemeinschaft* to *Gesellschaft* (Tönnies), from mechanical to organic solidarity (Durkheim), from traditional to means-rational orientation (Weber), or from ascribed to achieved status (Linton) (italics in text).

Let us now recall some of the familiar implications that this macro-level process has for the character of social ties, in order to see how they underpin White's new image of the emergent type of social contexts. Basically, the structural changes generated by this historical macro-scale process mean that an ever-growing number of social relationships in new contexts have a profoundly different basis and character that is induced by the unprecedented advancement of division of labor and specialization. Whereas many of the social relationships in traditional societies rest on similarities and likenesses among those connected, in modern societies ties are mainly derived from the functional differences among social actors, each of which is embedded in a distinct setting within the larger and differentiated context (Durkheim 1984). It is primarily from these functional dissimilarities rather than from similarities of sentiments and perceptions that the overwhelming majority of social relationships in modern societies

arise. In other words, the main basis of connectivity in these societies is more often than not the complementary differences that are produced by the distribution of tasks among the people who perform various functions. Therefore, social relations in these contexts frequently imply functional interdependence among those connected. Ties among social actors stem largely from such differences, and it is the need and pursuit of matching these differences that primarily motivates social actors to establish and sustain their ties. Put differently, as the basis of connectivity in modern societies changes, the nature of reciprocity, which is inherent to social relationships changes too: it consists increasingly of a matching between the complementary expectations, demands, and claims of the connected nodes.

As the self-contained and isolated segments of traditional societies become integrated parts of the larger and differentiated organization of modern contexts, both the diversity and density of social relationships among people amplify dramatically. That is, not only does the number of ties increase radically as the result of this development, but also does the diversity of their content (Luhmann 1982; Parsons 1966; Smelser 1959 and 1963). If in the past practically all relations were enveloped in a kinship frame, in a more differentiated setting they are increasingly dispersed over many distinct and often incomparable frames of kin, peer, neighborhood and, above all, work. No longer stemming primarily from similarities of sentiments, beliefs and life experiences, these ties connect actors situated within heterogeneous regions of this huge, differentiated landscape. They tie together, directly and indirectly, people on various grounds and in a variety of ways, and are sustained largely through the functional interdependency of the connected nodes. As a result, the contemporary social landscape is essentially characterized by an ever-growing complexity of the system of ties among actors who inhabit various regions and diversified chunks of a highly differentiated social world.

Furthermore, the historical transition of traditional societies entails, above everything else, a profound shift from institutionally fixed relationships of these societies to the much more flexible and often contingent ties of modern contexts. These ties have often a narrower base and are more time-bounded; and as they are no longer primarily generated by binding traditions and sentiments, they are more fragile and volatile than the traditional bonds. Reconsidered

from a network vantage point, the new social setting is characterized by an unprecedented enlargement of the possibility of loosening up and/or unraveling social relationships hitherto unbreakable or at least very costly to break. The various, new grounds for connectivity and for establishing ties in modern settings also yield unprecedented logics for breaking these ties and for mobility. That is, the flexibility of ties and temporality of membership in social groups induce mobility processes that are fueled primarily by actors's pursuit of the optimal matching of their complementary differences within many major areas of life such as occupation, residence and marriage. As a consequence, there is in modern contexts a high geographical and social mobility of actors, which entails a rapid turnover in group membership.

Yet, modern ties are not only flexible in the sense of being breakable. For one thing, modern relationships are also flexible with regard to the selection of the particular actors to be tied together. Given a few and long-established principles of connectivity that prevail in traditional societies, it is generally possible to predict who will belong to what social association and who will associate with whom in almost every relationship of life. On the contrary, in the case of modern ties the issue is highly contingent and unpredictable. More important, however, are the variable contents and conditions of social relationships in modern contexts. In such settings, there are no preordained schemes with enough authority to spell out and instruct actors how they should be connected to one another, what their relations should look like, which legitimate expectations and obligations are on each side of the relation, and so on. In other words, with regard to their content and conditions, modern ties are initially indeterminate, and the terms of any relationship are to be negotiated and settled jointly by the actors on a case-by-case basis.

Indeed, modern ties can be broken *because* they can vary in their contents and conditions in the first place, and thus give rise to disagreements and mismatches in mutual expectations. Along with the dissolution of traditional roles and institutionalized relationships, the predictability of flows of expectations and behaviors is also undermined. In consequence, in contemporary social settings, the ties in which each actor is engaged are increasingly unspecified in advance. They are variable along a number of dimensions, such as their duration and strength, as well as the type of sentiments, perceptions, expectations and claims that they contain. In societies that are

characterized by the fluidity of social categories and fuzziness of boundaries, social ties no longer have their previous permanency and stability. They are no longer mainly designed and maintained in accordance with preordained schemes and prescriptions about membership in various social categories and about the relations among them. Modern social ties, in other words, cease to be preceded and accompanied by commonly agreed-upon perceptions and lack their previous clarity of definition and meaning. Since they increasingly become ambiguous, the flows of expectations that each node produces cease to be predictable. In short, in modern social settings, an ever-growing portion of relationships turns flexible, as the previously institutionalized or conventionalized relationships fall "everywhere in decay," to paraphrase Goffman (1971: 89). The less a social relationship is conventionalized or formalized, the less predictable it is and the more it is liable to be contingent with regard to both the choice of nodes connected and the terms of the relationship, that is the content, strength, durability, and the perceptions and expectations attached to it.

Given the inherent mobility and contingency of the great portion of modern social ties, however, any relationship that is persistent enough to be observed as a tie represents some degree of settlement between the participants. It represents some stable balance, some settling down of the mutual control efforts of the nodes, which aim to determine the conditions and terms of the tie between them. In other words, it represents the outcome of their struggle over the character of the tie, although this may be only temporarily stable. However contingent a tie may be, some settlement is required for it to be durable. What is needed is some degree of mutually recognized perceptions and interpretations of the terms and conditions of the tie. Since none of this is given beforehand, matching between the actors becomes the central issue in any social relationship. That is, given the attributes of modern social ties that have been presented so far, reaching a viable settlement between any pair of actors over the terms and conditions of the tie between them becomes the focal and critical issue in the process of formation of any tie. Diverse, heterogeneous, and often conflicting perceptions of the actors about what the reasonable, legitimate and acceptable conditions and terms of the relationship between them are must somehow be fit together and reconciled. As such, a tie thus becomes increasingly a feat of social skill and

competence. It becomes a joint construction, the accomplishment of which takes a certain amount of effort regarding negotiation and adjustment of mutual perceptions, expectations, claims, and so on. It is against this background that White (1992a: 68–9) maintains that even

> an apparently simple pair-tie can be seen to be a considerable social accomplishment. A context and onlookers persist in recognizable fashion, which means that some substantial interest obtains concerning the "simple tie." There also must be ambivalence and complexity built into a tie, since it is a dynamic structure of interaction in control attempts. It is this structure which is being summed up as "a tie," and interpreted in stories, both by its members and by onlookers.

This revised notion of tie, obviously, is quite different, and theoretically more enriched, than the concept of social relationship that is commonly used within the social network approach. Indeed, although White is himself one of the major pioneers of this tradition, he gradually grows critical of, and distances himself from, the conception of social tie as it is usually adopted by the practitioners of the social network analysis. He ceases to regard social ties as ossified canals which either exist between two nodes or not. He also abandons the idea of social relationships as unproblematic linkages that remain the same once they are established, like solid bridges via which various kinds of resources are transported back and forth in discrete packages, from one node to another, and which never really allow these flows to transform anything but the distribution of the resources in question. Rejecting this static and mechanical notion of social relationships, White instead seeks to inject some theoretical insights into this basic unit of social network analysis, and tends to view social ties as dynamic constructions that emerge out of the interaction processes among real social actors. In this revised view, a tie is a complex phenomenon that is constructed and sustained jointly by those connected. Any pair-wise and apparently simple relationship is the concrete and unique outcome of the association of the actors and is the fragile product of the dynamic forces that are at work in that association. Its construction, as well as its continued existence, requires the matching of mutual perceptions and actions of those engaged. It is a social feat of the connected parties, and far

from being anything mechanical and static, it must be actively and continuously maintained by the connected nodes. Never static, a social tie is no "once-and-for-all objective interconnection" between actors (White 1992a: 67). Rather, it is a dynamic, intersubjective construction that is "socially constructed" (White 1992a: 91) and that emerges out of complicated, ongoing interactive processes between the connected actors. Nor should networks be seen as static configurations of ties, which are given once and for all. Rather than treating them as fixed and finalized constructions, networks should be seen as dynamic contexts that keep being constructed and reconstructed, as their constituent elements do so. One should not lose sight of the dynamics involved and reduce social networks to "sheer connectivities" or "mere juxtapositions of ties" (White 1992a: 79 and 93. See also 1993a: 104).

It may be worth mentioning at this point that the increasingly contingent nature of modern social ties has been noticed in many different sociological traditions. According to Talcott Parsons (1960: 39), for instance, in modern societies "the institutionalization of [any] set of role-expectations and corresponding sanctions is clearly a matter of degree. This degree is a function of two sets of variable; on the one hand those affecting the actual sharedness of the value-orientation patterns, on the other, those determining the motivational orientation or commitment to the fulfillment of the relevant expectations." Moreover, in their analysis of social interaction, Parsons and Shils (1976) argue that any interaction is always "doubly contingent" in the sense that it is not completely determined by the motivations of one of the parties alone. The establishment of an interaction thus requires a matching between the actions of one part with the expectations of the other. This matching, or mutual fitness of expectations and behaviors, however, is not always achieved. The reason is that modern contexts do not represent any complete institutionalization of all the elements of social action any more.

Another sociological current that, despite all its differences with the Parsonian tradition, makes a similar point and highlights the contingent nature of social ties is symbolic interactionism. In the terminology of this tradition, any social relation, even the apparently simplest one, is the outcome of a "joint action," emerging out of the matching or fitting among the courses of action of participants in any interaction. According to Herbert Blumer (1969: 17–18), one of

the most prominent representatives of this current,

> a joint action always has to undergo a process of formation; even though it may be a well-established and repetitive form of social action, each instance of it has to be formed anew. Furthermore, this career of formation through which [a joint action] comes into being necessarily takes place through the dual process of designation and interpretation. … repetitive and stable joint action is just as much a result of an interpretative process as is a new form of joint action that is being developed for the first time. This is not an idle or pedantic point; the meanings that underlie established and recurrent joint action are themselves subject to pressure as well as to reinforcement, to incipient dissatisfaction as well as to indifference; they may be challenged as well as affirmed, allowed to slip along without concern as well as subjected to infusions of new vigor.

However, this reconceptualization of the notion of tie, recognizing the contingent nature of modern social relationships, has several important implications for social action. One such implication is the control efforts that are inherent to, and never absent in, any relationship, that is the efforts carried out by the parties in determining the conditions and terms of the relationship. Moreover, in the absence of any valid and legitimate preordained schemes or guidelines, the parties in a relationship are mainly left to their own devices to work out the conditions and terms of the tie between them. These issues will be discussed more in Chapter 4. For now, another property of modern social ties should be mentioned – a property that stems from the contingent nature of these relationships.

Story

One of the novelties introduced by White is the conception of *story* – a concept whose help White seeks to highlight what could be called the subjective dimensions of social ties, and to enrich the social network approach with insights concerning the perceptions of the parties in a relationship. The term refers to the accounts developed and reported by each party in the tie concerning the nature, character, and state of the relationship. A story, in other words, is a description

of how a tie is perceived by the actor who is engaged in that tie. A story is a certain interpretation of a tie that an actor has of that tie; it is the particular definition or meaning that he assigns to that tie.

Such a story includes the actors's account of the history of the tie, that is the narrations and valuations of past interactions between the actors, now accumulated as the history of the relationship. Such a story also includes a report on what is going on in the relationship and what prospects it has, that is how the relationship is expected by the actors to unfold in the future. In short, such a story is a construction made by any party in a relationship out of his experiences and recollections about the existence, conditions and terms of the tie. As such, stories thus "describe the ties in networks" (White 1992a: 65); they "represent ties" and are "perceptions about particular ties and interconnections of ties" (White 1992a: 66). Reporting on the state of the relationship, past and present, stories include accounts of all kinds: friendship or enmity, attraction or repulsion, cooperation or competition, and so on. Stories include accounts of interactions going on between the parties or, as White (1992a: 83) has it, they "cite … actions on specific occasions."

Above all, however, the participants in a relationship use stories in order to justify and legitimize their expectations, demands, and claims. They often draw on valid cultural schemes, normative conventions, dominant principles of action, and others in order to give acceptable accounts or representations of their expectations, claims, and demands. They give accounts and offer meanings to create justification of their actions and to influence others's perceptions of these actions. In this sense, stories provide the actor with a rationale for his expectations and claims, and help him to create a maneuvering space for himself. Therefore, as White (1992a: 84) puts this latter point, "stories are vital to maintaining as well as generating social spaces for continuing actions." Such legitimizing accounts or representations involve of course a selection of what is to be included or excluded, celebrated or rejected. Such reporting may include rational arguments and/or cultural glosses for interpretation or justification according to the context. At any rate, any such report represents an attempt on the part of the narrator "to weave that recounting out of stories familiar to the hearers" (1993a: 47).

Needless to say, however, that story telling as a means of seeking legitimacy is not confined to individuals but is a more general strategy deployed by actors at all levels. Meyer and Rowan (1977), for

instance, draw attention to the stories told by organizations:

> a story incorporates elements which are legitimized externally – just as jealousy, anger, altruism, and love are myths that interpret and explain the actions of individuals, the myths of doctors, of accountants, or of the assembly line explain organizational activities.

Other extensions are easily perceivable, for instance stories told about relations among countries, nations, classes, races, religions and/or sexes, but what matters most for the purpose at hand is the place of this concept in White's conception of modern social ties and in his overall image of contemporary contexts. The fact that in modern settings relationships are contingent implies that their definitions and conditions are open, unsettled questions. Such ties remain largely undefined with regard to the contents and terms of connectivity. In consequence, the mutual treatment of the parties to a relationship becomes a matter of negotiation that has to be settled jointly. In this view, any social tie becomes a site of struggle, a force field in which each node seeks to gain, sustain, expand or reinforce its control over the character of the relationship.

Against this background, stories are constantly, and more or less skillfully, used by each node to define the relationship, that is to determine the conditions and terms that are to be valid for the tie between them. It is in this sense that White (1992a: 68) asserts that "stories come from and become a medium for control efforts: that is the core." What is necessary for a tie to be sustained is the matching between the stories that each party of a relationship has on his side. Such a matching of stories, or fitting together of accounts, is a necessary condition for the parties to reach a settlement and for the control efforts to find a viable resolution. In short, such a matching of stories is a necessary condition for a tie to be established and persist. Stories are inherent to such negotiations and control efforts to the degree that, according to White, "a tie becomes constituted with story" (1992a: 67) and "all ties are defined by, and induce and respond to, stories" (1992a: 88).

A new image of contemporary social contexts

So conceptualized, social ties are the basic elements of White's sociological thought, and constitute the building blocks of his theoretical

construction – a construction, which begins by taking a fresh look at the kind of reality that constitutes the subject matter of the discipline. That is, although he never announces his ontological stance explicitly, White pursues his aim of regrounding sociology by developing a new image of the contemporary social reality, which rests upon the fundamental assumptions of the social network approach. According to his ontological outlook, social reality consists neither of atomized individuals nor all-inclusive totalities. Rather, this reality is made up of the bulk of chains and networks of ties, which encapsulate dynamics of interaction processes. And, given the properties of its constituents, this reality is nothing reified, existing ready-made "out there." Rather, seen from the network vantage point, social reality is something essentially complex, vivid and indeterminate. It resembles a fluid, unfixed and pliable mass, always changing shape and hue. It is an unfinished and unsettled kind of reality that is amenable to continuous remolding and recasting. In White's (1968: 17) own words, "society derives from and is endlessly reconstituted in terms of networks of tie." It can be described as a "mesh," as Barnes (1972) did, but "*mush* might be a better word than *mesh*, for it is hard to see clear and stable form and process in [the constituent] ties" (White 1963c: 94) (italics in text). Or as he (1992a: 4) employs yet another metaphor to convey his ontological stance, "there is no tidy atom and no embracing world, only complex striations, long strings reptating as in a polymer goo, or in a mineral before it hardens."[1] Or as Nitin Nohria and Robert Eccles (1992: ix) report on White's basic image of modern social landscape, it is no "crystalline grid [but] a repeating polymer," which always resists being crystallized and reified.

Seen from a network vantage point, the social landscape "out there" appears as a huge and dense texture of interlocking and overlapping networks, without any clear-cut boundaries. These "impenetrable networks" (von Wiese 1941: 29) are made up of numerous long chains of pair-wise ties of varying content that extend in all directions. In other words, ties of various kinds concatenate into numerous strings, which evolve into a complex and multi-layered texture of endless networks, intertwining and weaving together in such intricate ways that it is practically impossible to keep track of the individuality of any of them.

Moreover, given the heterogeneity produced by social differentiation, such a landscape can be envisioned as a mosaic of juxtaposing and

only partly coalescing segments, or in White's view, as an uneven, differentiated and "inhomogeneous gel" (1992a: 12), where people are brought together mainly by the virtue of their differences rather than because they are similar and like-minded (Wirth 1938). "Weak ties" (Granovetter 1973) are especially interesting in this regard because these "more casual" relationships "connect a larger fraction of [the] world together than the strong ties, which are weak in the broader context" (White 1992a: 75). At any rate, the overall connectivity is so dense and widespread that it seems justified to speak of one single universal network, in spite of the actual unevenness of this landscape and the fractures and gaps among its heterogeneous regions. Indeed, many pioneers of the network approach did tend to adopt the idea of one global or total network context, that is "the general ever-ramifying, ever-reticulating set of linkages that stretches within and beyond the confines of any community or organizations" (Mitchell 1969: 12), and that which "spreads over the whole world, without any absolute solution of continuity anywhere" (Radcliffe-Brown 1952: 193). And, some observations regarding the "small world" phenomenon (Milgram 1967; Rapoport and Horvath 1961; Travers and Milgram 1969; Watts 1999) and "weak ties" seem to provide further evidence of this dense and endless connectivity, suggesting how surprisingly interwoven social networks may be. They show, in other words, that diverse relationships concatenate endlessly and that the resultant strings continue across, cut through, and connect many apparently separate and remote realms or regions within modern social landscapes, which thus become full of unexpected strands that link individuals seemingly far removed from one another in both, physical and social space. The consequence is the astonishing connectivity of the social world, manifested through the fact that any "arbitrary pair [can] connect in about half a dozen steps, this within a hundred million persons, – [something that] to peasant societies [of the pre-modern era] might seem a bizarre task" (White 1992a: 76).

Yet, there is more to it. The overall landscape is not marked only by the dense and diverse connectivity among its inhomogeneous regions but also by the dynamism of this connectivity. The web of contemporary social world appears to be not only intractably interwoven, but also enormously dynamic and changeable. It is a landscape kept in constant motion by the dynamics of connectivity and interaction among the uncountable independent actors who are

hardly ever embedded within a permanent and rigid constellation of ties. This dynamism is primarily derived from the increased flexibility, and the entailing temporality of group memberships in modern settings, as the connected nodes are constantly driven towards and away from each other by a variety of forces of attraction and repulsion, of attachment and detachment, no longer fully harnessed.

Given the flexible nature of ties, contemporary social settings can, on the whole, be conceived as dynamic contexts, which are never completely at rest. Rather, they are better characterized by the profound liveliness that they host, as the constellations of their constituent ties are ever changing. Since ties are subjected to constant change, never fully and/or permanently settled, the modern social terrain can be regarded as a restless universe. It is kept in ceaseless motion by the dynamic forces of connectivity and interaction among numerous uncoordinated agents, by ties continuously being broken, recast or reformed. Or as Sorokin (1959: 381) put it long ago, the most outstanding characteristic of contemporary social settings is their intensive mobility, that is the social circulation and transposition of their members who are less attached to their places and positions, reminding one of "a pot of boiling water in which the water particles move up and down, to and fro, with great rapidity."

Moreover, it is a confusingly complex landscape where events and actions spill over into one another, chain together and culminate in highly intractable and indeterminate ways. This complexity stems from the enormously increased density and diversity of connectivity in modern social contexts. This is a well-known kind of complexity that is generated through the disorderly interactions of multiple, distinct causal chains that weave together in highly intractable ways and cumulate into unintended effects (Collins 1984). It derives from irregular intertwining of numerous long chains of cause and effect that, at any given point, cross each other and interfere with one another. It comes from the erratic interplays of actions of numerous autonomous actors, so that what happens to one node at one point in time and space affects others at other points in time and space.

As shown in the case of mobility studies, the interlocking and congestion of the numerous independent causal processes are so extremely complicated that in many cases, especially within larger populations, it may be justified to use stochastic models in the analysis of social processes. And it is the ambition to deal analytically with this

complexity that underlies the sustained interest that White devotes to the study and development of models of stochastic processes. Yet, for him, this complexity does not represent a mere technical problem: it also has crucial theoretical implications for the way that he understands and describes the constitution of modern contexts. For one thing, this complexity gives rise to a profound sense of confusion in the actor who, located in the intersection of several distinct networks, is constantly bombarded with erratic flows pouring down on him from every corner. Very early on, White (1972a: 1) expresses his amazement over "the enormous complexity of interplay among different lives, the fascinating unpredictability of how different actions, perhaps of millions of persons, cumulate into chains of unintended consequences." He (1972a: 1) also expresses his awareness that the interplays of numerous distinct perceptions, intentions, and conditions are so overwhelmingly complex that they make us perceive life as unpredictable and indeterminate, and that they lead us to find the various worlds we live in and near puzzling, "erratic and often pointless."

White, in other words, is aware of how the unexpected breakups of the routinized daily normality, the cracks and fractures of everyday life, constantly remind us that contingency or chance holds an "awful grip … on human affairs" (White 1990b: 783), making us feel that we "live in a world where disorder is around every corner and improvisation the only means of survival" (White 1992a: 3). Moreover, due to the complexities generated by the interdependence of so many lives and fates, we are also forced to realize the limitations of our capacities to create and maintain orderliness in our lives and to have control over the sequences of events that our actions set off. As White (1971b: 1) puts it,

> each of us in our own small worlds has learned how impossibly complex it is to understand developments even in small, apparently homogeneous groups in which we think we know most of the ties operative among members. We see in a few instances how indirect chains of relations have induced changes in direct relations, how the existence of relations to third parties interacts with direct relations, how an incident here triggers sequentially other incidents across the group, how in general the enormous array of circuitous paths of relations transforms familiar inputs into surprising results.

This confusion, induced by the complexity of the social world and the subsequent limitations of action, together with the partial view that any actor has of the social landscape around him, are indeed some of the basic premises for White's theory of social action – a theory in which agency is basically conceptualized in terms of actors's control efforts. This is, however, the topic of Chapter 4. For now, it shall be mentioned only that this complexity leads White to go so far as to recognize chance not only as a subjective perception but also as a fundamental characteristic of modern life. This is an integral part of the contemporary social universe that induces a radically different social logic with far-reaching implications. Indeed, what is distinctive to White is his conception of contemporary societies as worlds of confusion where contingency or chance is a normal condition.

