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How to model an institution

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Abstract Institutions are linkage mechanisms that bridge across three kinds of social divides—they link micro systems of social interaction to meso (and macro) levels of organization, they connect the symbolic with the material, and the agentic with the structural. Two key analytic principles are identified for empirical research, relationality and duality. These are linked to new research strategies for the study of institutions that draw on network analytic techniques. Two hypotheses are suggested. (1) Institutional resilience is directly correlated to the overall degree of structural linkages that bridge across domains of level, meaning, and agency. (2) Institutional change is related to over-bridging, defined as the sustained juxtaposition of multiple styles within the same institutional site. Case examples are used to test these contentions. Institutional stability is examined in the case of Indian caste systems and American academic science. Institutional change is explored in the case of the rise of the early Christian church and in the origins of rock and roll music.

One of the most striking developments in recent research on institutions has been the appearance of a spate of new work by scholars who are using relational modeling techniques originally developed for the study of social networks to disentangle the complex logic of institutional processes. Of course, one can argue

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that social network analysis has always been about the study of social institutions and in a certain sense that is surely true.[1] But it is also true that there has been a significant shift over the last decade or so by a number of researchers who have moved away from a more traditional focus on interactional (e.g., social) networks towards a modeling strategy of a broader scope that directly tackles the structural character of institutions by recognizing that what makes an institution work is that it interpenetrates the social with the cultural.[2] Thus an institution links together different orders and realms of social life, notably the agentic with the structural, the symbolic with the material, and the micro with the meso and the macro structures of social organization. Indeed we argue that it is precisely this—the articulation of relational sub-systems into a structured whole—that constitutes the very essence of an institution.

In some cases the distinctive feature of this new research is the application of network analytic tools to take the measure of cultural systems that underlie broader institutional processes. Using autobiographical texts as their data, Bearman and Stovel (2000) map out the network structure of life story narratives as told by members of the German Nazi party during the 1930s. Smith (2007) uses a similar model to compare the contested historical narratives of two different ethnic communities along the Yugoslovian/Italian border. McLean (1998) applies relational modeling strategies to unpack the cultural logic underlying the presentation of self in fourteenth and fifteenth century Florentine patronage letters while Sonnett (2004) uses relational methods to map out the boundaries of musical taste communities in American society.

In other work, network tools have been deployed to demonstrate the structural mappings that link cultural forms with institutional actions. Tilly (1997) used a block model analysis to show the linkages between the institutional claims various types of collective actors made upon one another during a series of some 8,000 contentious gatherings occurring in England from 1758–1834. Breiger and Mohr (2004) relate the 'structural equivalence' concept to logics of institutional practice, and they use a dual clustering algorithm to map out the relations between cultural identity categories and types of outreach programs employed by the University of California in response to an externally imposed prohibition on affirmative action policies in the

[1] Just as an example, early work by the second author (White 1963a) focused on the logic of kinship systems, building on long traditions of analysis in anthropology, and demonstrated that the institutions of kinship were derivable through an empirical analysis of the structure of kin ties. In another early publication on the "Uses of Mathematics in Sociology" the institutional ambitions were expressed clearly, "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 in 1200), decentralization in the TVA (today), and political pluralism in