More important, however, are the implications of such a basic image of reality for social theory. Where does such an ontological position take us? Or more concretely, how is social action to be conceived if one starts with such a basic conception of social reality and human social conditions? Surely, with the image of social reality as something essentially fluid and indeterminate, the pursuit of control becomes a fundamental concern. The need for control is also reinforced by the fact that the modern social landscape is not only fluid and indeterminate but also a web of causal interdependence, where the terms and conditions of the interdependencies among actors can only be settled through uneasy and fragile agreements, and where such agreements are more the source of contingency than predictability. In other words, given the overall character of the contingent and intractable network goo of modern social contexts, the need for control seems overwhelming; hence the centrality of it as a basic concept of social theory on which to build further.

4
Control and Identity

Embedded in multiple networks

The notion of *embeddedness* lies at the root of White's approach. It constitutes the basis for the two main concepts or, as he (1992a: 16) calls them, "the two primitives of [his] theory," that is *identity* and *control*. The rest of White's conceptual apparatus and theoretical construction is also derived from this notion of embeddedness and its implications. Although the idea of embeddedness is quite familiar and widely used (Granovetter 2001; Polanyi 1944), White's understanding and conceptualization grant it a rather distinct character, and bring into focus a number of potentials of the concept hitherto unexplored. The distinctiveness of White's treatment of the concept comes from the particular properties of social relationships in contemporary societies. Let us now start by trying to explore in detail White's conception of social embeddedness in modern contexts.

As interaction among various spheres of the modern society intensifies, any social actor increasingly becomes a member of widely divergent groups. The actor becomes involved in multiple social circles that belong to wide-ranging and distinct realms of the differentiated society. Both multiple memberships in various social groups and the subsequent plurality of roles taken by any single actor are the familiar facts of modern life – facts that are recognized and well theorized within different sociological traditions (Garfinkel 1967; Goffman 1972; Linton 1936; Turner 1986). The same goes for many of the implications of these facts. Among these, for instance, is the commonly observed diversity and, at times incompatibility, of the

expectations and behavior profiles attached to the multiple roles enacted by each single actor. Other known implications regard social actors's constant switching among their various roles, as well as the skills that are required to handle such shifts and possible complications.

Recast in a network perspective, the general increase in both the number and diversity of interactions in modern social contexts means that each actor is engaged in an ever-growing bundle of ties of widely divergent characters that connect him to different regions of contemporary society. As the actor's relationships become more numerous and diverse, he increasingly becomes a convergence point of, or a link between, many different social spheres. He increasingly becomes, and can be conceived of as, a node that is located at the intersection of several distinct, often heterogeneous networks.

Several important aspects of this intersecting position should be noticed. First, it follows that each actor has a unique topological position within the modern social landscape. He has a unique "immediate action locale" (White 1986: 1) in the sense that his individual ensemble of network memberships and ties make up a unique constellation. It is a unique configuration that consists of a specific group of other people connected to the actor by various sorts of ties. It is also a unique constellation of indirect relationships by which these others are joined to one another and to still others through the actor. The matter is put clearly by White (1973a: 45) when he maintains,

> in societies with which we are familiar – as opposed to the segmentary societies of the anthropologist – each person is effectively unique. No two [persons] share an identical topological position in the full networks they live in. Even in direct ties two persons differ, in the number and attributes of friends, their demographic position in the family, their ties in organizational contexts, and so on.[1]

This unique embeddedness of the actor, however, is hardly a condition of isolation. On the contrary, it is precisely the site where the actor confronts all the dynamic forces that influence him as a social actor. Let us recall that mutual expectations and obligations are inherent to any social relationship. It is true that, in contemporary social contexts these expectations and obligations are no longer

derived from rigid cultural prescriptions. It is also true that modern relationships no longer enjoy in any substantial way the sanctioning support of traditional authorities. But this does not mean that modern social ties cease to generate sentiments, expectations, demands, and such others that, in different styles and to varying degrees, claim the connected parties's attention and commitment. On the contrary, as common observations in daily life easily confirm, the expectations and obligations that modern social relationships imply do not seldom put significant constraints on the interconnected actors's time, energy, attention, and loyalty, as well as material resources; no matter how flexible and negotiable these constraints may be, they never fail to make themselves felt through various types of reward and punishment.

With this in mind let us now turn to another aspect of White's notion of embeddedness. Being positioned at the intersection of multiple networks means being engaged in a whole set of various relationships. Since each relationship brings along a bundle of particular expectations and obligations, this embeddedness means being simultaneously subjected to a number of specific constraining forces. Since these relationships belong to distinct networks and to different contexts, the constraining pressures that these generate are inevitably heterogeneous, each pulling the actor in a different direction. Furthermore, due to the uniqueness of his topological position, each actor's constraints are different from that of everybody else. In other words, the uniqueness of the actor's embeddedness means that he is at the intersection of a unique set of heterogeneous constraining forces. It means being bombarded by a unique set of flows of different sentiments, expectations, claims, and so on with which the actor has to deal continuously. Pouring down on the node from different directions, each one of these flows originates in a distinct realm of modern social reality and demands some portion of the actor's attention and commitment in a specific way and with a particular intensity. To illustrate the situation, White (1973a: 45) draws on a comparison between actors in modern social contexts and nodes in technological networks, and asks the reader to

turn now to networks of humans. Both as social scientists and as everyday people we tend in talking about social organization to adopt very quickly some particular abstract cultural perspective in

which [real] people are replaced by actors in a role frame. Instead consider the activities of concrete persons in real time – let these be the nodes. … Focus on their nature as receivers, processors and transmitters of messages to close contacts and thence indirectly to distant persons in large populations. "Messages" include official messages, rumors and gossips, but also moods and sentiments. … Typically, a person is vastly overloaded in real time with messages of various sorts to which he could give attention. … It follows from the nature of the network context that a person receives message of a given sort in quite erratic and unpredictable fashion, as well as being enormously overloaded if one considers all active and latent messages of all sorts accepted by at least some of that society's members as real and relevant. Each of us lives under erratic bombardment of all kinds of messages in a large and complex web, which yet is different from, though tied to, the web of any neighbor.

The quotation above touches on yet another crucial feature of multiple embeddedness, namely the *erratic* character of the bombardment to which the social actor in contemporary societies is subjected. This randomness stems from the distinctive features of social ties in modern contexts, namely the fact that they are breakable and that their conditions and terms are increasingly indeterminate. As mentioned in the previous chapter, an ever-growing number of relationships in modern contexts are no longer institutionalized, and they can thus be broken at much lower social costs than before. The flows of claims and expectations that these relationships generate are no longer prescribed; they are negotiable and, thereby, changeable. Whenever these ties exist, in other words, they prove capable of producing an unforeseen array of mutual expectations and obligations with undetermined and unpredictable constraining effects on the interconnected actors. As mentioned earlier, the absence of fixed conditions and terms of social relationships accounts for both the contingent nature of these relationships and the erratic character of the bombardment that White speaks of.

Against this background, the social context in which each actor is embedded can be seen in a different light. Given the uncertain character of the ties and the contingencies and ambiguities that they transfer, the immediate, embedding context that environs any actor

or his habitat, as Zygmunt Bauman (1992) calls it, ceases to be stable and fixed. Instead, the unique social territory surrounding him becomes changeable in ways that are too complex to predict. That is, the embedding context becomes variable as the constituent ties become variable, both with regard to their constellation and to what they bring along. The more numerous, diverse, and ambiguous the constituent ties, the more changeable the embedding context will also be. Consequently, the topological position of each actor, as well as the character of his environment, keep changing as the constellation of the constituent ties vary, now connecting him to one particular cluster of other actors, then to another cluster; and since the contents of ties are negotiable, the actor faces one set of expectations to fulfill at one moment, and another set at another moment. As new ties are included into actor's constellation of connection, new segments of the social landscape will be brought into his horizon and made relevant to him; and as the new connections replace the old ones, new flows of expectations enter the actor's little world, inducing impulses to reconsider and rearrange his attention and commitment priorities.

Furthermore, not only does the embedding landscape around any focal actor keep changing but also there are certain limitations to the actor's cognitive abilities when handling the situation. For one, "the huge social terrain out there," as White (1986: 2) puts it, "is too vast and uneven to be knowable by [any] particular person." It is also, as already pointed out, so complex that the actor faces severe problems in his attempts to make sense of what is going on in his surroundings. The intractability of the environing context he is embedded in is so high that it allows him to have only a circumscribed horizon and a partial view. In addition, the variability of the surrounding landscape further reduces his chances of having any clear picture that is valid long enough to serve as a reliable basis for his decisions and actions. This lack of a broader view and clearer vision means that each actor is able to scan the field around him only upto a limited extent, while the rest of the embedding context remains beyond his horizon and quite opaque. The actor thus normally will not be able to trace the sequences of actions and events more than just a few steps away in either direction. The actor will have only a slight chance of discerning the intractable territory around him where these actions or events originate, or what outcomes they will generate a few moves ahead.

This can only diminish the actor's chances of having any overall understanding of what goes on around him and what is happening to him, just as he will have only a small likelihood of predicting the outcome of his own action a few removes away.

Nor does the actor have many other resources to rely on when making his environment more knowable and/or manageable. To the contrary, the actor is pretty much on his own in coping with the erratic bombardments to which he is subjected. Indeed, according to White (1973a: 45), to conduct the business of everyday life in the face of these bombardments "only limited concrete guidance on choice of message to handle can be found from imitation, much less from accepted norms and rules." On the one hand, the uniqueness of each actor's topological position means that his social environment consists of a highly individual constellation of ties, flows, and constraints. Any actor's baggage of past experiences and current challenges will, as a result, be very different from that of any other actor. This, in turn, strongly undermines the usefulness of imitation as a strategy in handling one's particular situation (White 1988a and 1995c).

On the other hand, as discussed above, the dissolution of previously institutionalized relationships entails a radical increase of the indeterminacy and unpredictability of the conditions and terms of the relationships that make up the actor's environment. This indeterminate character of actual relationships makes them correspond poorly to the typical descriptions found in any prevailing cultural scheme. One of the consequences of this is that available cultural guidelines or manuals are too general to provide the actor with specific guidance on how to cope in real life with the concrete and unique mixture of constraining forces that bombard and push him in different directions. Instead, the actor is largely left to his own devices, to his own capacities, to sort through the various expectations and obligations he faces, and to develop ways to respond to them.

Control

This particular version of embeddedness constitutes the bedrock of White's general theoretical construction. As the description above indicates, the starting point is an image of the social actor located at the intersection of multiple networks. It is the image of an actor who

is embedded in an intractable and changeable environment made up of relationships that lack clear definitions and conditions. It is the image of an actor who has to carry on the business of his everyday life under the erratic bombardments of various flows that constantly make his environment uncertain and ambiguous, and who cannot hope for much external guidance on how to conduct his life.

Some of the implications of this basic image for a more realistic conceptualization of social action have already been mentioned in the previous chapter. Confusion arises because the complexities involved appear too overwhelming to the actor; in the absence of any clear vision, chance emerges as a governing condition of existence. Moreover, the uncertainties inherent to such a situation tend to produce in each actor a profound sense of lack of control over, and power to affect, his surrounding to any significant degree. Since his plans of action frequently are overridden by the unpredictable interplay of factors out of his control, he is forced to realize the limitations of his agency, and finds himself relatively powerless to influence his environment.

An even more important implication of this basic image, however, regards the actor's need for and actual exercise of control. Induced by the omnipresent contingency and the subsequent confusion, coping with uncertainty is indeed a real dimension of human agency. Social action is permeated by efforts to shield from uncertainty and by attempts to create some degree of regularity and predictability, no matter how local and temporary, how partial and fragile the produced orders may be. White's concept of control essentially describes a familiar phenomenon. In a general sense, the term control is used to designate the whole array of attempts undertaken by the actor to reduce the uncertainties and contingencies in his social environment. It is a label for the actor's efforts to anticipate and respond to the overwhelmingly unpredictable changes in the context in which he is embedded and operates. It refers to the ways that the actor tries to shield himself against the unforeseeable eruptions that constantly jumble this context and his action plans. As such, the concept represents a fundamental property of agency at all levels.

Although capturing a familiar phenomenon, White's treatment is nonetheless quite novel, due to his rearticulation of the issue within a network theoretical framework. As shown in Chapter 3, a rearticulation in network terms embodies White's determined quest to make

social phenomena more concrete, and thereby subject them to more specified analysis. It has already been demonstrated how White recasts the inherent uncertainties and contingencies of contemporary social settings in network terms by locating them in properties that are characteristic of modern social relationships. Along the same vein, White conceives of control – that is the responses to these uncertainties – in terms of the actor's strategic efforts to handle and manage the attributes, conditions, and terms of his ties, according to the purpose at hand. Control, in other words, in White's conceptualization boils down to handling one's relationships, with the primary aim of reducing uncertainties as far as possible. Control is therefore part and parcel of any relationship.

Let us try to unpack this observation. Within the revised network perspective adopted by White, the unsettled and basically contingent character of social relationships lies at the root of the need for and pursuit of control. Social relationships, in other words, are seen to be prone to produce uncertainties of various kinds. Given the interdependencies that often underpin relationships among actors, such uncertainties can have disturbing implications for the actor's planned projects. If the actor is to protect his planned actions from this type of contingency, some kind of shield is required. This protection can be achieved through the actor's efforts that target the very source of uncertainties. In other words, the actor can obtain an effective shield against contingencies in his environment by trying to exercise some degree of control, in one way or another, over the contents and conditions of his relationships. In more specific terms, the core issue for the actor is to raise his guard against, and command over, the various flows of contingent contents to which he is constantly exposed. The central, urgent task is to handle the supply of expectations and demands that come in erratic ways through the ties that connect the actor to the rest of the world. Although the performance of this task varies according to the type of the situation and interaction, the basic interest remains the same: the overarching objective is to secure and increase control over the array of heterogeneous expectations and claims that the actor constantly faces.

Fundamentally, the task requires the actor to have some kind of general principles that can guide him in making judgments and decisions about how to handle the flow of bombarding expectations and demands. What is needed, in other words, is a workable *scheme*

that can help the actor to distinguish among the flows of diverse expectations, and to determine the relevance and relative significance of each of them. What is needed is a classificatory or prioritizing scheme to guide the actor in judging the relative importance of each individual flow, and in deciding the amount of due attention to be paid to it. Continuing the comparison mentioned above, White (1973a: 45–6) expresses the point by arguing that

> fundamentally, a person has to function as a service facility to stochastic streams of messages of various sorts. His problem, solved in large part implicitly, is to evolve a *priority scheme* to deal with these flows, a scheme which in real life is forced to be rather different from his neighbor's (italics added).

Some points require special attention. Among these are the complex questions of where such a scheme comes from and how it is developed. Apparently, White's particular conception of control rests on the assumption that each actor, or at least each socially competent actor, is capable of developing and applying the necessary relevance and significance assignment scheme. Given the unique topological position of each actor, one is led to think that each actor has to work out his own individual scheme in isolation. As mentioned above, the actor cannot find much concrete help in the reservoir of overly general cultural prescriptions. Nor is imitation a real option for the actor, since his scheme will be different from those developed by his neighbors. Any satisfactory treatment of this issue requires some familiarity with other elements in White's conceptual apparatus, which have not yet been introduced. This issue will therefore be discussed later. Nonetheless, some brief points can be made at this stage.

First, since any scheme will reflect each actor's unique location, it must be developed on the basis of his own stock of knowledge. This is the kind of knowledge that each actor can reasonably acquire through his own experiences and, therefore, is essentially practical, local, concrete and often implicit. Or, as Alfred Schutz and Thomas Luckmann (1973) observe, each man's stock of knowledge is unique and biographically determined. It is a knowledge that is generated through his individual life experience and shaped by the concrete physical and socio-cultural environment in which he is embedded.

Therefore, this knowledge has a strong individual component, although it is not an entirely private kind of knowledge.

Second, comparisons seem to play a crucial role in the actor's efforts to elaborate the required scheme out of his stock of knowledge. In White's view, each actor will, under certain circumstances, be able to acquire some guidance by monitoring a particular set of actors. This is the set of the actor's peers who, because of the perceived similarities in their topological locations, constitute a sort of reference group for the actor. They constitute a group within which

> individual actors watch one another … and imbibe patterns in how to maneuver and how to account in stories and values for the maneuvers. Thereby individuals acquire a style, as they jointly reproduce [some behavioral] profiles through their mutually patterned actions (White 1992a: 200).

Third, although such a scheme emerges out of the actor's concrete, practical and local knowledge, it must be general enough to be applicable to the numerous and diverse situations that the actor will face. Given the actor's multiple embeddedness, the flows of expectations and obligations with which the actor has to deal are heterogeneous. They come from vastly different parts of the social landscape to which the actor is connected and they bring along heterogeneous types of claims and demands. The required priority assignment scheme must therefore be general enough to be applicable across various types of ties and network flows. It has to be useful across numerous possible combinations of these flows and able to deliver concrete guidance on how to handle the complex situations that may come up.

As mentioned earlier, however, any relationship implies mutual expectations. This mutuality means that any participant in a relationship is not only subjected to the other party's expectations, but he is a source of expectations directed to the other party. Control, therefore is double-edged: handling the expectations that are issued by other party is only one face of the actor's control efforts. Equally important for the actor is to ensure, as far as possible, that the behaviors of the other party fulfill the actor's expectations. Seen another way, just as the actor is the object of the other party's control efforts, the latter is the target of the actor's control attempts; and just as the

actor seeks to defy the control efforts to which he is subjected, the other parties do the same. Therefore, control is best viewed in terms of mutually posed constraints, that is constraints that participants in a relationship seek to enforce on one another in order to shape each other's behavior.

A final point regards the practical consequences of such a serviceable and general scheme for the actor's actual conduct in life. By having recourse to such a scheme, the actor can bring some sense and order into an otherwise confusing situation. He will be in a better position to determine what to attend to, in what way, and to what extent. As more control is achieved through the elaboration and application of such a scheme, the actor's surrounding territory will be less variable and his sight will become clearer. As a result, the actor will have better premises for his decision-making and planning of projects, and will be better prepared to reject or/and respond to what might be disturbing to these projects. The more control that is gained this way, the less vulnerable the planned action is; the more control there is, the less contingency is allowed to upset the actor's plans. Therefore, prior to any of the actor's specific objectives is the general and overriding aim of achieving control, so that the actor will have enough maneuvering space for his action while, at the same time, he seeks to block and/or narrow down the range of options that are open to other actors; hence the centrality of control to social agency.

Modes of control

Since control efforts can be carried out through different means, the question of how control is sought and obtained is multi-dimensional. The means can take on various forms, and may combine and overlap in numerous ways. Sometimes these control efforts aim to create clear interaction environments and unambiguous decision-making situations. At other times, actors may use an opposite strategy and, as White (1992a: 10) puts it, "seek control … from weaving a maze of uncoordinated and changing contexts around others." Basically, however, control is a matter of *tie management*, and tactfulness in handling one's relationships is fundamental to control attempts.[2] The particular forms that this tie management takes vary considerably, depending on the types of ties and their specific circumstances. Since this is so variable it is unlikely that one can discover the

particular disguises in which control strategies may occur. But, some general types of control strategy can be identified.

Among the possible options, there are control efforts that derive from or build on the "cultural" or "interpretative ambiguity" (White 1992a: 103 and 112) of relationships. It has already been mentioned that an actor may seek control through attempts that he makes to alter the contents and conditions of his relationships according to his preferences. Although the utility of this strategy varies depending on the context, it can be found even in cases of contracted relationships, such as employment, where the terms and conditions can be highly specified and formalized. The main concern in such a strategy, however, is to keep the tie ambiguous enough to preserve its flexibility. That is, control in a relationship can be sought by keeping it undefined and, thus, liable to various meanings and interpretations. By avoiding clear-cut descriptions, a relationship can be kept open to redefinition, that is it is held in such an indeterminate state that it can lend itself to alternative definitions, and thus adjust to the variations of the circumstances. In this way, the flexibility of the tie can be preserved and predictability can be suspended. In consequence, purposes and standings can be kept unclear, full commitments can be escaped and, thereby, room for maneuvering can be created. By being ambivalent and ambiguous at any particular instant and in any tangible action, these ties are pregnant with many possible unfoldings.

It should also be added, however, that although according to White modern social relationships with regard to their conditions and terms are much more flexible than traditional bonds, it would be a grave mistake to conceive of modern societies as contexts where there is no normative order, in which all social relationships can be entirely altered at will. Rather, as the notion of *story* suggests, this strategy is a matter of actor's manipulation of the contents and terms of a given tie *within* its cultural framing, which often is done by invoking elements out of the cultural repertoire at hand in a selective, that is arbitrary manner to fit the actor's purpose. On one of the occasions that White addresses the issue explicitly, he seems to mean that cultural conventions are normally resistant to change and independent of the specific interpretations that actors tend to make of them according to their purposes and conditions. This resistance and independence is possible because these conventions are often generally formulated, so that they can be applied across various social situations. And it is

precisely this general character of conventions that makes possible the "fuzz in the rules of perception and interpretation" (White 1992a: 107). Translated into a more common language, it is this general character of conventions that makes it possible for actors to manipulate them according to circumstances. In White's (1992a: 106) own words,

> the conventions actually used by actors, which may vary arbitrarily as gauged by the social mechanics going on, can be expected to be resistant to change. These conventions are not mere matters of perception. Exactly because a convention, as set of stories, fits any situation very loosely, it is not subject to refutation by ongoing observation. Ambiguity can be measured as the spread in stories within such a convention. Pressures for change of conventions will come as by-products of efforts at control.

Another, less straightforward way of seeking control is what White (1992a: 111–12) calls "social maneuver" or "social ambage." The latter term seems to refer to the pursuit and exercise of control in an indirect manner. It appears to designate an actor's control efforts in which he uses his indirect ties to influence some other actor. To employ such a strategy, in other words, means that the actor seeks to influence his target through the chain of ties that indirectly connect them, starting from the actor's closest neighbor, then going through one or several other nodes in-between, and finally leading to the target node. Actor A, for instance, can seek to change the target actor B's perceptions and preferences about any matter indirectly, that is through one or several middlemen (C, D, E, and so on), who appear to A to have greater influence on B, than A himself has.

Such a strategy requires the actor's familiarity with the social landscape so that he can identify and choose among various routes in the network context to reach the target of the actor's control effort. This strategy also involves the mobilization of the nodes along the particular network routes that are chosen according to the purpose at hand. Whereas interpretative ambiguity involves manipulation of cultural conventions, ambage is purely social. As White puts it, "ambage is especially associated with the connection between identities and networks" (1992a: 111) and it "concerns the concrete world of social ties, in networks of ties and corporates among nodes" (1992a: 107).

What is at issue is precisely the actor's mobilization of his ties, especially the dormant ones, that is ties that weakly and/or in a slack way connect the actor to others, without demanding any considerable amount of the actor's attention and/or other resources. Furthermore, since social ambage is a control strategy that builds on indirect ties, it reveals the importance of these ties for social action. That is, indirect ties enlarge the actor's sphere of control beyond his immediate environment. They can be made to function as canals that diffuse the actor's influence. Chains made up of the actor's indirect, efficient ties can therefore be seen as his prolonged arm, a means by which his influence and capacity to make a difference is reinforced and made more penetrating.

It can be seen easily that the degree of an actor's success with this strategy, and thus with his control efforts, depends on the number, spread and diversity of his indirect ties, as well as his skills or abilities to mobilize these ties. Therefore, expanding one's network with ties that have the potential of being mobilized seems to be an important element of competent social agency. Filling vacant positions in a formal organization with loyal people, for instance, is a well-known phenomenon; and as cases of rising leaders clearly demonstrate, indirect ties of loyalty are of crucial significance for the buildup of any chain of command in informal networks of power.

Purely social, ambage concerns the skills in connectivity. Resembling the basic insights associated with the notion of *social capital* (Baron *et al*. 2000; Bourdieu 2001; Coleman 1988; Lin 2001; Lin *et al*. 2001; Putnam 1993 and 1995), ambage reflects one's ability to maneuver in the maze of relationships. It requires the ability to see and use social ties as canals that lead to resources "out there" embedded in networks – resources that can be used to enhance the outcomes and effects of purposive actions. In other words, ambage requires the ability to regard social relationships as opportunities, as doors that lead to resources that are otherwise inaccessible to the actor. It also requires the actor to know practically which routes of connections and chains of ties to take, which levers to use and which button to push, in order to handle and bend the objective realities of social life, and to make a difference.

Finally, decoupling is a general control strategy, which is "basic to networks" (White 1992a: 112) and which occupies a central place in White's account. Decoupling is a strategy which, employed in various

settings, aims to preserve an intended order of things by keeping out and hedging against uncertainties and contingencies that may threaten that order. A familiar example may serve to illustrate the point: In many major cities, special lanes are separated and assigned to public transportation in order to shield it from the unpredictability and contingency of the traffic flux and thereby to secure the scheduled regularity of this transportation. When applied to social ties and networks, however, the notion of decoupling refers basically to the ways in which actors actively and consciously avoid undesired connections and dependencies. To decouple means to buffer one's action from the actions of others by removing or loosening the constraints which are put by others on one's own action. As a result, it permits the coexistence of various, distinct courses of action. In other words, the term refers to a common form of control seeking that cuts off a relationship and/or keeps out anything undesirable in the flow that it transfers. Among many other things, decoupling can mean resisting the establishment of relationships that are assumed to generate irrelevant and thus disturbing expectations and obligations. As White (2002a: 211) formulates it, "de-coupling concerns dependencies [which] express themselves in ties." Or, whereas coupling or connectivity is rather obvious and can be "traced in strings of ties" (White 1992a: 112), decoupling implies the absence of connectivity. And referring to production markets, he (1990a: 88) defines decoupling as follows:

> in this context, "de-coupling" means that in order to achieve a certain production [i.e. a product of certain quality], you simply have to chop off some causal chains. You have to somehow simplify them, to dissolve their impetus through people's perceptions. If you look at the origin of present-day production, you'll find that it has in my terminology "de-coupled" itself from a series of kinship and political phenomena. This has been pointed out in several studies, … Many people have made this observation, and I am just using the terminology of "de-coupling" to emphasize that it is not just a passive phenomenon – it's *an action*. People must deliberately de-couple in order to achieve some of their ends. … But I shouldn't be saying that people do this to achieve their "ends," because these are more a by-products than a cause, … The question is one of achieving a kind of control (italics in text).

The essence of control through decoupling can be seen most clearly in White's another example from the world of formal organizations, namely that of a military drill and its clear-cut approach to seek control by cutting off what is irrelevant or distracting. He (1992a: 10) writes,

> the military drill is but one model of control, a model which subjects to caricature the preconditions and steps for control. In a drill persons are induced to move in parallel within a small group which is both literally and metaphorically cut off from other social relations for a time.

Other examples can be found in almost any modern formal organization, military or otherwise. As Weber made clear long ago, the core of the rational administrative process adopted by modern bureaucratic organizations is to preserve its professional purity. Such an organization seeks to create a stable and predictable environment for decision-making by excluding arbitrariness and by safeguarding against irrelevant influences, both from within or outside.[3] Furthermore, many familiar social roles involve this kind of decoupling, whose objective is the purity of role performances which in many cases is the same as professionalism. A psychologist's efforts to keep a professional distance from his patients, for instance, illustrates how decoupling can be intended to prevent irrelevant and improper ties from ever occurring. Decoupling can also mean rolling back a tie temporally or permanently, and it can be done entirely or partially. At times, the main tie and the whole set of indirect ties that come along with it can be aborted, as in a divorce or a resignation. Alternatively, decoupling can be done through splitting up a multiplex relationship into several distinct fractions, with the intention of preserving some, while dismissing others. The general point is that decoupling can underpin control attempts that aim to diminish the types of perceptions, sentiments, expectations, and others that demand the actor's attention and commitment in ways which are not desirable or acceptable to him. Above all, it can be used by the actor to guard himself against various control strategies of others, and to loosen the constraints that these control efforts may put on the actor.

Decoupling can thus be employed, as White puts it, to "buffer one chain of actions from another" (1992a: 112) and to "restart the social clock" (1992a: 78), and for setting the scene for what White calls *fresh action*. More concretely, cutting off some ties and replacing them with others means changing the constellation of direct and indirect relationships that make up the actor's immediate social territory. That is, a direct consequence of an actor's decouplings is the changes in his topological position. Alterations of this kind are often the driving force behind an actor's calculated, strategic moves. Such moves may take the form of changes in the actor's group affiliations. An actor's voluntary changes of partner, occupation, working place, and/or neighborhood are some obvious examples. Many other examples can be mentioned from other sites of sociability, like the move from one political and/or religious organization to another, or moves among different leisure activity groups.

One aspect of decoupling that requires particular attention is its role in providing the actor with action opportunities and potentials. Some of these are well known from conventional social network currents. Being a member of a social network often means being able to influence the flows that run through that network. As a node, the actor can exercise some degree of control over the flows that pass through him, depending on his position within that network. He can function both as a coupler and a buffer, that is he can let the flows run through, but he can also stop them, temporarily or permanently. The actor can also try to reroute these flows, sending them to other, more preferable directions. Alternatively, he can seek to modify these flows, that is to weaken or reinforce their content, and/or to slow them down or speed them up. Action potentials of this type increase in accordance with the number of direct ties that the actor has. These potentials also depend on the array of indirect routes that are available to the actor. Even more interesting is his potential for agency as a measure of his multiple embeddedness. By virtue of his intersection positioning, each actor connects a unique set of distinct networks through himself. This puts him in charge of the connections among these networks. That is, the actor is empowered to decide either to permit or prevent resources, actions, and events from one network to run through him, and to spill over into another. This capacity of the actor becomes particularly significant when paths of causal processes across distinct networks are considered.

Control and agency

Where do all these observations and ideas about control efforts and strategies lead us? Most fundamentally, these observations provide further reasons to reconsider the notion of social relationship. As mentioned in Chapter 3, rather than being a simple and stable link between two nodes or a static and neutral path or canal of resources, any social tie should be viewed as a site of mutual, counter balancing control efforts or, as White (1992a: 67) suggests, as a vivid "portrayal of connection." That is, on this account a social tie is conceived best as a locus of the ongoing dynamic control processes that are launched by its participants. Any social relationship should, in other words, be viewed, as a battle field where the participants struggle ceaselessly for control and mutual constraint, and where each participant gives his account of such struggles in the form of stories, which draw on familiar cultural notions and principles.

As such, a social tie should be seen and conceptualized as both the locus and medium of control. By the same token, any social relationship can also be seen as a means of agency; it is where agency takes place, and where the actors can pursue their planned actions through competent management of their ties. Through their ties, the actors can, when needed, try to mobilize more remotely located resources, of course. But above all, they can try to fulfill their wishes and materialize their preferences by getting others to do as they want them to. This point is emphasized by White when he (1992c: 92) with reference to management in formal networks writes,

> agency is the root of management process. To manage is to make use of ties. To gain and maintain control requires attending to networks of ties. … Influences and acts among actors run through ties, and how they cumulate into significant actions is heavily influenced by shape and connectivity in the networks of those ties. Seeking, or observing effective control thus requires making use of and understanding how networks operate, and how a network both is shaped and can be further shaped through very actions on which it impacts.

On the whole, these observations also lead us to see the embedding social networks as both constraining and enabling contexts of action.

As mentioned above, the actor's embeddedness in multiple networks means that he is subjected to the erratic bombardments of a unique set of heterogeneous constraining forces that originate in distinct fields of the social landscape. These bombarding forces take the form of diverse, and sometimes even incompatible, bundles of expectations, demands, claims, and others that pour down on the actor and shape his behavior in different ways. Diverse and heterogeneous as these constraining forces are, they tie the actor down through different, and perhaps even conflicting, commitments of varying intensity and durability.

Against what has been said so far, one can see these forces in a different light. The source of these forces is nothing but the control efforts of others, to whom the actor is connected through various ties. The actor's embedding context, in other words, is an environment in which many other actors, if not all, also seek control. This context is best characterized as a force field, in which actors launch contesting control projects. These projects may never come to a permanent resolution and keep being launched and relaunched, or they may counterbalance and cancel one another out, as in a symmetric single pair-tie. It also becomes a context in which some of these control efforts can accumulate into a sequence of asymmetric relationships, as in a chain of command or in a pecking order among a set of actors. The embedding context, however, is essentially a site of continuous mutual control efforts, where one actor's attempt to gain and increase his control becomes a constraining force on others; and it is the control efforts of the former that materialize into the erratic bombardments of the constraining forces with which the latter has to cope.

No matter how constraining this environment may be, however, it is also an enabling context. As shown above, it offers the actor an array of action opportunities, that is an array of potentials that the actor can actualize to gain and/or expand his control as well as to resist and/or counter the control efforts of other actors. The context of multiple networks in which the actor is embedded, in other words, puts at the actor's disposal a whole set of control strategies and options that, if used skillfully, can empower him to alter constitution of his social terrain considerably. For the reasons just mentioned, the scope of such a power may be, and often is, limited to the actor's immediate environment. Nonetheless, multiple embeddedness

empowers the actor to choose and change the nature, strength, and composition of the forces that constrain him, and this is often what matters most in enabling the actor to alter what constitutes the premises of his action. White (1999a: 1–2) expresses this dual character of the embedding context as follows:

> social network means "ties" which warrant and explicate other, further ties. Some of these warranties will materialize. So social network is process – interpretive process – as well as structure. … Embedding does tie down and constrain, but it also contradicts itself since socio-cultural processes in networks reproduce themselves in choices, that is, in acts of agency. Because humans are symbolizing, interpreting, remembering, and commitment-making creatures, social interaction creates and transforms contingent ties among individuals. But the existence of such ties, with their interpretive baggage, channels, constrains, facilitates, and even generates further social interaction. Hence, agency creates structure and structure creates agency.

Another point to be noticed regards the essence of social agency. White views the need and pursuit of control, that is the actor's efforts to reduce uncertainty and bring stability into his social environment, as fundamental to social action. Seeking control seems, in White's view, to be the overriding driving force that motivates the actor's social action and the overall objective from which the actor's interests derive. Put differently, any form of end-means rationality necessarily calls for control. With specific goals and objectives being so changeable, what is universally fundamental to social action is to gain and secure control, so that any planned action can survive contingencies and intended outcomes can be secured. It is with this in mind that White (1992a: 4) informs the reader in the first pages of *Identity and Control* that "the real riddle [for his theory to solve] will be seeing how it is that anyone can effect action by intention in social context."

Hardly a surprise, this emphasis on control as the essence of social action is a logical consequence of the particular image of social reality that White adopts, that is the image of social reality as a context where contingencies and uncertainties are everywhere, making the need and pursuit of control overwhelmingly urgent. Yet, by no

means does seeking control imply rigidity. On the contrary, "since control is both anticipation of and response to eruptions in environing process" (White 1992a: 9), control efforts "consist in unpredictable action" (White 1992a: 236) and are necessarily bound up with improvisation in the midst of chaos and contingency. That is, from White's particular view of the context of social action, it follows that competent agency requires the elaboration of as robust a strategy as possible. In every interaction situation, the competent social actor aims primarily at working out and adopting what is perceived as the most sustainable strategy. Given all the uncertainties, ambiguities, and complexities in the environment, which come from all the other actors's control efforts, this strategy needs to be robust. It has to be resistant to the uncertainties involved in the situation and flexible enough to be operative, despite possible changes in the environment. In other words, it has to provide the actor with the maximum possible preparation to face however events unfold and whatever outcomes these may bring along or lead to.

Identity

It is now time to turn to the other main concept in White's theoretical construction, namely, *identity*. It should immediately be pointed out that, in White's usage, identity has a particular meaning that is very different from what is commonly meant by this term. For him, the term refers to any agent or author of meaningful and purposeful action. It is a very broad concept that embraces any social body which is capable of producing behavior which is designed consciously and intentionally, excluding only behaviors induced by inbuilt impulses or forcers beyond actor's control. Or as White puts it, identity is any source of "original and unpredictable action by intention" (1992a: 67, fn. 4), "any source of action [which is] not explicable from biological regularities, and to which observers can attribute meaning" (1992a: 67, see also 1992a: 236). The term thus designates any kind of social actor at any level, of any composition, and of any durability, be it an individual person, a casual temporary group, a short-lived formal organization, a historical city, a state, and so on.

   More importantly, however, identity is a concept that is closely tied to the notion of control. The former is defined in terms of the latter because identity comes from and is bound up with control in a

substantive way. More specifically, identity is a property of the social actor that emerges out of, and is a byproduct of the control efforts that the actor undertakes to deal with uncertainties and contingencies in his environment. Put differently, the concept is intended to capture the specific behavior profile that is particular to an actor and that grows out of his attempts to handle the unique and erratic bombardments to which he is subjected. It refers to the certain fashion and style that the actor develops to handle these bombardments and create some degree of order and regularity in his habitat. As mentioned above, any actor located at the intersection of multiple networks needs to elaborate a scheme to use in coping with these bombardments. The actor is more or less forced to work out a priority assignment scheme that helps him to distinguish and judge the relative relevance and significance of the flows that pour down on him. In that, such a scheme is a frame of action, which helps the actor to bring some order into what otherwise is chaotic. Such a scheme helps the actor to conduct the business of everyday life with some degree of orderliness, as it provides him with some general principles of how to deal with network flows, just as lists help us to channel, constrain, and organize the flow of daily tasks and gadgets so that these are brought into some sort of manageable sequence.

Fundamental to actors's attempts to make sense of the reality around them, however, a priority assignment scheme is needed to create some kind of order in the chaotic and thus meaningless environment in which they live. This cosmos appears pointless unless the actors ascribe it a meaning through imposing an order upon it. This is done not only by typifying other social actors but also by categorizing social events, that is by sorting the various types of expectations, demands, and claims to which the actors are subjected and by ascribing them relative significance and importance. To the extent that the actor develops such a priority scheme and deploys it with some persistence to seek effective control over network flows, he develops an identity. That is, from any sustained use of such a scheme the actor develops a certain behavior profile or a particular individual style of reacting to the flows of network ties. In other words, an identity emerges when and to the extent the actor manages to develop and use a relatively stable mode and amount of control upon what is going on around him. To the extent he manages to do so persistently, he develops a distinguishing and characteristic behavioral profile or a

mode of conduct that is stable and reoccurring enough to make him predictable to and recognizable by others. By virtue of doing so, he thus becomes an identifiable actor or an *identity*.[4]

Several aspects of this particular notion of identity could be high-lighted and discussed, but the one that is the most relevant for this presentation has to do with the conditions that according to White are essential to, and indeed indispensable for, the formation of an identity, namely multiple embeddings and subsequent mismatches. As White repeatedly asserts, embeddedness at the cross-point of sev-eral distinct and heterogeneous networks is a necessary prerequisite for the construction of an identity. In his (1992a: 76) view, "identities emerge out of turbulences in social process." That is, identities "are generated out of contingency and mismatch" (1992a: 29); they "emerge out of contingent ties and mismatches of distinct networks" (1992a: 7 and 79) and come from "frictions and errors across different social settings" (1993a: 49). The reason seems to be as follows. It is only by being embedded at the intersection of several distinct net-works that the actor becomes subjected to, and faces the challenge of dealing with, multiple heterogeneous constraints and all the possible combinations and clashes among these. It is only by being located at the converging point of several distinct network flows that the actor is forced to, and enabled to, deal with the inevitable mis-matches among heterogeneous bundles of perception, expectations, claims and such others.

These mismatches result from the actor's failure to meet fully and perfectly the continued flows of the various and conflicting expecta-tions and obligations that come from so many distinct spheres. The more divergent these embedding networks, the more heterogeneous the pertinent constraining forces; the larger the entailing mismatches among the expectations, the stronger the pursuit of control and the development of a control scheme becomes more urgent. Since each constraining force requires the actor to behave in one way rather than another, the actor needs to gain some effective control over these forces; the more he can create a space for his own action and secure its independence, the greater probability that he also will become a source of creative actions and original responses to these forces, that is the greater probability he has to become an identity.

The importance that White ascribes to the crosscutting network flows of expectations and claims as a necessary condition for identity

formation has at least one important implication. The uniqueness, contingency, and heterogeneity of the constraints that are involved in the formation or construction of an identity count for its individuation and singularity as well as its fragile, changeable, and untidy character. Singular and contingent, an identity can remain stable and resemble other identities only under particular social circumstances. In specifying these particular circumstances, network flows and forces are once again central. The stability of an identity is dependent on the resonance of the constraining forces to which it is subjected. Equally, the similarity of identities, that is observable similarities in their behavioral profiles reflects or rather is caused by the similarities of these forces. These two points are closely related to each other and constitute the core of White's structural analysis: the commonly observed similarities of behavior of social actors stem from the similarities of their topological positions within multiple networks. The latter similarities mean that actors are subjected to similar types of constraints and therefore may show a tendency of developing similar styles of handling these constrains. Similarly positioned, these actors tend to view one another as a comparable peer. Each thus turns to the others within this set of peers to find guidance on action, and tends to develop a behavioral profile that is generally similar to those of the others in the set. Any satisfactory exploration of these issues, however, requires some familiarity with some other basic notions in White's sociology like structural equivalence, role structures, and disciplines – all the topics of Chapter 5.

5
Structures and Disciplines

Structural analysis

As the subtitle of White's major theoretical work *Identity and Control* unmistakably suggests, his approach is meant to be a structural theory of social action. On the one hand, there are early signs in the body of his production, indicating clearly the persistence of his preference for structural explanations and his rejection of the kind of analysis that allots individual attributes like sex, age, and so on too much explanatory value and strength. For instance, White (1968: 3–4) explicitly criticizes much of the social sciences – particularly as practiced in the United States – for what he calls "voluntaristic individualism," that is, for neglecting the constraints of social structures and for building on the assumption that "basic reality is in individuals' values and choices." He regards this kind of "individualistic sociology" as a scientific reformulation of common sense or "simply a restatement of [the] folk sociology" that reflects the kind of common notions that permeate the dominant culture.

On the other hand, White explicitly adheres to the structural mode of analysis. In his view, the attributes or attitudes of actors contribute little or nothing in explaining their actions, leading to nothing but spurious causal explanations. Shunning aside such an individualistic approach to social reality as a "mockery" (White 1968: 3), he instead adopts the particular way of thinking about this reality that is distinctive for structural sociology. In his attempt to account for various social phenomena he subscribes to the characteristically structuralistic methodological axioms, suggesting that actors's positions within

social structures are by far more crucial than their individual attributes in determining their perceptions and actions, and that the observed similarities in these perceptions and actions can more satisfactorily be explained in terms of the similarities of actors's structural conditions.

Adhering to this fundamental postulate, however, White's version of structural analysis has its own distinctive features, which derive from the particular conception of social structure that underpins it. In full accordance with the rest of his sociological thought, White's structural approach is a network-based version of structuralism in the sense that social structures and structural positions are in this approach conceptualized in network terms, that is, as local and relatively stable configurations of social relationships that emerge within the fluid and indeterminate mush of the contemporary social settings. Furthermore, in White's network-based approach the aggregation principles that underpin these conceptions of structure and position are defined in terms of actors's relationships. Finally, as this perspective has it, the main forces and mechanisms that uphold social structures and allocate actors to their positions reside in actors's ties.

Let us take a closer look at the issue. Social structure is indeed a central issue that dominates much of White's sociology right from the start. A reconceptualization of social structures according to the new principles does indeed constitute an important part of White's enterprise of regrounding sociology, and much of his writing works towards the development of an analytical tool for identifying and locating these structures, as well as attempting to account for their emergence and maintenance. This persistent search starts by a critical stance towards the existing notions of social structure, however – a critical stance, which clearly shows the impact of Siegfried Nadel's (1957) criticism of the ways in which social structure is commonly understood and defined in social science. Informed by this criticism, White very early on shows his dissatisfaction with common conceptualizations of social structure, finding many of these notions unfit to underpin his structural mode of analysis. In an early work, for instance, White (1967: 17) points to the question of social structure as "the key issue in theory" but he (1976: 11) also finds strong enough reasons to maintain that it is precisely this issue that is "the sore point in sociological theory." Moreover, although the sociological literature abounds with various conceptions of social structure,

White (1970a: 4) points to the "basic conceptual difficulties in theories of social structure," including the problem of even defining properly the phenomenon in question.

Typically, White declines to offer a systematic account of his criticism and leaves the matter unexplored. Yet, there are enough leads throughout his work to help the reader to grasp the main point of his criticism. At the most basic level, this criticism reflects, once again, White's general quest for concretization and specification of social scientific concepts. He unequivocally rejects the theoretical constructions that analysts often tend to elaborate in abstraction, instead of dealing with tangible, empirical social phenomena. In the same fashion, White dismisses many conventional conceptions of social structure because of their constructed character. This is most clear in his refusal to ascribe scientific value to what he calls the categorical notions of social structure. This label refers to common conceptions in which social structure is envisioned as an ensemble of social categories that are constructed by the analyst, who uses various attributes to divide and classify a population of actors. Within a categorical approach, the attributes used in partitioning actors are either derived from abstract theoretical schemes like membership in social classes, status groups, and so on or represent individual properties like age, sex, income, ethnicity, and so on. Statistical measures are often used in the construction of these categories and in the underlying systems of classification from which these categories are derived.

White's criticism of categorical structures originates in his early discussion of various types of category systems that underpin the common notions of social structure. White (1965a: 4–5) offers a fourfold typology of these systems, where the first, and most simple kind, is the ad hoc category system, that is, a classification system where actors are partitioned according to whether they "have [the] attribute versus don't have it." According to White, this type of system yields "an arbitrary set of categories such that any person in the population belongs to exactly one of them." The second type is the generic category system where an actor "is located within successively finer subdivisions of an initial large category." An example is "location of an adult by the industry, company, division and title of his work affiliation." Finally, there is the cross-tabulation category system in which "a person is cross-tabulated by being placed simultaneously within two or more ad hoc category systems, each of which covers the entire

population." For instance, "specification [of a person] by sex, age, religion, location, and income is a cross-tabulation." This category system is often associated with a particular kind of sociological analysis, that is, survey analysis, in which "the first question one asks of a cross-tabulation is how much dependence it reveals between the category one belongs to in one ad hoc system and the category one belongs to in the other."[1]

It is relatively easy to see why White, in accordance with his disapproval of survey analysis, dismisses categorical conceptions of social structure. Such conceptions are, in White's view, constructions based on invalid or flawed classificatory systems that rest on "averages called for by cultural glosses" (1992d: 210) or some other, arbitrarily chosen statistical measures devised by an observer. This type of categorical structure represents social regularities that are perceived through the lens of constructed categories. Rather than representing or corresponding to actual partitions of social actors in reality, the analyst projects these categories upon the social landscape to bring some order into and make sense of it. Furthermore, in accordance with his preference for detailed causal accounts, White finds such categorical conceptions too descriptive and analytically vague. In his view, these conceptions lack the penetrating capacity that is needed for developing specified causal explanations which lies at the heart of sociological theorizing.

In White's (1967: 1) own words, "theory in sociology, and other social sciences, at present deals most effectively with category concepts: class, values, epochs in evolution, attitudes, locales, ages, sex. It is hard to generate models of causation in such classificatory system, however elaborate." On another occasion, White *et al.* (1976: 732) put forth the claim that "the presently existing, largely categorical descriptions of social structure have no solid theoretical grounding"; and, finally, White (1968: 5) points at "the limitations of [the] descriptions in terms of categories" as one of the reasons for the "undervalued" importance of social structure in sociology.

Finding sociology in need of a proper conception of social structure, White undertakes what he calls "a general effort to systematize [his] approach to human social structure" (White and Heil 1976: 26), and sets out to develop an alternative approach that is different from the one based on constructed categories. Dating back in his writings on kinship structures in the first half of the 1960s and continued

through the 1970s and 1980s, this sustained effort is made with the assistance of a number of students and associates like Francois Lorrain, Scott Boorman, Ronald Breiger and Gregory Heil, and gives birth to a line of works including "Structural Equivalence of Individuals in Social Networks" (Lorrain and White 1971), "Social Structure from Multiple Networks: Blockmodels of Roles and Positions" (White, Boorman and Breiger 1976), "Social Structure from Multiple Networks: Role Structures" (White and Boorman 1976), and finally, "An Algorithm for Finding Simultaneous Homomorphic Correspondences Between Graphs and Their Image Graphs" (White and Heil 1976).

Given the foundations of White's approach, a decisive premise of this endeavor is that social structure should be conceptualized in such concrete terms that it becomes tangible and empirically observable. The alternative notion of social structure must, in other words, be as close as possible to the empirical reality that it designates, and it should have sufficient empirical validity. That is, this alternative notion must be inferred directly from the actual networks of ties among social actors rather than from invented categories. It must reflect the existing partitions in social reality, that is, those durable groupings that are generated through, and are directly observable in, actors's interactions and connections. It must represent the actual social categories that appear as the social actors themselves create, sustain or recast their relationships. Therefore, the objective of such an effort is primarily to unearth those categories that are implicit in the context, and to reveal the structures that these spontaneous categories make up. In other words, the objective is to identify or "tease out" (White 1992b: 210) the structures that are "given by the interaction of all dyadic relations with empirical referents in the given population" (White 1971b: 2).

The outcome of this sustained effort is, of course, nothing but a network conception of social structure, which no longer has the abstract flavor often associated with the notion. The new conception is concrete and precise and open to rigorous and sharp scientific inquiry. Its meaning is narrowed down and confined to the system of actual relations of various types among the constituent units. Thanks to this network reconceptualization, social structure ceases to be anything but the tangible outcome of the configurations of ties among actors in a concrete population; it is something that "exists concretely in a population of so many individuals related in such and such ways"

(White and Lorrain 1971: 50). According to this conception, social structure is thus local and dependent on the relational properties of actors within any given, particular context. It is on such a concrete notion of social structure with a sharply restricted connotation that White's methodological strategy rests – the structural mode of analysis he describes as follows:

> Structural analysis focuses upon the patterns of relationships among social actors. This emphasis rests on the often unspoken postulate that these patterns – independent of the content of the ties – are themselves central to individual action. Moreover, structural analysis posits that the constraints associated with positions in a network of relationships are frequently more important in determining individual action than either the information or attitudes people hold. … Structural context is represented by patterns of ties of varying content, and the analyst's interest is in how individual behavior serves to reproduce the structural context. … This discovery of "self-reproducing" structural contexts has occupied structural analysts in such diverse areas as kinship systems …, organizational structures …, world systems, and abstract social structures. … In this endeavor structures are "explained" when their self-reproducing properties – and therefore their continued existence – are analytically understood (White and Leifer 1987: 85).

Structural equivalence

On the basis of this particular notion of social structure and the methodological strategy that is derived from it, White and his associates have developed a number of conceptual and technical tools like structural equivalence, blockmodels, and relational definitions of role and position. All of these innovations are now well known and widely used within the social network tradition, so they will be presented here only very briefly. The focus is instead turned to certain aspects of these innovations that lie beyond their purely technical value and that are important for the study of White's general sociological approach. These aspects are chosen on the basis of the relevance and bearings that they have for two questions of particular importance for the present study.

The first one regards the exact manner in which the structures implicit in the networks are "teased out," that is, how the ties among the actors generate the non-categorical and relational groupings in a concrete population and how the subsequent structures are discerned. The second, and more substantive, question concerns the characteristic way in which the general promise of structural analysis is realized within White's approach. In other words, how exactly is this particular network conception of social structure employed by White to account for individual actors's perception and action? How does this notion explain the observed regularities of perceptions and actions of those actors who are located in similar structural positions? Fundamental to both these questions is another general social logic that White introduces through the well-known concept of structural equivalence, the core idea beneath which is that those in same positions exhibit similar behavior. As an explicit and specified analytical concept, structural equivalence is a novel device developed by White, although he (1971b: 9) holds that the general underlying idea is "so basic in sociology [that] it is sometimes left implicit." Essentially, the idea behind structural equivalence is that two or more units which occupy similar structural positions are interchangeable with regard to the prevalent classification or partition principle valid in that structure.

The idea of structural equivalence itself has a long history in White's work and can be found in his writings on kinship structures in the early 1960s. In these studies, White divides a tribe into a small number of clans. Any such clan is defined as a mutually exclusive group of tribe members who occupy the same position with regard to marriageability in the tribe's kinship structure. They become equivalent and interchangeable in the eyes of others, just as the members of any other clan are equivalent and interchangeable to them. As White (1963a: 28), puts it, "men in a clan are equivalent to one another: each obtains a wife from the same other clan, finds his father in the same clan, his son in the same clan, and gives his sister in marriage to the same clan." In the 1970s, however, White's work seeks to explore and tap the specific methodological potentials of the notion of structural equivalence. He turns the concept into a sharp analytical tool that can be used to partition and group social actors into various homogeneous categories. In more concrete terms, White uses this notion to sort social actors in any given context and cluster them

into a limited number of relational categories or groups. He carries out this partition in the population on the basis of similarities and differences among the actors with respect to their ties.

In a purely technical sense, two or more nodes are structurally equivalent if they have exactly similar connections to all other nodes in the population across all relations. This rather stringent criterion is used to unearth the structural similarities that exist among actors who are embedded in multi-relational networks. By using this relational criterion, actors might be grouped together and placed into distinct structural positions. As defined by White and Breiger (1975: 68), the structurally equivalent nodes in any network population are those "who send or do not send ties of each given type to the same other sets." White and Lorrain (1971: 63) give a more concrete definition of the concept, holding that any network member "*a* is structurally equivalent to *b* if *a* relates to every [other nodes] in exactly the same ways as *b* does. From the point of view of the logic of the structure, then, *a* and *b* are absolutely equivalent, they are substitutable."

According to this definition, then, two or more nodes are structurally equivalent in a network context if they have identical sets of ties to and from all other nodes across all types of relations. Being structurally equivalent means having exactly the same set of ties sent and received, and being similarly connected in several types of ties to the rest of the network population. Thus, structurally equivalent nodes together make up a particular cluster or category of actors, that is a category where similarity of ties is the criterion of membership. By the virtue of similarity of their ties, actors become members in the same category and share the same structural position.[2]

Of more interest for the present study, however, is the importance of structural equivalence in relation to the notion of social structure, that is, the function of structural equivalence as the only valid principle of aggregation that can yield an adequate conception of social structure. Indeed, through his dissatisfaction with, and criticism of what he refers to as the categorical conceptions of social structure, White brings to life a more fundamental issue, namely that of aggregation or partition. In his opinion, what undermines the theoretical validity and explanatory worth of common conceptions of social structure is the inadequacy of the partition principles used in the

construction of these conceptions. White, *et al*. (1976: 733) for instance hold that,

> all sociologists' discourse rests on primitive terms – "status," "role," "group," "social control," "interaction," and "society" do not begin to exhaust the list – which *require* an aggregation principle in that their referents are aggregates of persons, collectivities, interrelated "positions," or "generalized actors" (italics in text).

The authors also add that despite its centrality, the question of aggregation has not been adequately addressed and apart from "some exceptions … there is a remarkable lack of attending to aggregation as a central problem for sociological theory." But although White clearly raises this issue, he does not delve into it sufficiently. He leaves out several aspects that are of great theoretical significance and that seem to have been of crucial importance for the development of his general sociology. Therefore, some attention to these lacunae is in order.

Technically, the question of aggregation is rather straightforward. The question that the structural analyst has to deal with is as follows: What are valid principles of categorization or classification? More concretely, what are the most adequate principles of division to use in order to construct the various homogeneous social categories into which actors are to be placed? Beneath this technical surface, however, lies a fundamental question of great theoretical importance for any conceptualization of social structure and, thus, for any sociological approach that adheres to a structural mode of inquiry. This deeper dimension regards the choice of the valid structuring principles, that is, the identification of the classification principles that will yield the most theoretically significant partitions. Such a choice, in other words, is a matter of determining the organizing principles that will have the most explanatory power, that is, those that can best account for social actors's perceptions and actions. If the structural position of an actor is decisive for these attitudes and behaviors, as the structural mode of analysis claims, then the issue of the partition principle becomes a question of locating causal factors: which classifications can yield the most adequate explanations of actors's perceptions and actions? And, which principles of division generate these classifications?

As mentioned above, White dismisses any attribute-based aggregation method. For White, the analyst's placement of actors in constructed categories does not suffice as an explanatory factor of actors's perceptions and actions. Membership in the social groups that are constructed by cross-tabulating various individual attributes or other statistical inferences lacks the causal power needed for explaining actors's attitudes or behaviors. Such placement tells us nothing, or very little, about the specific social environment in which these actors are in fact embedded. Nor do these memberships tell us much about the actual forces to which actors are subjected or about the concrete forms that social constraints take. In fact, the attributes that actors do have may well be the result, rather than the cause of, their placement within various social groups and categories. This is, of course, an important and complex question that will be the subject of further inquiry in the final chapter.

All that will be said about this now is that by dismissing the partition principles derived from individual attributes, White instead rests his own mode of aggregation on the basis of actors's relationships. This is the essence of his alternative notion of social structure. By the same token, this is also the heart of his structural mode of analysis and the novelty of his approach; all this stems from, and is manifested in, the notion of structural equivalence. According to White's alternative mode of aggregation, classification and partition of social actors is carried out with reference to the similarities and differences in their social relations. Rather than relying on actors's individual attributes, in other words, this alternative principle is based on the properties of their relationships and operates by distinguishing among these relationships.

The relevance and fundamental theoretical importance of the notion of structural equivalence should be seen in this light. Instead of distinguishing among actors on the basis of attributes like age, income, class background, ethnicity, and so on, this tool sorts actors according to the similarities and differences that are directly observable in the properties of the relationships in which actors are actually involved. As a measure of relational similarities and differences among actors, structural equivalence is thus the new device which is required for aggregation and partition of these actors; it is the relationally constructed yardstick that can be used as the structuring principle in networks of ties in a population. The application of this

relational principle can help the analyst reveal the social structure implicit in the context as a system of categories that are constructed relationally, that is as a system of categories that are discerned on the basis of particular properties of the units's actual ties and with respect to the actual types and configurations of these relationships (see for, instance, Breiger 1981).

In collaboration with some of his graduate students at Harvard, White develops an analytical apparatus whose "core idea is structural equivalence" (White 1992d: 209). Blockmodeling, as he calls this apparatus, is by now a well-known technical procedure that is widely used by social network analysts to identify social structures within any given context of multiple networks. The main objective that motivates the use of this procedure is to lay bare the structures that are implicit in the context and that are often only vaguely perceived by the actors themselves. In very broad features, the blockmodeling procedure allows the population at hand to be partitioned and clustered into several blocks. Each block is a cluster of nodes that, as members in multiple networks, have similar bundles of ties, that is, members who through similar types of relationships are connected to similar set of other members. In other words, each such block consists of, and hosts, nodes that occupy and share structurally equivalent positions in the context under observation.

The basic substantive ideas behind this procedure are anticipated in the fourth kind of category system in White's typology. This fourth type, the one preferred by White, is called the contextual categorical system. It is a system of classification in which people are partitioned and lumped together into categories that are defined on the basis of relations among them. The entities placed within each category occupy the same position in relation to the position of other entities that are clustered into other categories. Defining this system, White (1965a: 5) holds,

> placement in a [category] in this system is meaningful only within the context of the whole structure formed by the categories. A hierarchical system of social classes is an example. One is not upper class because of some intrinsic attribute but in contrast to being lower class. The actual criteria of upper class membership can change, and even become inverted in a given society over time, so that membership in the category is a matter of the

context. In this simple case of two social classes one could just say membership is a relative matter, but the word context better conveys the complexity of assignment in more complex systems of categories which form structures. One example of a more complex system would be the schools and cliques in which artists are viewed as falling.

As many studies of even small informal groups show, the chart of connectivity of the actors across a few distinct networks is often too complex to be truly useful. Some mode of reduction is thus required to sort and somehow summarize all the actual relationships into a simpler, and yet sociologically meaningful, system of connectivity. As one of the main merits of this procedure, blockmodeling reduces the numerous relations that exist among the individual members of the network population to a limited number of blocks. It converts the overall complex pattern of connections in a context of multiple networks into a much simpler system of few, interrelated blocks. Through the blockmodeling procedure, the original context is thus converted into a much simpler network of few blocks. Although the relations among the resultant blocks are more abstract than the actual ties among the population, the complexity of the context is reduced to a manageable level. In other words, the blockmodel approach is, a procedure that distills the complex web of actual ties into patterns that are of a higher level of abstraction but simpler – "simpler not only in having fewer constituents but also in exhibiting interrelations which are more regular or transparent" (White and Lorrain 1971: 49).

The final picture that emerges through this procedure is a simplified representation of the social structure implicit in the context. The underlying structure that is revealed is often concealed from the actors themselves. This structure now becomes visible as a constellation of the constituent blocks and relations among them. It appears as a system of distinct and mutually exclusive clusters or, as they are often called, "positions" that are related to one another through certain durable bundles of ties (Borgatti and Everett 1992; Burt 1977; Marsden 2000; Wassermann and Faust 1994). These are, as White and Lorrain (1971: 49) put it, positions "within which classes of equivalently positioned individuals are delineated." In other words, the actors who end up in any one of these blocks are similarly located

within the overall structure; they "are equivalent with respect to the system of positions" (White 1971b: 9) and share an equivalent position in a population's social structure. In this sense, that is, as a system of positions, the overall extracted image is also a role structure.

After this sketchy description of the particular way of partitioning actors, it is time to turn to the second question that is central to the structural mode of social analysis. As already mentioned, the notion of structural equivalence involves the observation of a new kind of relation, one at a higher level of abstraction that is perceived by the analyst among the blocks. Another way of putting it is that the analyst extracts a set of "objective" relations among the blocks in the structure from the context of actual ties. These relations are objective in the sense that any such relation between any pair of blocks is a general representation of all the actual ties that members of one block have to the members of the other one. As a generalization, it is thus independent from any single one of the ties that it represents. Indeed, the final structure that is revealed through the blockmodeling procedure is the overall pattern that is made up of all the general or objective relations that can exist among the constituent blocks. The unearthed structure, in other words, is the sum of such abstract relations.

But there is also a subjective side, which seems to have been less noted. That is, this new and abstract relationship is not only discerned by the analyst but is also perceived by the actors themselves. The blocks or positions that constitute the social structure are not entirely independent from the subjective perception and appreciation of the actors. On the contrary, each set of structurally equivalent actors, that is, each set of actors who are positioned in each distinct block, tend to perceive themselves as members of a single collective entity. By the same token, they also tend to perceive actors in any other position as members of another distinct collectivity. Put differently, members of each block tend to regard themselves as sharing a collective role or identity, just as they bestow other, distinct and collectively held roles or identities upon members of other blocks. In White's (1965a: 6) words,

> the principle result … is the definition in the eyes of participants of a new type of relation, equivalence within the structure. The simplest example is the development of cliques in a net of friendship.

> As the density of ties among a subset of persons in the net reaches some threshold value, the subset will come to regard itself as having an identity. Most of the pairs in the subset may not be connected by the net relation at a given time, but because of the feeling of identity all relations will be regarded as present in a latent way. That is, any person in a clique will feel free to "mobilize" the relation with another person in the clique.

There are a number of important issues to note here. First, as in the case of the analysts, the abstract relations that actors perceive among various blocks or positions serve to reduce the complexity of the context in question. This possibility of reducing the complex web of relationships into manageable form and size comes from the interchangeability of all the members of any given block in the eyes of any actor. That is, the actor can discern in the population the sets of others who are structurally equivalent to him, and, thus, interchangeable. Therefore, the actor can regard those in each set without discrimination. As long as these others share the same collective identity and the same relation to the actor, no individual consideration of them is necessary (White 1963a, 1964).

The more interesting issue regards the underlying assumption implicit in the quotation above. White assumes that social actors tend to partition and classify themselves and others on the basis of relations that they have. According to this assumption, actors can both perceive their own place within the social structure as well as discern that of others. That is, any actor can tell which set of actors he belongs to and with which group of others he shares a common position. The actor can do the same with others as well. He can identify who belongs to which set, and where the set is located within the structure. In other words, any actor, or at least any competent actor, has a sense of one's own place and of the place of the others or a sense of closeness to and distance from others. He can expose himself and others to this partition and project a certain classification upon the population. And he can do all this, not on the basis of individual attributes that he and others posses respectively, but on the basis of his and others's relationships. The actor, in other words, applies a relational view in making these partitions and in bestowing distinct roles or identities upon himself as well as upon others. This is a bold assumption that seems to be responsible for many of the substantive

ideas and insights in White's sociology. Two central ideas that are closely related to this issue are the comparability of equivalent actors, and the similarity of their attitudinal and behavioral profiles.

Comparability

Being structurally equivalent means being interchangeable in the eyes of others, as mentioned above. But it also means being comparable. In other words, any group of structurally equivalent actors not only appears to others as a set of interchangeable units but also its own members regard it as a group of comparable peers. When the group members look at themselves, they realize the shared structural role they have. They also become aware of the position that they occupy and hold in common in relation to other sets. On this basis they tend to regard themselves as members of a single peer group. This is simply just another aspect of sharing a single role or identity, although it may be added that it is a matter of self-identification. In other words, it is a matter of identifying oneself with a set of certain others on the basis of some perceived similarity while, at the same time, distinguishing oneself from other sets on the basis of some perceived differences. In this sense, it is a very basic and fundamental sociological observation of which one can find a great number of diverse formulations in sociological literature. White expresses this familiar and largely uncontroversial observation in the network language and thus gives it a more tangible empirical foundation. This idea of comparability, however, is of such fundamental importance to White's sociology that he (1992a: 13) refers to it as "the second principle of [his] theory."

Drawing on the insights won by Leon Festinger (1954), a student of Kurt Levin, the importance that White attaches to comparability derives from the fact that such comparisons among structurally equivalent actors provide them with some guidance on their action (see also Friedell 1969 and Hoffman *et al*. 1954). Here the basic image of the social actor in the modern social context should be recalled. As described in the previous chapters, in contemporary social settings the actor is embedded at the intersection of multiple networks and subjected to the erratic bombardments of heterogeneous flows. These flows that pour down on him from different direction are streams of various and, at times, even conflicting expectations and demands

and come through the contingent ties that connect the actor to different regions in the social landscape.

The overall effect of this bombardment is to confuse the actor, as discussed above. This sense of confusion is reinforced by the fact that the overall landscape is too vast and complex to be knowable by the actor. The intractability of the social landscape allows the actor to have only a limited horizon and a partial view, which for practical reasons is confined to the actor's immediate environment. This tends to make the actor quite unable to scan any larger sections of the landscape or to orient himself by tracing the flows to which he is subjected. In such a disorienting situation, the actor is left to his own devices in handling these flows. The actor is forced to work out some kind of priority scheme that can help him distinguish and judge the relevance and importance of these erratic expectations and demands. In developing such a scheme, however, the actor does not have much recourse to cultural instructions or prescriptions, which are too general to offer any concrete guidance. Nor is imitation an option, since the uniqueness of the actor's topological position undermines its utility and does not permit it to be of any considerable help.

It is with this image in mind that the importance of comparability should be considered. Comparability offers the actor assistance. It offers help to the actor in handling the confusing situation caused by the erratic bombardment of the flows. Having a set of comparable peers means having a group of others who are in the same situation as oneself and who are therefore forced to handle roughly the same kind of flows. This set of comparable peers functions as a kind of reference group for its members (Hyman and Singer 1968; Merton and Rossi 1968). This set of comparable peers functions as a point of reference for its members in the sense that it helps them develop ideas about how to be and behave. It provides the actor with a sense of normality in a context that otherwise would be overwhelmingly confusing and hard to make sense of. While imitation is not a real course of action, watching the comparable peers may provide the actor with some guidance on action. Monitoring others who are perceived to be in the same situation can offer a reliable enough basis for working out the scheme that the actor needs.

Although each actor in this set is aware of the uniqueness of his own topological position, he nonetheless knows that others in the set have very similar partial views and can therefore see very similar

segments of the larger landscape as him. Sharing the same position within the social structure, these comparable peers also share the same standpoint, that is, the same point of view from which they can perceive the social landscape. Each actor is aware that the other ones in the set are subjected to the same or very similar flows of expectations, demands, claims, and so on. Each actor knows that others are forced to cope with the same or very similar bundle of constraining forces and pressures. The actor also knows that these forces and pressures originate in the same fields within the larger social landscape as those which he is connected to. The actor thus knows that he shares with others in the set the kind of disparities and incompatibilities of expectations that he himself has to cope with. These similarities may therefore function as, or provide, a basis for similarities in attitudes and behaviors of the equivalent actors.

The notion of structural equivalence lies at the heart of White's attempt to capture the structural properties of the social contexts in which actors are embedded. This notion serves, in White's structural sociology, as the structural basis of the similarity of actors's perceptions and actions. By translating the similarities of these actors's structural positions and roles into network terms, a relational basis is provided for explaining the similarities of actors's role behaviors and attitudes. In contrast with both the abstract cultural-holistic and individualistic approaches, this relational explanation accounts for the observed similarities of actors's perceptions and actions in terms of these actors's actual ties and their tangible patterns.

According to this view, given the shared structural position of the members of any given set of actors, it is very probable that these equivalent peers develop very similar schemes of perception and action. The occupants of each position will have similar linkages to the occupants of other positions. On the basis of their relational similarities, these actors will have similar experience since they are exposed to the same or at least very similar bundle of constraints and enjoy the same or very similar opportunities. Thus, in White's version of structural analysis, the similarity of actors's behaviors are inferred from the similarity of actors's structural positions, which in turn is derived from or defined in terms of the similarity of actors's ties across multiple networks. It should be pointed out, however, that this emphasis on structural or positional similarity is not to deny the individual variations. Contrariwise, comparability also implies

competition amid structurally equivalent actors within the same set. As in the case of firms in white's model for production markets, each member of the group will seek individuation, that is, differentiation and distinction. While sharing a collective identity with others in the group, each actor will strive for his own individual identity. As White (1992a: 13) points out,

> One is surrounded by examples: professors vie for distinction and thereby become as peas in a pod to students in their classes; physicians strive as individuals – and also in much the same process as specialisms – for prestige only to exactly thereby become imbued by other identities as interchangeable. Burger King, MacDonald's, Wendy's and so on induce a new category of equivalence, the fast food restaurant, exactly and only by striving to be better – which requires, and therefore induces as presupposition, being comparable.

Disciplines

The idea of structural equivalence continues to play a central role in White's later attempt to develop a general sociology, and underpins one of the most central and novel concepts in his theoretical construction, namely discipline – a concept to which White attaches great importance and high ambitions. As White (1992a: 22) puts it metaphorically, a discipline can be viewed as a "social molecule," that is, a relatively stable and recognizable formation, which consists of a limited number of identities or actors.

A discipline emerges in a network population, and its constituent elements are a rather small group of structurally equivalent nodes within that population. A discipline, in other words, is normally made up of a handful of actors who are similarly positioned within the overall structure of their embedding context. On the basis of this structural similarity, these nodes make up a distinguishable compound entity. To put it differently, the discipline, that is, the group that is made up of such structurally equivalent nodes, becomes recognizable as a distinct whole, both for its constituent nodes and for others. It becomes a distinct entity, a distinguishable whole with its own collective identity that is shared by its constituent members.

Yet, as may be recalled from the previous chapter, in White's terminology being an identity means being a distinct and independent source of social action. Thus, to regard a discipline as an identity means to see it as an actor with a certain behavioral profile. In other words, a discipline should be conceived of as a compound or collective social actor in its own right, that is, as an actor with an own, relatively stable and thus recognizable mode of action. It is with this conception of discipline in mind that White (1992a: 25) maintains that each discipline comes "to be perceived as an entity, and to constitute an independent source of social action. In being embedded within a broader social array, it is also empowered as a distinct new social actor, an identity."

The most important and interesting thing about disciplines in White's sociology is that these are the elementary units of social order. That is, disciplines are conceived and conceptualized by White as tiny islands or enclaves of order, regularity and predictability in a world that is otherwise chaotic, disorienting and confusing. And since the scope of human control is limited, these social orders are limited in their scope and are necessarily local (Collins 1988). Any given discipline embodies and represents a local social order, in the sense that it is a site where the constituent identities are disciplined. It is an embedding context where the participating actors are captured and tied down. It is the context where they cease to be fluctuating and dependent on the contingent forces that pour down on them from every corner. It is a context where these identities cease to respond randomly and behave as if they were atoms that could hover freely in a kind of social weightlessness.

Instead, a discipline is a relatively orderly context for action where identities can have a considerably larger degree of control over the contingencies and uncertainties that impact them. As the choice of term indicates, the constituent identities in a discipline acquire some resonance in their responses and some stability in their behaviors. In more concrete terms, belonging to a discipline means having a point of reference to which an identity can turn and look for guidance about how to be and behave. Belonging to a discipline and sharing a collective identity means being subjected to certain, known and relatively stable constraints, and it means having a certain, known and relatively stable frame of action. In White' own words, disciplines are the "basic constituents for [social] order" (1992a: 22), and are the

"locally overawing expressions of social control" (1992a: 233). Like in a molecule "which captures atoms from … their own interactions" (1992a: 22), in a discipline the behavior of the constituent nodes are constrained, and, as a result, "within a discipline, there is predictability, in perceptions and actions by the identities … whatever the rhetoric in which it may be expressed" (1992a: 29). It is in this sense that a discipline is "a discipline for social action" (1992a: 23).

It should be remembered that disciplines are basically relational categories or blocks that, together with a number of other similar units, make up the social structure that is teased out through the blockmodeling procedure. This means that disciplines do not merely represent tiny, isolated and self-contained local orders, but can also be parts of larger and durable role structures. More than just an orderly context for their own participant, disciplines can themselves be nodes in networks, but above all they can be the basic units of the role structures that make up the skeletons of social organizations at a higher aggregation level. That is, disciplines are the main and fundamental constituent part of any larger social organization, so that the underlying role structure in such an organization is a concatenation and configuration of a number of distinct disciplines. It is this issue that White (1992a: 22) refers to when he argues that although any "social organization is a shamble rather than a tidy crystal, but it is all the more important to be clear about any basic constituents for order, any social molecule. What persists, and thus is observed, builds from molecules." It is in this sense that disciplines, according to White (1992a: 23), are "unavoidable" and the most distinctive aspect of social organizations.

Another important feature of disciplines is their capacity to reproduce themselves. As White conceives of disciplines, they are self-contained and self-propelling units or "self-reproducing social formations" (1992a: 22). Disciplines, in other words, are constraining contexts of action that are locally constructed. That is, they are durable formations that are jointly produced and maintained through the actions of the participant actors themselves. What sustains a discipline is primarily the internal forces and interactions among its participants. It persists because its participants mutually constrain one another, as they monitor and keep one another on track, all within the limits of the overall shared identity. Such mutual control efforts constitute the underlying source of both the formation

of and the ongoing dynamics in any given discipline. To quote White on this point, disciplines are "distinctive units of mutually constraining efforts at control" (1992a: 23), and each discipline sustains and "persists only because of powerful mutual reinforcings among its handful of participants" (1992a: 28).

Now, some important questions arise immediately: How does a discipline operate as the basic unit of social order? How do the actions of a set of structurally equivalent nodes, which are not necessarily interconnected, become coordinated and harmonized? How does a discipline function as a constraining context of action for the participant identities? How is the behavior of these identities disciplined and how is the range of their choices of action narrowed? What is absolutely essential in answering this kind of questions is the comparability of the identities that together make up a discipline. As mentioned above, comparability occupies a central place in White's approach, primarily because through comparisons, the structurally equivalent nodes can develop a sense of normality and find some guidance about how to respond to the network flows and control efforts to which they are subjected. Comparisons with those who are perceived as peers offer assistance to the actor, so that he can turn to these peers to look for a point of reference, for a measure of normality and/or for a standard of action.

Although such mutual watching and monitoring is important for the operation of a discipline, it is not the whole story. Comparability is essential for the very existence and constitution of any discipline as a self-constructed social formation. The core issue here is that the membership in any discipline is not given in any "objective" way but is a matter that depends on, and that is determined through, the agency or action of the identities. In other words, belonging to a certain discipline rather than another and sharing a certain collective identity rather another is a matter that is settled through the actors's own and conscious efforts. It is settled through the actors's efforts to be seen as comparable with one set of peers rather than another. And since membership in any given discipline is decided by the actual bundles of ties in which these actors are involved, establishing, breaking off and recasting ties become crucial ingredients in the actors's strategies. In brief, to strive to become a member of any given discipline takes strategic maneuvering in the social landscape as well as manipulative coupling and decoupling attempts, all designed to

establish discipline-specific comparabilities (White 1992a: 13). It is this sense of comparability that makes it a profound feature of social life, so that comparability, according to White (1993a: 5), "is the meaning of the social …[and] achieving comparability is the key."

Such comparisons are, however, made by identities along schemes that are specific to any given discipline. Any such scheme provides actors with the necessary measures or standards that can be used by the actors to carry out valid comparisons. Such a scheme represents the collectively held identity of the discipline, within which the participant actors can find or define their own, distinctive profiles. As such, the scheme provides the participant actors with some scale on which they can be ordered and ranked. That is, it functions as an organizing device to be used in a discipline to produce and uphold the hierarchical order that prevails among the actors in that particular discipline.

By the same token, such a scheme also functions as a guideline or yardstick to help measure the fitness of the actors entering into the discipline and sharing the common identity. On the one hand, it helps those actors who are already members of the discipline to sort those who seek membership, including the ones who are judged to fit and excluding those who are not. At the same time, the scheme that represents the overall identity of the discipline offers guidance to the membership seeking actors about the valid criteria. Moreover, such a scheme makes it possible for the participants in a discipline to assign the entering actors to their proper place within the existing order, as it also helps the newcomers to embed themselves within a new and larger identity, to jostle, join and nest themselves among the participants, and to find or define their own niches within the new embedding context.

White calls these organizing schemes or status orders valuation orderings. A discipline "evolves together with an ordering [and] goes with some sort of specialized valuation" (White 1992a: 28) or, "each [discipline] is characterized by a valuation ordering" (White 1992a: 16). In any given discipline, such a comprehensive, hierarchical scheme is used to produce comparative judgments on the relative place of each member as well as on the fitness of the membership candidates. In any given discipline, a specialized valuation ordering defines the boundaries of that discipline and frames the behaviors of the participant actors. It envelops the identities, shapes them, and

keeps them on track within the collective profile of the discipline while, at the same time allowing the participant identities to pull apart and seek distinction within the boundaries of that common profile.

White identifies three general bases on which such judgments are made, and he associates each one with a distinct general type or species of discipline. In each species of discipline one type of these valuation orderings prevails, so that in any given case "all social action [is] mediated through the specialized valuation ordering that is the valid 'idiom' in that discipline" (White 1992a: 29). Moreover, each type of valuation ordering seems to stem from three fundamental and universal types of social relation. The three discipline formations and three underlying valuation orderings that White includes in his typology are the interface discipline with quality as the pertinent valuation ordering, the council discipline with prestige as the associated ordering, and finally the arena discipline with purity as the prevailing valuation ordering.

The first species of discipline, namely interface, is typically, but of course not necessarily, a social unit that evolves primarily around material production where – like in the case of production markets of modern industrial economies – what is produced in the discipline is shipped or delivered downstream. Interface is closely tied with the "passing through and transformation" (White 1992a: 31) of directional flows of products. In this sense, an asymmetry of flows is built into this formation. On the other hand, there is also another directional flow of rewards, coming from the receivers of the products, which gives rise to competitive pressures and constraints on the participants in the discipline. Furthermore, in an interface discipline the quality of that production is a core concern; at issue is the participants' commitment to produce the certain quality that is characteristic for that discipline. From this follows that the relative performance of the participants in delivering that quality is being comparatively assessed and rewarded. As a result, any interface can be characterized by the competition that exists among the participants, as each participant seeks to perform relatively better than his peers. Similarly, the presumed or actual ability of the membership seeking actors to hold the valid quality measures and standards is decisive for their entry into the discipline. Furthermore, the internal competition among the actors is carried out along these valid quality measures.

That is, each participant's relative position within the internal hierarchical order of the discipline is determined on the basis of judgments that are made about the quality of that participant's performance, compared with the performance of the other participants. Or, according to White's (1992a: 38) description, in an interface

> a set of actors can become comparable, become peers, through jostling to join in a production on comparable terms. They commit by joining together to pump downstream versions of a common product, which are subjected by them and downstream to invidious comparison. Children competing in hopscotch or reciting for a teacher, mathematicians in a test for a prize, manufactures of recreational aircraft for the U. S. market, actors in a play – all can be examples. "Quality" captures the connotations of the invidious transitive ordering induced in such interface disciplines.

A final world should also be said before concluding this chapter. Given the length of the time that White has spent studying production markets as a case of interface, there is a large number of publications in which he elaborates various aspects of this discipline rather extensively (see Appendix) and fleshes out his abstract ideas about interface with more tangible and concrete observations from the economic realities of large-scale, modern industrial production systems. But, as far the other two species, namely council and arena, are concerned there is in White's production a regrettable lack of explicit and clear presentations or even consistently presented examples which show how these two other species of network formations are related to notions like role structures, structural equivalence, and so on. Nor does he make any attempt at systematic and transparent accounts, which could inform the reader how these two species of discipline derive from and operate through prestige and purity, that is, the particular valuation orderings that White associates respectively with council and arena. Furthermore, there is no account of the reproduction mechanisms at work in these two species. Finally, White fails to explain how the participants's perceptions and actions get harmonized and coordinated within these disciplines, so that the overall, shared identities of the disciplines are maintained. On the whole, there is a sharp asymmetry of treatment concerning the various species of discipline, and especially in comparison with interface, council

and arena remain largely underdeveloped and vague. White's account of these two, as he himself admits, is quite sketchy and incomplete to the extent that any attempt to present these two types of discipline would hardly be more illuminating than what is to be found in *Identity and Control*.

6
A General Assessment

After having presented the main concepts and ideas in White's theoretical construction, the stage seems to be set for an assessment of his effort to develop a general sociological theory on the basis of the premises of the social network approach. Before proceeding, however, it should be pointed out that any such evaluative attempt must take into consideration the unfinished state of White's theoretical construction. As many observers have pointed out (see Chapter 1), rather than a fully developed conceptual framework, that is, a coherent and consistent system of full-grown, well-integrated ideas, what is put forth in *Identity and Control* is only a little more than a sketchy outline of a grand theoretical project, representing a less systematic ensemble of some novel concepts, images, arguments and propositions, which are yet in need of much further theoretical refinement and elaboration. Indeed, given the fact that White is himself aware of the incomplete condition of his theoretical project, one is left with the impression that the ultimate purpose of *Identity and Control* is primarily experimental, that is, to test the worth and potential of the proposed original approach that it contains by inviting, sometimes provocatively, the sociological community to reflection and assessment.

This unfinished state of the theory has, of course, certain implications for any assessment of it. On the one hand, it offers numerous opportunities for criticism, as many apparent shortcomings, gaps and even inconsistencies can be found without too much effort in this still vaguely articulated theoretical project. One can, for instance,

pick up almost any concept or topic in the book and easily demonstrate its incompleteness and/or inadequacy of treatment. Likewise, the theoretical approach presented in *Identity and Control* can doubtlessly be also criticized for omitting many crucial issues indispensable to any sociological theory that claims to be general. On the other hand, the unfinished state of the theory also makes it hard to assess its true value, and to do so with fairness. The absence of a definite, complete and systematically presented conceptual framework opens itself up, among many other things, to a variety of interpretations, and puts any student of the theory in a rather vulnerable position. The reason is that, as the whole and final construction cannot be perceived, one can never feel very comfortable with his interpretation. Furthermore, as White's unconventional and, at times, idiosyncratic ideas, images and concepts make comparison with other approaches difficult, one is almost totally left to his own devices when interpreting and assessing this theory, lacking recourse to anything comparable to the established interpretation frames that often accompany other general sociological theories.

At any rate, given the unfinished state of White's approach, it seems more fruitful to concentrate the present assessment on the overarching ambitions and achievements of his enterprise, rather than on specific concepts, notions and/or arguments. In other words, although it is inevitable to discus at least some of White's central concepts and arguments to a certain extent, it seems worthwhile to focus more narrowly on the fundamental issues that constitute the heart of his enterprise as well as his challenge. That is, leaving aside more meticulous examination of specific elements of White's theoretical apparatus, any critical assessment should at this stage turn its focus to the key question: How well and/or to what extent does White succeed in substantiating his claims of having laid the proper foundation for a new, and more adequate, sociology? Put differently, the most important question to be examined is whether or not, and to what extent White's approach represents a fresh start and provides us with new a ground to build on. To reground sociology, or any other science for that matter, means a wholesale and radical reconsideration of the prevailing ontological and methodological standpoints, and requires the development of novel positions to start from. Therefore, in White's case the key question to be examined is how well he succeeds in developing a novel, network-based description of

social reality and how adequate his new network-based method of analyzing this reality is. And given the fact that White's enterprise is the most ambitious and elaborate attempt to develop a general socio-logical theory on the basis of the tenets of social network approach, such examination becomes in effect a trial of the potential and worth of this approach as a sociological paradigm.

Quest for the real

Let us now try to identify and assess the plausibility of White's input to this key question. In my view, White's single most valuable contri-bution to a fresh start for the discipline lies in his attempt to break with theoretical and methodological constructs and to return to social empirical reality. As mentioned earlier, White, perhaps because of his initial training in natural science, is firmly committed to the fundamental premises of empirical science, and in his practice as a scientist is guided by a sincere respect for reality and its complexities. This deep-seated empiricism, however, exceeds by far what is con-ventionally understood by the term, and seems to generate in him a general and profound quest for realism, that is, a quest for moving away from the constructed of all kinds towards the factual, and away from the imagined and hypothesized towards the actually existing and evident. In other words, what constitutes the very essence of White's regrounding project is the attempt to break away from the prevailing social scientific myths of all types and to return to social reality as it is shaped and coped with by the real-world actors. And in pursuing this project, he seeks to develop a theoretical apparatus and a mode of analysis that is firmly anchored in what is the true subject matter of these sciences, rather than relying on the arbitrary and speculative, analyst-made abstractions substituting it.

It is worth mentioning that, despite many obvious substantial differences, White's attempt to break away from constructs is essen-tially similar to that of Durkheim (1982: 60) who, deeply discontent with the unscientific character of social theories of his time, accuses them of doing nothing but "an ideological analysis," and calls for a fresh start. In other words, White's basic thrust resembles that of Durkheim who sternly criticizes many of his contemporaries for con-fusing preconceptions of reality with reality itself, and for analyzing their own theoretical constructs instead of inquiring into the true

nature of the empirical social reality by observing, describing, and comparing actually existing social phenomena that make up that reality. And as known, on this basis Durkheim urges for a radical reorientation, proclaiming that sociology in order to advance must abandon the illegitimate surrogates that it hitherto more or less exclusively has been concerned with and must instead turn to what is its true subject matter, that is, social reality itself.

In White's case, however, the materialization of such a radical and far-reaching ambition is sought through social networks. That is, what characterizes his attempt is a move towards a distinct level of sociological analysis, that is, a level which is equidistant from the two established paradigms of social theory and which can be labeled the level of concrete interactions and relations or the level of the social, lying between the psychological level of the atomism and the cultural level of holism. This characteristic reorientation and return to empirical social reality is indeed a strategic turn, which constitutes the very cornerstone of White's endeavor and which represents the most salient and pivotal feature of his theoretical construction. It is also a multi-dimensional turn, which has a number of manifestations and implications, both ontological and methodological. Furthermore, it is also a move from which much of the novelty, as well as the ambiguity, of White's approach stems. Therefore, keeping track of this move and exploring its various dimensions is not only a good entry point to White's sociological thought but is also inevitable in grasping the essence of his criticism of contemporary social science and in understanding his alternative approach. So let us try to unpack it.

The bedrock of White's realism and return to empirical social reality consists of course of his adherence to the assumptions of connectivity of social actors to one another and of their embeddedness in the webs of their relationships. These assumptions, which, in his view, represent the most fundamental properties of social reality, constitute the most realistic point of departure in any science that aims to deal with that reality, and are therefore indispensable to any adequate conceptualization of that reality and to any account of its constitution. Furthermore, tangible social interactions and relationships among real actors embedded in actual social situations make up the true stuff of social life. Therefore, the proper raw material in any description and account of the constitution of man's social existence is the empirical observations of interactive processes. That is, rather

than observations about the invented constructs – such as atomized actors or social systems – and the various attributes and properties ascribed to them, what constitutes the proper raw material of social science is observations concerning the genuine stuff of social life, that is, observations of real actors who are invariably engaged in ongoing social interactions and relationships, and who constantly build up and recast the chains and structures of coordinated activities amongst themselves as they try to match their perceptions and actions with those of others.

Another expression of this realism is, as we have seen, White's persistent attempt to reconceptualize central sociological concepts in terms of social ties and networks. As a generalizing science, sociology cannot obviously do without general and abstract concepts. Without such concepts it could barley stretch beyond pure description of individual instances of social phenomena. Nor would it be able to determine the theoretical relevance of the accumulated data. Given the centrality of general abstract concepts in social science, the adequacy of any theoretical framework thus depends decisively upon the validity of its concepts. Whereas there are no significant disagreements on this issue within the sociological community, it remains unresolved how social scientific concepts should be developed, and how their validity is to be measured. The crux of the matter, in White's view, is to seek more disciplined ways of developing social scientific concepts in order to secure their empirical validity and their correspondence to the empirical social world. In other words, the key point is that social scientific concepts must be empirically well founded. They must be firmly rooted in close and intensive observations of various domains of social life, and must be provided with sufficiently concrete and specified connotations, so that it is made clear exactly what kind of real phenomena in the empirical social world they refer and correspond to. That is, for the same reason that White finds unspecified causal assumptions among constructed entities inadequate (Chapter 2), he also questions the validity of empirically unfounded concepts and theoretical schemes that build on such concepts. Applying the same criterion of validity, theoretical concepts must, in his view, be made clarified and specified, provided with empirically determined referents. Just as causal accounts should rest on tangible and specified empirical evidence rather than building on hypothetical assumptions among constructed entities, theoretical concepts too

should be empirically concretized and underpinned, and thereby made subject to empirical test.

In pursuing such an objective, White seems to draw on the line of argument made by a number of other, prominent sociologists like George Homans (1950) and Herbert Blumer (1969) who, especially in polemic against the abstract Parsonian type of theorizing, advocate a concretization of social scientific concepts or "big words" (Homans 1950: 10) such as culture, power, function, status, and so on in terms of observable referents. Yet, although White's attempt to provide central concepts with empirically specified connotations can be seen as a long-awaited response to an old call, his quest for concretization does not stop here. Due to the realism of its underlying assumptions and the genuineness of its raw material, White's approach offers exceptional possibilities of adopting a more realistic ontological stance, that is, a description of social world and an understanding of its constitution, which corresponds better to the reality "out there" than any other image that, for instance, takes atomized individuals or all-inclusive totalities as its starting point. Instead of employing such myths or constructs this reality is in White's approach conceptualized in terms of nothing but its true constituent elements that make up this reality, that is, the concrete ties and networks amongst real-world actors.

Misleading ontological constructs

It is this unyielding rejection of unspecified concepts, vague ideas, arbitrary constructs, and/or unfounded, hypothetical assumptions that evolves gradually into a rather stern critique of the very conceptual foundation of the contemporary sociological perspectives. In White's view, the most established perspectives in sociology and other social sciences build on false descriptions of social reality, and employ inadequate modes of analysis, which are derived from these descriptions. According to him (1992a: 8–9), these perspectives have up to now, more or less exclusively, been concerned with unscientific constructions or "myths" such as "society" and "individual as person" and pertinent methodologies. Although many social scientists keep using these constructs in an unreflective way and treat them as the self-evident points of departure or building blocks in their theories, these constructs for White are nothing but theoretical

inventions designed in abstraction. They are nothing but thought objects that social scientists elaborate in order to describe, analyze, and understand social reality but often tend to substitute for that reality. Mistaken as actually existing and unproblematic entities, these are invalid objects of theorizing and will only yield misleading conceptions of the empirical social world, which can be grasped adequately in terms of neither all-inclusive totalities nor isolated individuals.

White's double-edged attack on constructs, on the one hand, targets the notion of society as it is conceptualized in the standard holistic perspective. This notion refers typically to an all-embracing whole or totality, as a real and concrete entity which has an independent, self-contained existence and which is clearly separated and demarcated from its surroundings. As such, this notion derives from false assumptions, especially those concerning the existence and prevalence of some overall order, balance, and harmony. And on these false assumptions rest the pertinent structuralistic mode of analysis, which is content with explanations made in terms of inherent needs, requirements, tendencies and/or driving forces of "society." In the Parsonian style of envisioning social reality, for instance, "society" denotes an all-encompassing and well-organized societal system, normatively unified and functionally equilibrated, with an ensemble of fixed roles, neat divisions and tidy boundaries. Despite its lip service to "action," social actors are made invisible in this fashion of conceptualization, as the main emphasis is put on the ways the core values and their institutionalization shape actors's behavior through socialization, internalization, and social control.

Sharing a widespread criticism against the Parsonian way of portraying social reality, White disputes the empirical validity of the conceptualization of society as a well-integrated and well-functioning system of norms and roles existing "out there" in their own right and independent of human agency. Drawing on false assumptions, especially concerning the existence of some overall order and the prevalence of balance and harmony, such a conception of social reality is according to White an invalid construct, a fabric of imagination that corresponds poorly to the reality it intends to denote. For him the "myth of society as some pre-existing entity" (1992a: 9) represents a tenuous theoretical construction, which is void of realism and which has "an abstract, ideological quality" (1970a: 4), that is, it lacks

sufficient empirical foundation and, therefore, scientific adequacy and value.

Another target for White's (1992a and 1995c) criticism against the prevalence of constructs in social science is the notion of individuals as persons. As the individualistic approaches have it, the ultimate unit of social life and the basic unit of analysis is the individual. Committed to "the fundamental singularity of individuals" (Fay 1996: 31), these approaches build on ontological atomism, according to which "individual as person" is an essentially autonomous and self-contained entity, fundamentally distinct and separate from others. As such, every individual is assumed to possess a stable, fixed and pre-made core that consists of certain given attributes, faculties, and propensities, all shaped independently from the effects of social conditions, particularly the concrete social relationships in which the individual is involved. Whereas composed entities like society, nation, or class are somewhat counter-intuitive for ordinary habits of thought and are often hard to express clearly, "individual" seems to be an unproblematic unit in full accordance with common experience. And it is this apparent givenness, this immediate existence of individual human beings that justifies the status of "individual" as the autonomous, self-contained and ultimate source of action, and thereby as the fundamental constituent of social life and as the solid rock bottom of social analysis.

Never delving into the issue, White frequently makes brief statements, asserting that this atomistic notion of individual is a fiction, a purely theoretical invention. In launching his critique White seems, on the one hand, to express the rather common and established view that the conception of "individual" – as a distinct, autonomous, self-contained and self-directing being who possesses a set of unique characteristics – is not a naturally given phenomenon but a historical product, that is, something that has emerged historically late within the particular cultural-ideological context of Western thought (Dumont 1986; Durkheim 1984; Elias 1998; Hollis 1977; Mauss 1979 and 1985; Taylor 1989). What is more interesting and more relevant for the purpose of this study, however, is that through his disapproval of the construct of individual as person White conveys implicitly a stern criticism of the ontological atomism of individualistic perspectives in social science and the associated mode of analysis called methodological individualism. For him, individual as person is

another theoretical construct that, like society, corresponds poorly to the empirical social reality and, being an inadequate substitute for that reality, lacks sufficient validity to be taken as the point of departure for social science. Despite its long-established position, White not only dismisses the adequacy of person as the proper unit of social analysis but also calls into question its scientificness, claiming that "person" remains a concept which has but an "uncertain scientific status" (1992a: 192) and which "has come to prove a sterile basis for social and behavioral sciences" (1995c: 67).

In White's view, self or personhood is a social product, or an emergent entity, which does not exist outside and prior to social interaction. Or as he (1970a: 4) very early puts it, "individual identity is always in and end defined by position in an interlocking structure," and derives primarily from the individual's embeddings in multiple networks. Itself being a phenomenon of second order that emerges out of processes of social interaction, however, individual as person lacks the ontological primacy that is commonly ascribed to it. It, therefore, cannot be the ultimate basic unit of social analysis and is itself in need of being accounted for. Moreover, as the basic assumptions of the social networks approach concerning connectivity and embeddedness have it, "there is no tidy atom" (1992a: 4) in the social world, and the conception "persons as atoms," that is, as disembedded agents, existing in some kind of social vacuum or floating freely in a state of social weightlessness, is an illusionary and deceptive "mirage" (1992a: 3) or a "myth" (1992a: 8). It is, in other words, a misconstruction, which, being derived from false assumptions, cannot offer a reliable, solid foundation for social science. Not only isolated social agents is a fiction but also the assumption concerning their abilities and capacities to behave rationally – typically regarded by individualistic approaches as a self-evident truth – is a problematic postulate, to say the least. Consequently, due to these incorrect ontological premises, it is, according to White, faulty to locate genuine causal social forces in individuals and to give explanatory primacy to their psychological attributes, personality traits, interests, incentives, and so on all being shaped by the formative forces in their embedding environments.

To sum up this section, White's endeavor to reground sociology begins with a redefinition of the subject matter of the discipline, that is, a wholesale reassessment of the constitution of the modern

societies that it sets to analyze and theorize about. He, in other words, dismisses as invalid constructs the common cultural-holistic and atomistic conceptions of contemporary social contexts, together with the assumptions of all-inclusive harmony and of prevalent rationality that underlie these conceptions respectively. As he views the issue, both constructs of society and individual as person correspond only poorly to the tangible, real phenomena they purport to represent. They have no genuine grip on the phenomena they denote and lack sufficient ontological justification. No matter how elaborate, these fabrications are void of scientific validity inasmuch as they lack proper, that is, specified and verified, empirical referents. Therefore, to be a science of social reality, sociology must give up efforts to construct an apparatus of pseudo-scientific theory and method, and instead of never-ending elaborations on constructs, it must return to the real, actor-made social world. To remain scientific, sociology must make a profound shift, look for an alternative point of departure, which can offer a more realistic understanding of the nature and constitution of the kind of reality that is its subject matter. It must in other words begin with what actually makes up this reality, and find appropriate ways to conceptualize it in terms of its true stuff, namely the bulk of concrete social interactions, relationships and networks among real actors as they carry on the business of their everyday life in actual situations.

Seen from this new point of departure, the social reality "out there" consists neither of atomized individuals nor all-inclusive totalities. Rather, from this ontological position, the social landscape appears as a huge, dense, and impenetrable texture of interlocking and overlapping networks that emerge as ties of various kinds concatenate into numerous strings without any clear-cut boundaries or stable forms. This reality is made up of the bulk of chains and networks of ties, which encapsulate dynamics of interaction processes. And, given the properties of its constituents, this reality is nothing reified, existing ready-made "out there." Contrariwise, due to the dynamics and contingencies that are inherent to its basic building blocks, this reality is something essentially complex, vivid, and indeterminate. It resembles a fluid, unfixed, and pliable mass, always changing shape and hue. It is an unfinished and unsettled kind of reality that is amenable to continuous remolding and recasting. The social world that real actors inhabit, the world they live in and respond to, is not the one

constructed for them by the analyst according to the latest social scientific fashion but a world made by actors themselves – a world which consists of, and emerges out of, uninterrupted flows of interactive events and experiences of real people.

Real social forces

In a coherent sociological perspective ontology and methodology go hand in hand. Put differently, in any coherent perspective there is a substantial affinity or parity between, on the one hand, the particular ontological outlook that defines and determines the nature, constitution, and structure of objects to be investigated and, on the other hand, the methodological stance, that is, the mode and logic of scientific procedure that is considered as the most adequate one for conducting the investigation (Bhaskar 1989; Giddens 1984). White's approach represents a good example of this kind of cohesion and compatibility, where a particular ontological outlook gives rise to a pertinent methodology. That is, the novel image of social reality that he develops not only constitutes the foundation upon which a whole new conceptual framework is built, but also has far-reaching methodological implications as well as some crucial consequences for the agenda of the discipline, giving rise to a whole set of new questions to be dealt with. What produces this compatibility is but White's quest for realism and his attempt to return to empirical reality, permeating both the way he envisions social reality and the mode he chooses to study it. Furthermore, this is a parity that originates in White's recourse to social networks, both as the most adequate conceptual perspective to describe the nature of social reality and as the most appropriate analytical device to examine its properties. That is, the main source of this parity lies in the fact that in White's view, social tie is the core; it is both the fundamental constituent unit of social reality and the prime site of causal social forces that are at work in that reality. A wholesale return to social reality thus means to develop both more realistic images of the social landscape in which ties and networks are the basic building blocks, and a mode of analysis that takes the dynamic forces of embeddedness and connectivity as the principal explanatory causes of social phenomena. Let us try to unpack this.

Several characteristics of White's methodology have already been mentioned (Chapter 2). His ambition to approach social reality

without the veil of methodological constructs have, as we have seen, taken various forms, among which are his rejection of survey analysis and the pertinent accounts that build on statistical constructions, his preference for in-depth fieldwork which allows not only the production of own data but also a closer and more direct contact with empirical social reality, and a more intensive and thorough inquiry of the particular phenomenon under observation. Furthermore, White's quest for realism underpins his disapproval of a facile and unproblematized acceptance of assumptions about causal relations among statistical constructs. As we have seen this disapproval induces him instead to aim, on the one hand, for arriving at specified, fine-grained, and analytically dense causal accounts and, on the other hand, to work out analytical tools that can offer detailed insights about the causal processes that actually take place and produce the regularities that survey analysis can at best only reveal. And both these objectives are materialized through the use of social networks. That is, in pursuing his ambition to develop a more realistic mode of inquiry, White finds social networks as the best analytical framework within which actual causal processes and mechanisms, and the general social logics that governs them, can be identified and used in producing detailed explanations.

Of special attention in this regard is White's particular version of structural analysis. As mentioned earlier (Chapter 5), White clearly denounces the kind of analysis that allots individual attributes too much explanatory significance and, rejecting such an individualistic approach to social reality, he explicitly adheres to the structural mode of analysis, asserting that actors's positions within social structures are by far more crucial than their individual attributes in determining their perceptions and actions, and that the observed similarities in these perceptions and actions can more satisfactorily be explained in terms of the similarities of actors's structural conditions. To assert this, however, is to subscribe to the core and distinctive methodological axiom that is the hallmark of structuralism, that is, a mode of analysis, which despite the diversity of its versions, is characterized by giving the explanatory primacy or priority to the wholes or totalities over the constituent parts.

Yet, as known, whereas the methodological premises that are adopted by the numerous brands of structural sociology are more or less similar, what gives rise to the considerable diversity among them

is the underlying notion of social structure adopted by various members of this large family. That is, any structural mode of analysis requires and presupposes some conception of social structure, and any particular version of structural analysis is dependent upon, and determined by, the particular way in which social structure is envisioned. As Peter Blau (1975: 3) puts is, basically "social structure refers to the patterns discernible in social life, the regularities observed, the configurations detected. But the nature of the patterns and shapes one can recognize in the welter of human experience depend on one's perspective." And social science does indeed abound with such perspectives and, consequently, with the theoretical conceptualizations of social structure, ranging from the class structures of the Marxist style, to the highly differentiated structures of complex social systems of the Parsonian type, to the hidden, abstract structures of cultural meanings, symbols, and signs, as those elaborated by Claude Lévi-Strauss (1952, 1967), shaping the mind of actors and governing their mode of thought. And as social structure holds a number of attractions, this fundamental concept keeps gravitating many sociologists towards a structural orientation, and many different approaches are constantly developed to improve our understanding of social structures, their properties, dynamics, and impacts.

Adhering to the fundamental methodological axiom of structuralism, White's version of structural analysis, as we have seen, has its own, distinctive features, which derive from the particular conception of social structure that underpins it. In full accordance with the rest of his sociological thought, White's structural approach is a network-based version of structuralism in the sense that social structures and structural positions are in this approach conceptualized in network terms, that is, as local and relatively stable configurations of social relationships that emerge within the fluid and indeterminate mush of the contemporary social settings. Furthermore, in White's network-based approach the aggregation principles that underpin these conceptions of structure and position are defined in terms of actors's relationships, with the methodological implication that the observed regularities and similarities of actors's perceptions and actions are induced by, and should be accounted for in terms of the similarities of actors with regards to their bundles of ties and their embeddedness within multiple networks. Thus, by translating the structural similarities of actors's social positions and roles into

network terms, a relational basis is provided for explaining the similarities of actors's behaviors and attitudes. And as mentioned earlier, this implication is formulated through the notion of structural equivalence which, representing a crucial and general social logic, becomes thereby the prime concept in terms of which social order and regularity are to be understood in White's brand of structuralism.

Apparently, this particular kind of structuralism, which rests upon a notion of social structure that has been given a concrete and empirically tangible referent in terms of social ties, demonstrates clearly once again White's quest for realism and his ambition to move away from the constructed. In accordance with his disapproval of the prevailing atomistic and cultural-holistic descriptions of social reality, this network version of structuralism demonstrates in other words White's simultaneous rejection of methodological strategies associated with the dismissed ontological outlooks, expressing his ambition to explain social phenomena without appealing to either the psychological or the cultural as the decisive explanatory element. Discarding both the psychological traits or/and individual attributes as well as abstract, culturally defined role prescriptions and/or presumed mystical powers in positions within the analyst-made structures as primary sources from which valid explanations can be derived, White's structuralism turns instead to the level of concrete social ties and interactions, concrete connectivity, and embeddedness of real actors to find the real causal social forces. That is, in White's view the true causal forces are the very concrete forces that reside in bundle of relationships that make up the actors's immediate habitat within relational structures. Therefore, as he (1967: 1) puts it, "to get at efficient causes one must explicitly deal with concatenations of relationships in concrete social structures."

Some critical remarks

Despite all its merits, however, White's general sociological scheme has some serious shortcomings. Many of these shortcomings are a consequence of the unfinished state of the scheme, but not all of them. In what flows I confine my critical discussion to only a couple of concepts, discipline and tie, which are of enormous importance in White's theoretical framework and which in fact constitute the two main pillars of his construction.

Given the ontological outlook on which White's theory rests, the classical question of social order can no longer be conceptualized within the holistic perspectives, in terms of behavioral regularities that derive either from an all-inclusive value consensus or from the functional integration of social totalities, simply because such phenomena are totally absent from White's social universe. Nor can the question of order be formulated, as the atomistic ontologies suggest, in terms of achieved social contracts that are intended to end, or at least regulate the war of all against all. In other words, White's quest for a realist approach to social reality, his particular image of it, and the set of assumptions from which this image is derived undermine and invalidate the very premises of conceptualizing social order according to both holistic and atomistic styles. Instead, in White's alternative perspective, the question of social order is articulated relationally (Emirbayer 1997). That is, it becomes a question of identifying and teasing out the tiny islands of regularity within a social landscape that is dynamic and indeterminate. In more concrete terms, it becomes a question of mapping the limited and local patterns or configurations of relationships that prove relatively sustainable and thus observable, despite all the dynamics of embeddedness and connectivity that they nonetheless host.

This style of conceiving and addressing social order is done by White through the concept of discipline. As we have seen, discipline is the concept that White chooses to label the basic unit of social order, the enclaves of regularity and predictability in a world that is otherwise chaotic and confusing. According to his view, any given discipline embodies and represents a local social order, that is, a site where the constituent identities are constrained, tied down, and disciplined. It is a context where participating actors cease to fluctuate and react unpredictably to perceptions and actions of others. It is the context where the participating actors develop relatively stable frameworks for action so that their behavior is ordered and harmonized. It is in this sense that, as said earlier, disciplines are "disciplines for social action" (White 1992a: 23), and that disciplines are the "locally overawing expressions of social control" (White 1992a: 233), or more simply, the limited sites that host observable regularities in participants's perceptions and actions.

Social order does not come from heavens; it is a human construction. The notion of discipline makes it possible to avoid conventional,

poorly underpinned and vague accounts of social order, which normally rest in one way or another on mythical assumptions either about the existence of some all-inclusive social contract, some organic whole or some deep-lying symbolic scheme. Instead of assuming some overall and omnipresent social order, in White's approach the phenomenon is brought down to earth and broken down into relatively small and locally created arrangements. That is, in accordance with White's overall quest for realism, social order is conceived and conceptualized as a tangible outcome of actual and local interactions among real social actors – an outcome that corresponds to the degree of control over the concrete contingencies and uncertainties that these actors face and have to cope with.

Another way of putting it is that White, through the concept of discipline, offers a phenomenologically informed basis for the kind of structural analysis that the social network perspective adheres to. That is, displaying a considerable degree of theoretical enrichment, the notion of discipline helps us to see the significance of actors's perceptions, meanings, and experiences for the creation and maintenance of social structures, and to see how the actions of individual actors unintentionally contribute to produce and reproduce these structures. In other words, the conceptualization of social order through the notion of discipline helps to gain some valuable insights about the intersubjective and interactive processes that underpin the production of the objective structures revealed by network analysis.

More importantly, these locally constructed social orders are conceptualized and accounted for in terms that are purely relational. Disciplines are defined as relatively stable and cohesive configurations of social ties. The ground for the construction of any discipline is, as said before, provided by the relationally defined categories of actors, that is, categories defined and discerned on the basis of the similarities and dissimilarities of participants's relationships. It is also through the management of their ties that actors seek to alter their membership or maintain their participation in these relationally yielded categories and, thereby, rearrange the constellation of their immediate habitat, their topological location, and their structural position. In other words, disciplines emerge as the constituent actors are driven towards and away from each other by multiple forces of attraction and repulsion, of attachment and detachment. As such, disciplines are the actor-made concrete basic units of orderly

social coexistence, that is, the primary sites where the struggles for control and the entailing processes of conjunction and decoupling among actors have reached some sufficient level of stability and gained some degree of steadiness.

Given all these insightful ideas that underpin White's style of conceptualization of social order, the treatment of the concept of discipline however demonstrates a number of flaws that mostly depend on the unfinished nature of White's theoretical project. As mentioned in the previous chapter, there is a sharp asymmetry of treatment concerning the various species of discipline. Whereas interface receives an extensive and elaborate treatment, the two other types, namely council and arena, remain highly underdeveloped, and White's account of these two leaves many threads loose. Indeed, *Identity and Control* is so far the only place in White's whole production where these two species are presented but the book lacks explicit, clear, and systematic descriptions of these disciplines, and apart from some vague speculative suggestions about the emergence of various species of disciplines from pecking orders in some kind of state of nature, there is not really much said about the origins of these formations, and the book evens falls short of offering illustrative and consistently flowed examples.

Among the many other questions that are left unanswered the following ones can be mentioned briefly. *Identity and Control* fails, for instance, to offer a comprehensive and satisfactory account of how council and arena are related to the central notions such as role structure, structural equivalence, and so on. Nor does White make any effort in this book towards systematic and transparent accounts, which inform the leader in a straightforward manner how these two species of network formations are derived from, and operate through, their pertinent valuations orderings, namely prestige and purity. Furthermore, leaving unspecified the reproduction mechanisms at work in these two species, White also fails to explicate how the participants's behavior get harmonized and coordinated within these disciplines, so that the overall, shared identity of the disciplines is maintained. Finally, White is rather silent on the reasons behind the typology of disciplines he puts forth. For instance, omitting the justification that White owes to his reader, he declines to explain why his typology includes the three particular species of interface, council, and arena, and not other ones. On the whole, however, these

unanswered questions and a number of conceivable others confirm only the fact that much of White's conceptual apparatus – especially the parts concerning the larger social formations like *style* and *institution* built out of concatenation of disciplines – is still under construction and in need of further development. Let us therefore turn to the other central concept of his theoretical scheme, the concept of social tie, which unlike discipline, has a much longer history in his thought.

To develop a general sociological perspective on the basis of the assumptions of connectivity and embeddedness of social actors in the web of concrete relationships and networks requires, above any thing else, a theory of what constitutes the building block of such a perspective, namely social tie. It requires, in other words, a considerable amount of effort aimed at the theoretical enrichment and sophistication of a mode of analysis that, not without good reasons, has been described as a methodology in search of a theory (Collins 1988). Certainly, social networks approach is a research tradition that is rich with sharp analytical tools that can be very helpful in conducting penetrating and rigorous inquiries. Yet irrespective of the brilliance of these tools, it is difficult to argue that they constitute a theory, and in absence of a systematically integrated body of substantive concepts the social networks analysis can hardly be characterized as anything but an ensemble of analytical devices and procedures. And as recognized by many, social networks analysis is scarcely more than "an orientation towards the social world that inheres a particular set of methods" (Scott 2000: 37), and despite the existence of a few home-grown theoretical insights, "a distinct 'network theory' has not developed" (Marsden 2000: 2728).

This dearth of theoretical elaboration or "the theory gap in social network analysis" (Granovetter 1973: 1369), has been joined with, and definitely not remedied by, the increased formalization of the approach in recent decades. Although this formalization has enhanced the analytical precision of the approach and been crucial for its applicability and popularity within many disciplines and across various levels, it has also gradually come to hamper the theoretical development of this mode of analysis. As time has passed, social network analysis has distanced itself from and grown more alien to the very substantive ideas that originally justified the use of networks in social research (Barnes 1954, 1969; Barth 1963, 1966; Bott 1957; Meyer 1961; Mitchell 1966, 1969; Wolfe 1970). During the

last two decades or so this approach has turned into a mode of analysis that is primarily concerned with the formal properties of networks, using various and highly advanced technical procedures to identify partition of the population and strategic positions of actors, and so on. Ties, on the other side, are just taken as given and unproblematic units. Apart from some of the formal properties of ties – such as their direction and in-betweenness – they rarely, if at all, receive any analytical attention, and the entire issue of their dynamics and the pertinent aspects such as the perceptions involved, the control efforts pursued, and the contingent outcomes, are simply left out. Not even the multi-dimensionality of ties is handled properly, mostly because of the absence of adequate measurement and analysis techniques. As a result, to the extent that this formalization has gained the upper hand, social network analysis has increasingly lost sight of the complex dynamics involved in interactive processes and, growing insensitive to these dynamics, has tended to adopt a static and mechanical view on connectivity and embeddedness.

This omission of the dynamics of interactive processes is most clearly apparent in the conception of social tie as it is usually adopted by the practitioners of the social network analysis, who in absence of a theory of the fundamental analytical unit of the approach, usually tend to regard ties as ossified canals which simply either exist between two nodes, pretty much in the same way as solid bridges within a transportation system. In this view, social relationships are unproblematic linkages that, lacking any inherent dynamism, remain the same once they are established. They are viewed simply as means or vehicles of transportation, with the help of which various kinds of resources are sent back and forth in discrete packages, from one node to another, reducing the impact of social forces involved to nothing but an influence upon the distribution of the resources in question among the nodes. As a result of this omission, however, social network analysis fails to tap the true potential of its basic tenets concerning connectivity and embeddedness, and despite all its merits it falls short of exploring seriously and thoroughly the workings and impacts of the genuine constructive social forces of interactive processes.

White's endeavor should however be seen basically as a reaction to and a search for a remedy for this unhappy development. Himself a major contributor to the formalization process that social network approach has undergone, he gradually grows critical of the

conventional modes in which social network research is commonly conducted and seeks a theoretical enrichment of the approach. In pursuing this objective he naturally turns to the theoretical sociological perspectives that have social interactions in real social settings as their primary focal point, and therefore appear as the most eligible candidates. That is, he attempts at a marriage between on the one hand the social network approach and on the other hand certain classical currents within symbolic interactionism, social constructivism, and phenomenological sociology. He begins a process of gradual theoretical sophistication in which various theoretical insights are increasingly and in a typically eclecticist manner incorporated in the original network framework.

This attempt to recast the social network approach along some of the fundamental ideas developed within these theoretical traditions is the first of the kind, and both the recognition of the need of such an effort and the explicit advocacy of it are very recent in White's sociology. Therefore, this undertaking may initially appear as a mark of discontinuity in his sociological thought. In fact, until this late stage, the typically formal character of White's production, with the exception of a few early works on the French art world, strongly supports the impression that his sociology has very little, if any, potential of developing in the direction towards any kind of sociology that as its prime task aims to venture into the social actors's immediate experience and to highlight their active part in the construction of the social reality that embraces them.

Much can be said as to how well White manages to pull this off. The most single outcome of this marriage, however, is a revised conception of social ties. As shown earlier (Chapter 3), in this revised conception, the nature of a tie is no longer given to the parties, predetermined by the objective parameters external to, and independent from those being connected. Nor is it static and invariant. Contrariwise, far from being anything fixed and mechanical, it is a dynamic and contingent construction, a living and organic entity, something that is achieved, formed, and sustained in various ways by the interlocked efforts of the participants. A link implies communication, mutual orientation of the actors, and matching of their expectations, and its construction as well as its continued existence requires negotiation, mutual response and adjustment of those engaged. Therefore, any social tie is an accomplishment, which requires a sizable amount of effort and a

considerable degree of social skill of the parties. A social tie, in other words, is a complex phenomenon that is constructed and sustained jointly by the parties, constantly adjusting and readjusting themselves to each other as the interaction unfolds. It is the concrete and unique outcome of the association of the actors, and is the fragile and delicate product of the dynamic forces at work in that association, having come to some accommodation.

As a result of this reconceptualization of social relationship, and especially through the introduction of stories told and the control strategies pursued by the parties, social ties become not only dynamic but also meaningful entities that can emerge only out of the interlocks and matchings of various meanings and perceptions involved. Another way of putting it is that through the marriage or cross-fertilization that White attempts at, he makes room for the subjective dimension of social interactions and relationships, that is, the particular mutual perceptions and meanings that the participants in a relationship develop and assign to the tie between them. This reintroduction of meaning and restoration of the subjective dimension of social reality, which has increasingly been overlooked and shunned away within the social network approach means, in effect, an opportunity to venture into the space of immediate experience, perception and comprehension of real social actors as they carry on their daily lives, and thereby to arrive at a more adequate description and understanding of actors's life-world. It opens up the social network approach for the entrance of one of the main components in actors's practical mastery of their relationships, that is, the practical knowledge and skills that enable the actors to carry out the checks and corrections intended to ensure the adjustment of their perceptions and actions to the expectations and reactions of other actors. In consequence, this reintroduction of meaning also opens up the social network approach to substantive sociology and creates a link to many fundamental issues such as structural differentiation, social distinction, authority structures, hegemonic discourses, and so on, preparing thereby the way for a more systematic and fruitful synthesis between social network approach and the bulk of accumulated sociological knowledge.

More generally, through this reconceptualization of the basic unit of social network approach, White seems to seek a break away from the constructed and petrified relations and networks, demonstrating

once again his quest for the real. It, in other words, marks yet another step away from analyzing illegitimate surrogates, which unfortunately have led astray the social network approach for too long, towards what is its true stuff, that is, the actual flows of social interactions and relations among real actors with all their contingencies and complexities. Such a break away from constructed networks and the attempt to reintroduce meaning, sought through the revised conception of tie, is obviously a great achievement and a very important step toward restoration of the realism of the social networks perspective. It also helps to revive the original theoretical orientation and consciousness of the social network approach, and contributes to the revitalization of the aspirations and ambitions that some of the pioneers of this approach such as Barnes and Bott initially started with. And given the present state of the social network analysis, White's effort to inject substantive theory into the formal body of this mode of inquiry is doubtlessly a much needed and welcome undertaking.

Nevertheless, despite all its leverages and potentials, this move is still insufficient, and although significant, it marks only a first step in the right direction. Of course, White's conceptualization of the basic notion of tie incorporates some of the fundamental classical ideas about the tentative nature of social interaction (Cooley 1902; Turner 1988) and the ceaseless mutual testing of the conception or image one party has of the other. It also captures the dynamic and contingent nature of social relationships, and shows sufficient analytical sensitivity to the continuing mutual adjustments and the various types of ongoing struggles between the connected parties. Yet, we are still very far from a general theory of interactions and relationships. Among the important ingredients of such a theory is, above all, a clear, substantive, and operational definition of social relations in which essential and general properties of ties are specified. Furthermore, a theory of ties requires also an account of the general forces of connectivity, that is, the forces of attraction and repulsion that push actors together and pull them apart. This means, in effect, a theory of tie formation and grounds of connectivity, including also a typology of the general types of ties. But, although White's achievement does represent the most ambitious and elaborated attempt so far to develop a general theoretical scheme, it falls short of treating these topics in any adequate way.

For instance, apart from social actors's universal urge for control and their overriding ambition to expand the range and scope of their agency, both having a rather strong tone of instrumentality, not much is said explicitly about the fundamental issues such as driving forces and motivational structures of social actors. These important issues are not even addressed openly in White's theoretical scheme, and the reader is just left with the impression that the only driving force assumed to lie beneath and behind all control efforts and struggles is but the familiar self-interest of the actors of all types and at all levels. More importantly, like many other practitioners of the social network approach, White declines in offering a definition of the basic constituent entity of the approach, namely social tie. This lack of a clear, substantive, and operational definition of social ties seems indeed rather inconsistent with White's strong ambition to provide sociological concepts with concrete, tangible, and empirically observable connotations, and is very unfortunate for a theoretical enterprise with the ambition of building upon this unit. Such a definition, however is the very step to be taken, that is, the absolute and indispensable requirement for a theory of social relationships and networks to my mind, simply because we need to know exactly what sort of things, that is, what group of real-world phenomena are subsumed under the label of "social tie" and exactly what subject matter the investigation concerns. In other words, a clear and substantive definition is inevitable for determining the essential attributes of social ties and thereby for distinguishing them conceptually from other, adjutant notions like encounter, interaction, and exchange. It is also necessary for guiding our actual observation and for our ability to discern ties and networks empirically from the actual flows of erratic confrontations and fleeting contacts among actors in various contexts. Yet, in spite of the obvious importance of the issue, White's endeavor fails to offer a satisfactory definition of social tie, and this crucial matter remains unresolved in an enterprise which aims for a general network theory. In fact, the issue is not even given due attention, leaving largely unperformed the theoretical task that for too long has been on the agenda of the social network tradition.

There are however still some fundamental issues that a general sociological theory based on the tenets of social networks has to deal with. One of these issues, which White addresses only in the passing is the crucial question of the general basic types of ties, their

distinctive characteristic and their origins. Here White, once again refrains from giving any detailed and systematic account. Nonetheless it appears that he does employ a typology, which embraces a few, fundamental, and universal kinds of relationship, which underlies his categorization of species of discipline. As mentioned before (Chapter 5) the typology of disciplines rests upon the three distinct valuation orderings – quality, purity, and prestige – which function as hierarchical schemes or status orders, and which help the participants in any given discipline to make comparative judgments concerning the relative place of each member as well as the suitability of the membership candidates. The point to be noticed here is that in his presentation of this typology White typically makes some hasty, brief, and poorly argued remarks concerning the existence of a more fundamental classification of the basic dimensions of social action or the universal types of social relationship. Covering various areas of social life across realms and levels, these fundamental types, as White (1992a: 29–30) calls them, are "instrumentalism," "friendly–hostile," and "dominant–submissive," which have been "induced from recent systematic observation of small human groups."

This rather faint attempt, suggesting that there are a few fundamental, general types of relationship each with pertinent logic and set of basic properties, is a good enough point of departure in dealing with another important issue that the social network tradition seems to have omitted all together. But, White's attempt is by far insufficient, and he remains quite silent about a number of issues around this three-fold classification. For instance, we are told very little about these three basic dimensions of social action or universal types of social relationship and about their distinctive features. We are told even less about their meaning, their origins, and the reasons why there should not be more or less, and why just these particular three and not other ones. Although he offers very little in this regard, however, the mere fact that he attempts at developing such a typology is interesting in itself and signals his awareness of an important theoretical need of the social network approach. In other words, this attempt exposes the need of an empirically tested typology consisting of the general ways in which actors of all types and across various realms and spheres of social world relate themselves to each other.

Such an elaborate typology is an important analytical device especially when one tries to dissect and separate the various dimensions

of a multiplex tie and to pin down the particular logic valid along each dimension, and to trace the impact of each dimension upon the other ones. And here I am mostly thinking of a systematic inventory of the various aspects or dimensions of multiplex social relationships of the kind developed for instance by Talcott Parsons (1960) in the form of the so-called pattern variables and by Alvin Wolfe (1970) in order to make possible more systematic comparisons among networks. Such a systematizing inventory will among other things boost the analytical rigor of the social network approach, assisting us in identifying and examining in more detail what goes along various dimensions, what sort of logic governs the activities that take place in these dimensions, and how these distinct logics, inducing different types of expectations and duties, interplay. For instance, it is analytically important and fruitful to be able to keep apart the instrumental dimension of a multi-stranded relationship from its authority dimension, knowing that each dimension incorporates and rests on a particular logic of interaction and generates particular sets of concerns, expectations, and evaluations.

But there is more to the question of developing a typology. Both this question and that of definition of ties are related to one another and to a larger and more profound issue, namely the question of tie formation and grounds of connectivity. Like many other social network analysts, White seems rather reluctant to elaborate on crucial matters of this kind and does not offer an account as to how, why, and by which mechanisms actors get connected to each other, and equally important, why, how, and by what mechanisms certain ties do not occur in the first place. That is, White, in line with many other social network analysts, leaves out the whole issue of the processes, mechanisms, and structures that, although external to ties and networks, are nonetheless decisive not only for the contents and terms of ties but also for their very emergence. What is overseen, in other words, are the facts that ties do not occur in vacuum, that they do not connect two isolated nodes, and that ties among actors are rather formed within larger socio-cultural contexts, which are relatively invariant and which set the fundamental conditions of connectivity.

These contexts, in other words, are important since they, to say the least, have a non-trivial bearing upon matters like who gets connected to whom, who does not get connected to whom, what kind of tie there is to be between the connected nodes, what dimensions the

tie is to have, and so on. But, White's approach remains silent on this type of topics and tells us very little about the larger parameters of connectivity, that is, the enabling and constraining conditions of the larger socio-cultural contexts within which ties among actors arise, be it functionally integrated systems concerned primarily with performance of particular tasks and attainment of certain goals, or power structures with pertinent authority orders, or culturally designed schemes including definitions of categories of various types and boundaries, distinctions, and relations among them. Ties occurring in each context will obviously be shaped by a certain set of parameters, will be shaped along certain prevailing logics, and storied in accordance with certain prevailing discourses.

One could go on and elaborate on these issues, but for the purpose at hand I think it is important that they be spelled out to show what sort of fundamental theoretical questions are left out from a conceptual framework of the kind that White puts forth. In other words, for a general theory based on assumptions of embeddedness and connectivity it is, in my view, inevitable to deal with issues such as general grounds of connectivity, systematic inventories of general types of ties and their properties, various tie formation processes, as well as the selections and exclusions involved in connectivity and embeddedness – all left unanswered in White's perspective. Yet, as stated at the beginning of this chapter, it is almost too easy to pick any topic or concept in White's approach and demonstrate its flaws. But, at the end, it should also be emphasized that these critical remarks should not be allowed to obscure one's vision. White's approach offers major novelties that, if fully tapped, will be of great significance for the development of sociology and, indeed, social science in general. His sound criticism of the unquestioned reign of theoretical constructs and his healthy emphasis on the need for a return to empirical reality are definitely a couple of insights that have a lot of innovative, ground-breaking potentials. Another major contribution concerns his effort to halt the excessive formalization of the social network approach at the cost of substantive sophistication and to turn the tide by seeking a theoretical enrichment and refinement of this tradition. Despite all its shortcoming, the approach presented in *Identity and Control* offers a new foundation and marks a fresh start. And although it is in need of much further development and elaboration, this approach shows the direction towards which sociology

should be moving. In short, even though his own effort falls short in many important aspects, White provides the sociological community with both the foundation and direction for a better sociology. This should encourage many others to take up the task and continue his effort.

Appendix

Harrison Colyar White was born on March 21, 1930 in Washington, DC. He was the third son of Joel Jesse, a physician in the US Navy, and Virginia Armistead, both Southerners from Nashville. During much of his childhood White moved around the United Status from one port city to another, as his father was transferred from one navy base to another every two years or so. Growing up in various port cities such as New Orleans, Long Beach San Francisco, Philadelphia, Norfolk, and others, White shifted a number of grammar schools, and had the advantage of being skipped for two grades. Consequently, he could already at the age of 15 enter the Massachusetts Institute of Technology (MIT). In 1950, only 20 years old, he graduated from the MIT and five years later, in 1955, he received a doctorate in theoretical physics from the same school, under the tutelage of John C. Slater who was also the chair of the department at the time.

With regards to the shift to social science, White (1990a: 81) often mentions his early interest in social anthropology, "especially in its English version" with its characteristic fieldwork on networks. Towards the end of his undergraduate studies, however, White, through a chain of events, took a casual course in nationalism with Karl W. Deutsch, a charismatic political scientist then at the MIT, whose influence and encouragement were decisive for White's later turn to the social sciences – an impact that probably has been boosted by Deutsch's (1953) emphasis on social networks as vehicles of communication that underpins a shared sense of nationhood.

Right after receiving his PhD in theoretical physics, however, White started his doctoral studies in sociology at Princeton University. At the same time he took up a position as an operations analyst at the Operations Research Office, Johns Hopkins University (1955–56). While continuing his studies at Princeton, White also spent a year as a fellow at the Center for Advanced Study in the Behavioral Sciences, Stanford University, California (1956–57). Upon an invitation from Herbert Simon, White then moved from California to Pittsburgh to work as an assistant professor at the Graduate School of Industrial Administration, Carnegie Institute of Technology, Carnegie–Mellon University, where he stayed for a couple of years, between 1957 and 1959.

It was also during these years that White, still a graduate student in sociology, wrote and published his first social scientific work, Sleep: A Sociological Interpretation in *Acta Sociologica*, together with Vilhelm Aubert, a Norwegian sociologist. White also managed to carry out a case study, which he in May 1960 submitted as a doctoral dissertation to the Department of Economics and Sociology of Princeton University and earned a PhD in sociology. Twenty years later, in 1980, this study was published in a dissertation series edited by Harriet Zuckerman and Robert K. Merton.

It was also during these years that White met his first wife, Cynthia A. Johnson, who was a graduate of Radcliffe College, where she had majored in art history. The couple's joint work on the French Impressionists, *Canvases and Careers* (1965) and "Institutional Changes in the French Painting World" (1964), originally grew out of a seminar on art in 1957 at the Center for Advanced Study in the Behavioral Sciences, led by Robert Wilson. In 1959, White moved to Chicago to start working as an associate professor at the Department of Sociology. At that point, both Peter Blau and Erving Goffman were there, but although perhaps not as influential as James Coleman who had just left for Johns Hopkins. The move to Chicago, which had come out of Philip Hauser's search for a mathematical modeler, was a turning point in White's career. During his stay at the University of Chicago, White finished *An Anatomy of Kinship*, published in 1963 within the Prentice–Hall series in Mathematical Analysis of Social Behavior, with James Coleman and James March as chief editors. Although social anthropologists of the time "largely ignored" this book (Mullins and Mullins 1973: 252–3), it received significant attention from many mathematical sociologists of the time, and contributed greatly to establish White as a model builder.

White's stay at Chicago did not last long, however, and in 1963 he left Chicago for Harvard. There he started working as an associate professor of sociology at the Department of Social Relations, which to a very large extent was a creation of Talcott Parsons (1902–79). This department was originally founded in the early 1930s, and was first chaired by Pitirim Sorokin (1889–1968). Almost two decades before White's arrival, Parsons had replaced Sorokin and taken over the chairmanship of the Department of Sociology at Harvard in 1944. Two years later, Parsons had reconstructed this department and renamed it Department of Social Relations to signal its new profile. By the time when White came to Harvard, Sorokin was marginalized in the life of the department, which now under Parsons's prevailing influence, was an interdisciplinary department, with a mixture of education and research in psychology, social psychology, social anthropology and sociology. It was also a place where a number of recognized American social scientists of the time were gathered. Besides Parsons and Sorokin, people like Gordon Allport, Daniel Bell, Robert Bellah, George Homans, Seymour Lipset, Stanley Milgram, Davis Shapiro, and Charles Tilly were among those who were then there.

As soon as White came to Harvard he started teaching. In 1963–64, he gave several undergraduate courses: "Social Stratification," "Mathematical Models," and "Anatomy and Control of Complex Organizations" (see later for course descriptions). During his first year at Harvard, White also assisted professor Alexander Inkeles in his sociology seminars organized for the first-year graduate students who were candidates for the PhD in sociology. The year after 1964–65, White, in addition to the mathematical modeling course and sociology seminars – now led by Chad Gordon – also got involved in an undergraduate course that was formally called "An Introduction to Social Relations, 10." This course was given between 1965 and 1969, and during all these years Professor Roger W. Brown, a social anthropologist, was the main

teacher. This course eventually turned out to be an important platform for White where he not only developed and conveyed many of his basic network ideas but also attracted many students who later formed the particular circle of researchers around him.

From the lectures that White delivered in 1964–65, in this course some notes were taken and put together by Michael Schwartz who was then a doctoral student of White and one of many section instructors of the course. Since then these notes – entitled "Notes on the Constituents of Social Structure" – have been circulating among many of White's students and colleagues and, eventually, within a larger circle of American network analysts. Furthermore, it seems to be out of this introductory course that interest in the social network approach and the structural mode of analysis associated with that grew among a number of students who later came to be what Mullins and Mullins (1973: 255) refer to as the "core of the original group" around White. Among the members of this group were people like Phillip Bonacich, Ivan Chase, Mark Granovetter, Nancy Howell Lee, Joel Levine, Nicholas Mullins, Michael Schwartz, and Barry Wellman, all of whom were White's teaching assistants for this course.

In addition to this basic course on social networks, there were also a number of other topics that White, during his years at Harvard, kept teaching. Among these, courses on sociology of art, complex organizations, and mathematical molding occurred almost regularly (see later in this chapter). What is especially interesting is that already in 1981–82, that is at the same time as White published his first articles on production markets, he also started giving a course in economic sociology. During the first two years that this course was given, that is 1981–82 and 1982–83, it was simply called economic sociology and was designed to focus on production markets as tangible, persistent structures embedded in wider economic apparatuses. In 1983–84, this course had a slightly different label and was called economic and business sociology, with an emphasis on analysis of the process of making business decisions in production markets (see course descriptions given later).

Moreover, during his time at Harvard, White also directed, or at least played an important part in, the doctoral work of a rather large number of graduate students in sociology. Before coming to Harvard, White had already had his first doctoral student at the University of Chicago, namely Morris F. Friedell. Later, when in 1986 White moved from Harvard to Arizona University, he also had a few doctoral students and, of course, since his arrival at Columbia University in 1988 White has continued to function as the thesis adviser for some graduate students, among them Mathew Botthner. But the years between 1963 and 1986 at Harvard seem to have been a special period in this regard.

Given the length of the time White spent teaching and conducting research first at the Department of Social Relations (1963–70) and then at the Department of Sociology (1970–86) at Harvard University, he was closely involved in the doctoral research of many students, though not formally their thesis adviser in all cases. For instance, people like Edward Laumann (1965),

Nicholas Mullins (1967), Barry Wellmen (1969), and Paul DiMaggio (1979) had not formally appointed White as director of their research but nonetheless developed their doctoral theses in close relation with him. However, among those who, formally and otherwise, have been White's graduate students at Harvard are Nancy Howell Lee (1968), Joel Levine (1968), Mark Granovetter (1970), Michael Useem (1970), Peter Brandt Evans (1971), Michael Schwartz (1971), Francois Lorrain (1972), Scott Boorman (1973), Ronald Breiger (1975), Christopher Winship (1977), Joseph Schwartz (1978), Robert Eccles (1979), Eric Leifer (1983), Kathleen Carley (1984), Peter Bearman (1985), Calvin Morril (1986), and Roger Gould (1990). (Indicated in the parentheses is the year in which the PhD was received. See later for a list of these students and the title of their dissertations.)

Furthermore, another factor that makes this period special is that White's attempt on the theoretical front to reground sociology was also coupled with an outspoken aspiration and a conscious effort on the practical level. White actively searched for and selected a group of young sociologists who would be trained in this new kind of sociology. In *A View on Mathematical Sociology*, a memo from 1967, White drew up the outlines of this project, and concerning "personnel" as one of the main requirements for carrying out the project, he argued for the recruitment of young men with appropriate mathematical training. In his (1967: 9) own words,

> by some mysterious process an increasing number of young men not only with conventional training in applied mathematics but also with real grounding in algebra are entering graduate work in social science. There is not much work in being to demonstrate the relevance of non-trivial algebra to social science. Some fellowships would be helpful to ease the way; no more than 20 a year would be of much relevance for the next 5 or 10 years given the existing level of faculty available.

However, as mentioned in Chapter 1, what is usually pointed out as one of White's major contributions to the contemporary American sociology is his role in training these students at Harvard, a number of whom are considered to be among the most successful American sociologists today. For instance, Andrew Abbot (1994: 895) points at White's "reputation as a man who has … trained one of the finest groups of students in the discipline." To what extent it is justified to credit White for having created and established a distinct theoretical tradition, a distinct sociological *school* or a *theory group* through these students is an interesting question that could be examined properly by those who are interested in the sociology of science and skilled in that kind of research. This issue, however, can be addressed briefly here by mentioning some of the remarks made by a couple of White's students.

In an unpublished paper from 1973, Scott Boorman, for instance, refers to the Whitean mode of structural analysis as a distinct current that he chooses to label *American structural sociology* (see White 1973b). Furthermore, in a study carried out about the same time, Mullins and Mullins (1973: 260), too,

speak of a distinct type of structural sociology that they call *American structuralism*, and present White as the "intellectual leader" of this current. According to the authors, up to 1970 White was concerned with training the "future structuralists" at Harvard, mainly through the course mentioned above. The authors also refer to the publication of White's article, "Uses of Mathematics in Sociology," in 1963 as an important intellectual event and as a work that "has served as structuralism's program statement." According to Mullins and Mullins (1973: 260), however, as the initial phase in the consolidation of this current came to an end, "the structuralists had an intellectual leader, a program statement, and a research-training center."

Although this question remains to be examined, it is nonetheless clear that White has played a crucial and pioneering role in the development of the social network approach. As already mentioned in Chapter 1, White's seminal articles from 1971 (with Lorrain) and 1976 (with Boorman and Breiger, and with Boorman) are all widely recognized as "the foundational work" (Wasserman and Faust 1994: 14–16 and 349–50), each being a significant landmark in the development of the social network current. To this one may also add the observation made by John Scott who, like many other students of the history of the social network approach, assigns White a great significance and a leading role in the development of this tradition. Reviewing the history of social network analysis, Scott (1988: 111) refers, for instance, to a "group of graduates trained in Harvard's Department of Sociology by Harrison White" as those who have played a key role in the development of social network approach.

Yet another interesting fact about White's achievements at Harvard concerns the part he played in the creation or rather re-establishment of the Department of Sociology there. Perhaps as another institutional aspect of his ambition to give sociology a fresh start, White broke away from the Department of Social Relations that, still under the strong influence of Talcott Parsons, preserved its old mixed character, drawing sociology among the odds and ends of various disciplines. The break-up occurred in 1970, that is only one year after White had become professor in sociology and when he was the acting chair of the Department of Social Relations. However, among the other faculty members who left the old department and joined White in the new-founded Department of Sociology were people like Daniel Bell, Seymour Lipset, and George Homans. The latter also chaired the new department initially and remained at that position until 1975. Talcott Parsons, however, was until 1973–74 a faculty member in both departments, while he seems to have preferred giving his courses in sociology in the Department of Social Relations.

To return to White's academic career, he was in 1971 a senior sociologist with Urban System Research and Engineering, Inc., Cambridge, and received the Sorokin Award of the American Sociological Association for his book *Chains of Opportunity* (1970). A couple of years later, he left Harvard to be a visiting professor at the Department of Sociology, Edinburgh University, Scotland in 1973–74, and in 1975 he was appointed as a member of American

Academy of Arts and Sciences and of National Academy of Sciences. In the same year White was also the co-winner of the Samuel A. Stouffer Award in Methodology, American Sociological Association. In the same year, he replaced Homans as the chair of the Department of Sociology at Harvard, a position he held for a couple of years until 1978.

The year 1985–86, however, was White's last year at Harvard as an active member of the faculty. In 1986 he moved to Tucson to be the head of the Department of Sociology and the Eller Professor of Management and Policy, at College of Business and Public Administration at Arizona University. After two years in Arizona, White, on Ronald Burt's initiative, went to New York in 1988 to work at Columbia University. Upon his arrival at Columbia, White was appointed director of the Paul F. Lazarsfeld's Center for the Social Sciences and maintained the directorship until 1999. In Spring 1990, White was a fellow-in-residence at the Netherlands Institute for Advanced Study, and on his return to Columbia he took over the chairmanship of the Department of Sociology there – a position he kept until 1994, left for a couple of years, and resumed in 1997–98. Since 1992, he is a Giddings Professor of Sociology at Columbia University. Recently, that is in March 1998, White received the Merit Award from Eastern Sociological Society and later in June, the same year, he was also rewarded by the University of Chicago with the title of Doctor of Humane Letters. White has also been a member of the editorial boards of the following journals: *Social Networks* (since 1989), *Sociological Forum* (since 1990), and *Poetics* (since 1991).

Courses given by Harrison C. White at Harvard (1963–86)[1]

1963–64

Social stratification (123)

The roots of social class and social mobility in personal relations, status, property, occupation, education, values, and power; with their functions and problems for the individual, the formal organization, and the broader social system.

Mathematical models (198)

Intensive analysis of single models, dissection of interrelations, within families of models, and practice in construction of models and comparisons to data are combined. From year to year topics vary and may include social mobility, attitude structure, sociometry, kinship systems, control systems, bureaucracy and processes of congestion, diffusion and allocation.

Anatomy and control of complex organizations (237)

Recruitment, integration, boundary conditions and coordination in large-scale organizations will be discussed. The emphasis will be on development and application of new concepts, such as vacancy chains, differential flow of uncertainty, and cycles of structural change. Church, government and private institutional systems, both present and past, will furnish examples.

1964–65

An introduction to social relations (10)

(with Roger Brown)
The course deals with the individual, society, and culture, and relations among them. It takes up problems of individual development, the family, primitive cultures, social institutions, and modern industrial society from the several viewpoints of psychology, anthropology, and sociology.

Mathematical models (198)
Same description as above.

1965–66

An introduction to social relations (10)

(with Roger Brown)
Same description as above.

Mathematical models (198)
Same description as above.

Anatomy and control of complex organizations (237)
Same description as above.

1966–67

An introduction to social relations (10)

(with Roger Brown)
Same description as above.

Mathematical models (198)
Same description as above.

Anatomy and control of complex organizations (237)
Same description as above.

1967–68

An introduction to social relations (10)

(with Roger Brown)
Same description as above.

Mathematical models (198)
Same description as above.

Anatomy and control of complex organizations (237)

Discussion of recruitment, integration, boundary conditions and coordination in large-scale organizations, emphasizing development and application

of new concepts, such as vacancy chains, differential flow of uncertainty and semi-lattices.

1968–69

An introduction to social relations (10)
(with Roger Brown)
Same description as above.

Mathematical models (198)
Same description as above.

Anatomy and control of complex organizations (237)
Same description as above.

1969–70

Mathematical models (198)
Same description as above.

Institutional analysis (206b)

Analysis of major institutions or complexes of institutions, social class and stratification, family, education and religion. The course is designed to provide a basic background for graduate students in sociology.

1970–71

Mathematical models (198)
Same description as above.

Anatomy and control of complex organizations (237)
Same description as above.

1971–72

Mathematical models (198)
Same description as above.

Institutional analysis (206b)

Exploration of structure in economic and legal systems and of ties between them. The nature of change in "politics" and institutions.

A theory of structure and process: de-coupling (131)

Systematic presentation of a set of ideas about social structures and process. Draws illustrations of varying scope from comparison of detailed studies in a range of periods. Discusses measures and models germane to the ideas.

Sociology of art: institutional context of change in painting (250)
Examines social contexts of selected transitions in western art with emphasis on the institutional systems within which painters work.

1972–73

Social stratification (123)
The study of structure and process of social inequality; class, status, and power in comparative perspective.

Mathematical models (198)
Same description as above.

Anatomy and control of complex organizations (237)
Same description as above.

Sociology of art: institutional context of change in painting (250)
Same description as above.

1974–75

A theory of structure and process: de-coupling (131)
Same description as above.

Mathematical models (198)
Same description as above.

Anatomy and control of complex organizations (237)
Selected theories, case studies, and systematic analysis.

Sociology of art (250)
Same description as above.

1975–76

Mathematical models (198)
A research seminar which develops a new family of models each year. 1975–76: Structural models for the study of manipulations and power.

Anatomy and control of complex organizations (237)
Selected theories and case studies of formal organizations extended to more complex institutions such as markets and administrative systems, with special attention to dual hierarchies.

Sociology of art (250)

Effects of social context on artistic production and the roles of artists. Students develop brief empirical studies, usually involving local fieldwork of particular institutions or aspects of an art "world."

1976–77

Mathematical models (198)

Topic changes from year to year. 1976–77: Survey of selected models for organization and market structures, with special attention to methods of aggregation.

Anatomy and control of complex organizations (237)

Same description as above.

Sociology of art (250)

Same description as above.

1977–78

Mathematical models (198)

Topic changes from year to year. 1977–78: a general survey based on a text-book.

Complex organizations (229)

(with John Padgett)
Compares and contrasts perspectives on complex organizations from several disciplinary points of view. Sample topics include: behavioral models of choice, manipulations and anticipations, networks versus hierarchies, organized anarchies, and inter-organizational relations.

Sociology of art (250)

Same description as above.

1978–79

Sociology of art (126)

Effects of immediate and larger social contexts on artistic production and the roles of artists. Surveys three themes common across the arts: replacement of "audiences" by "professional peers"; changing nature of realism; "styles as ideology."

Mathematical models (198)

Examines phenomena for possible hidden structure, expresses in mathematical form, and derives consequences. Topics, which change each year, include semi-group algebras for role structure, and partial differential equations for commercial relations in oligopolistic markets. Markov chains of mobility

within organizations, combinatorics of job searches, algorithms to identify network structures.

Organizational processes in historical context (229)

(with John Padgett)
Examines operation of organizational decisions in broader historical context. Attempts to derive conclusions on long run structural and policy adaptation. Topics include the meaning of an "ecology of games" in hierarchical, anarchic, bipolar, fractionated, and market institutional structures. Draws on historical and contemporary case studies.

Career lines and social class (240)

(with Ronald Breiger)
Bridges gap between wholistic views of class and accounting schemes for individuals' contributions. Selected historical and contemporary contexts: labor markets, economic demography of mobility, rise of towns. Impact of politics, marriage, income inequality, and opportunity structures. An alternative to the "causal path" analysis of Duncan, Blau, Hauser, and Jencks.

1979–80

Sociology of art (126)
Same description as above.

Mathematical models (198)
Same description as above.

Organizational processes in historical context (229)

(with John Padgett)
Evolutions in different institutional spheres (science, economy, religion, government) and social settings (caste, class, pastoral). Disentangling purposive from "natural." Contemporaneous interaction within populations of organizations. Case studies from various historical periods.

1980–81

Sociology of art (126)

Effects of immediate and larger social contexts on artistic production and on reputation and careers of artists. Emphasis on painting, theatre, and literature. Compares arts with one another and with selected sciences, especially in use of metaphor.

Mathematical models and social theories (198)

Surveys how different branches of mathematics contribute to qualitative understanding and to explicit theories of different social phenomena. Topics, which change from year to year, include differential equations models for social change, comparative statics treatments of terms of trade in production

markets, algebras for role structure, combinatorics of social networks, and stochastic models of mobility and service.

Organizations in historical context (229)

Evolutions in different institutional spheres (science, economy, religion, government) and social settings (caste, class, pastoral). Disentangling purposive from "natural." Contemporaneous interaction within populations of organizations. Case studies from various historical periods.

Career lines and social class (240)

(with Ronald Breiger)
Same description as above.

1981–82

Sociology of art (126)

Same description as above.

Mathematical models and social theories (198)

Same description as above.

Organization in historical context (229)

The focus is comparative state bureaucracies in Europe. Histories of selected European nations are contrasted to derive alternate forms of state administration and control from elite struggles in the arenas of taxes, military, and law. Organizational forms of interest include centralized bureaucracy, multiple hierarchies, aristocratic networks, and clientage.

Economic sociology (253)

Markets as tangible structures are the focus: how they persist, and their cumulation into networks and broader systems. Operational models and theory emphasize how calculations and actions are guided by and also constitute observed behavior and structure. Selected topics from sociological analogues to or replacements for rational expectations, hedonic prices, the Walrasian auctioneer, the matrix of claims, input-output schemes, and topics in microeconomics (price theory) and macroeconomics (distribution).

1982–83

Sociology or arts (126)

Same description as above.

Economic sociology (155)

Shaping theories of economy to correspond to diverse historical contexts and societal forms. Current markets viewed as asymmetric interfaces between diverse sub-populations. Other forms of interaction and associated rhetorics,

including neo-classical/microeconomic theory. Issues of aggregation and cumulation. Implications for selected policy problems.

Research styles (210)

Seminar surveys and compares styles of uncovering social reality which produce major landmarks in research. Exegesis, survey, modeling comparative, participant, hermeneutic styles.

Organizations in historical context (229)

How struggles over control shape and are shaped by structural context. Examines mobilization of organizations in diverse periods, regions and institutional settings. Identifies distinctive architectures of interface and strings, such as multiple hierarchies, patronage trees, and area networks. Interplay between rhetorics and boundaries.

1983–84

Research styles (303)

Same description as above.

Organizations as agencies (229)

How struggles over control shape and are shaped by structural context. The course examines mobilization of organizations in diverse periods and institutional settings, as compared with episodes and cases in American business. The course identifies architectures of interfaces and strings, such as multiple hierarchies, patronage trees, and elite networks.

Economic and business sociology (155)

Economic systems from different areas and societies are surveyed briefly. The concepts of network process, role structures, and inequality profiles are introduced. Tools are developed for applying these concepts to understanding what managers do, how firms are organized, and how they compete in markets. The course uses case studies from current American business to apply these concepts and tools in order to develop a general manager's perspective on control in and through markets and firms.

Sociology of arts (126)

Same description as above.

1984–85

Mathematical specifications of social theories (198)

The focus is applications of mathematical models to control problems in markets and firms. Recent developments in organization studies furnish the substantive basis. Students are to attempt solutions in depth as term projects or briefer surveys and comparisons; attempted solutions are discussed in

seminar format. Stochastic processes, analytic calculus, and combinatoric techniques might be drawn upon as well as simpler aspects of control theory.

Sociology of art (126)

Focus on how immediate and larger social contexts interact with the embedding of art production in local and general cultures. Changes in style are shown to emerge from such interactions. Careers and reputations of artists are a central concern. Visual arts are emphasized.

Economic and business sociology (155)

Same description as above.

Complex organizations in theory and practice (229)

(with Robert Eccles)
How struggles over control shape and are shaped by structural context. The course examines mobilization of organizations in diverse periods and institutional settings, as compared with episodes and cases in American business. The course identifies architectures of interfaces and strings, such as multiple hierarchies, patronage trees, and elite networks.

1985–86

Business and economic sociology (155)

Same description as above.

Mathematical specifications of social theories (198)

Applications of mathematical models to various theoretical contexts in social sciences. Recent developments in organization studies is one example, social networks is another. Solutions are discussed in seminar format, often with visitors. Students are to attempt solutions in depth, or briefer surveys and comparisons as their term projects. Stochastic processes, analytic calculus, and modern algebra may be drawn on.

Complex organizations in theory and practice (229)

(with Robert Eccles)
How struggles over control shape and are shaped by structural context. The course examines mobilization of organizations in diverse periods and institutional settings, as compared with episodes and cases in American business. The course identifies architectures of interfaces and strings, such as multiple hierarchies, patronage trees, and elite networks.

Identities and social formations (262)

(with Alessandro Pizzorno)
New theoretical approaches which contrast with reductionist theories centered on individual interests, as in economics. Focus is emergence of middle range orders out of identity projects, and the reverse. Seminar members are to

critique these approaches and begin specific applications to cases in various periods, institutions, societies.

Harrison C. White's graduate students at Harvard University (1963–86)[2]

Edward Otto Laumann, 1965 *Urban Social Stratification: A Study of the Urban Stratification System of an Urban Community*.

Nicholas Creed Mullins, 1967 *Social Networks among Biological Scientists*.

Nancy Howell Lee, 1968 *Acquaintance Networks in the Social Structure of Abortion*.

Joel Harvey Levine, 1968 *Measurement in the Study of Intergenerational Status Mobility*.

Barry Stephen Wellman, 1969 *Social Identities and Cosmopolitanism among Urban Adolescents: Variation by Race, Social Status, and School Integration Experience*.

Mark Sanford Granovetter, 1970 *Changing Jobs: Channels of Mobility Information in a Suburban Population*.

Michael Useem, 1970 *Involvement in a Radical Political Movement and Patterns of Friendship: The Draft Resistance Community*.

Peter Brandt Evans, 1971 *Denationalization and Development: A Study of Industrialization in Brazil*.

Siegwart Michael Lindenberg, 1971 *Aspects of the Cognitive Representation of Social Structures*.

Michael Herman Schwartz, 1971 *The Southern Farmers' Alliance: The Organizational Forms of Radical Protest*.

Francois Paul Lorrain, 1972 *Social Networks and Social Classifications: An Essay on the Algebra and Geometry of Social Structure*.

Scott Archer Boorman, 1973 *A Frequency-Dependent Natural Selection Model for the Evolution of Social Cooperation*.

Margaret Ann Theeman, 1973 *Rhythms of Community: The Sociology of Expressive Body Movement*.

Paul Bernard, 1974 *Association and Hierarchy: The Social Structure of the Adolescent Society*.

William Sims Bainbridge, 1975 *The Space-flight Revolution: A Historical and Ethnographic Studyof the Technological Social Movement Responsible for the Development of Modern Space Rocketry*.

Ronald Louis Breiger, 1975 *Dual and Multiple Networks of Social Structure: A Study of Affiliation and Interaction*.

John Douglas MacDougall, 1975 *Agrarian Reform vs. Religious Revitalization: The Sardar and Kherwar Movements among the Tribals of Bihar, India 1858–1895*.

Richard William Wilsnack, 1975 *Collective Behavior and Situational Stress: Problems and Responses of Graduate and Postdoctoral Physicists*.

Susan E. Anderson–Khleif, 1976 *Divorced Mothers, Divorced Fathers and Children: A Study of Interaction, Support, and Visitation in One-Parent Families*.

Harriet Bertha Friedman, 1977 *The Transformation of Wheat Production in the Era of the World Market, 1873–1935: A Global Analysis of Production and Exchange*.

Brian Samuel Sherman, *1977 The East Village: The Social Structure of an Alternative Urban Community*.

Christopher Winship, 1977 *Problems and Models of Aggregation*.

Joseph E. Schwartz, 1978 *Three Studies in Stratification*.

Paul Joseph DiMaggio, 1979 *Culture, Stratification, and Organization: Exploratory Papers*.

Robert Gibson Eccles, 1979 *Organization and Market Structure in the Construction Industry: A Study of Subcontracting*.

Wendy Griswold, 1980 *Renaissance Revivals: The Continuing Interaction between Culture and Society*.

Richard George Schneider, 1981 *Environment by Design: Power and Market in Eight Consulting Firms*.

Jerry Alan Jacobs, 1983 *The Sex Segregation of Occupations and Women's Career Patterns*.

Richard William Lachmann, 1983 *From Manor to Market: Structural Change in England, 1536–1640*.

Eric Matheson Leifer, 1983 *Robust Action: The Joint Determination of Outcomes in Social Relationships*.

David Brain, 1984 *The Discipline of Design: Modernism and the Architectural Professions in the United States*.

Kathleen Carley, 1984 *Consensus Construction*.

Peter S. Bearman, 1985 *Relations into Rhetorics: Elite Transformation and the Eclipse of Localism in England, 1540–1640*.

Calvin Keith Morril, 1986 *Conflict Management among Corporate Executives: An Ethnographic Study*.

Notes

3 Ties and Networks

1. A good example of White's unconventional style, this statement is also another example showing how physical imaginary still influences the way he envisions social reality. Used in the natural sciences as a synonym for macromolecule, the term *polymer* means 'many parts' and designates a large molecule made up of smaller repeating units, *monomers*, which chain together through bonds between specified atoms (see Rudin 1999: 2). Polymer materials are often divided into two groups: *elastomers* and *plastics*. Whereas elastomers (such as natural rubber) have a network structure that is made up of cross-linking chains of repeating units, the cohesion of plastics is mainly due to the physical attraction among the chains. Plastics are of two main types: *amorphous* and *crystalline*, depending on how regular their chains are (see Brydson 1995: 54). While at lower temperatures, plastics, and all polymer materials indeed, transfer into a glassy, hard, and brittle material with fairly stable structures, at higher temperatures they soften and turn into a shapeless goo (see Sperling 1992: 159).

4 Control and Identity

1. "Everyday Life in Stochastic Networks" (1973), the source of this quotation, is an important paper where one can find some of White's central ideas about control and identity, while still in their early stages of elaboration. Written more than 30 years ago, White examines in this work Leonard Kleinrock's models (1964) for technological networks, that is, networks in which messages that arrive in an erratic fashion are forwarded through a set of interconnected nodes in order to reach the target node, that is, the intended final receiver. The core issue in this article is to study how the system operates in dealing with the congestions and delays that occur during the processings of the messages. Still within a physical imaginary, White (1973a: 43) explicitly, although only in passing, maintains that these models can "be used to guide investigation of informal social networks" and can help us extract insights about the "hidden benefits of congestion."

2. *Tie management* is not an ideal term since it fails to indicate explicitly the manipulative element in control, but it comes close enough to what White means. An alternative would be *gaming*, which White (1992a: 112) mentions as the "current idiom for interacting manipulations."

3. This however does not necessarily mean that bureaucratically designed organizations are free from uncertainties. On the contrary, as uncertainty continues to be a fundamental problem for complex organizations, coping with it is a major challenge (Perrow 1986; Selznick 1948; Thompson 1967).

4. In an article from 1995, "Social Networks Can Resolve Actor Paradoxes in Economics and in Psychology," White touches briefly on this topic. In this work White (1995a: 63) departs from Gordon Allport's (1937) formulation of the *trait theory of personality* that, "insisted that individual distinctiveness consisted in exhibiting traits of response that were stable across time and context." Finding this theory unsatisfactory, White suggests a network rearticulation of it, drawing on some empirical fieldwork done by Walter Mischel and associates (Mischel 1990; Mischel and Shoda 1994) on a number of children and counselors in a summer camp. According to White (1995a: 64–5), "Mischel and colleagues uncovered distinctive profiles, distributions of behavior across [a limited number of] situations: if situation A, then [a boy with a particular set of traits] does X, but if situation B then he does Y, and so on, in contrast with another profile which discriminates another sort of boy. These profiles proved stable over time, as well as across distinct conventional settings, such as woodworking, games, cabin meeting." White then continues, "put in my terms, [the authors's] *central conclusion is that it is these profiles of discriminative behavioral reactions according to type of tie that should be seen characterizing personality*" (italics in text).

5 Structures and Disciplines

1. Contextual category system, the fourth type in White's typology, will be presented later.

2. It should however be also mentioned that since this criterion of structural similarity is too strict, it is often somewhat relaxed in practice. Consequently, instead of searching for nodes with identical sets of relations, the analyst often looks for those with only sufficiently similar sets of ties. Within social network analysis, it is also common to replace this criterion by another one, measuring how far from or how close to being structurally equivalent a given pair of nodes is.

Appendix

1. Sources: *Harvard University Directory of Officers and Students* (1962–63 until 1978–79), *Directory of Faculty, Professional and Administrative Staff* (from 1979–80) and *Courses of Instruction: Harvard and Radcliffe, Faculty of Art and Sciences*.

2. Source: *Doctorates in Sociology 1932–1989, Harvard University*, March 1989.

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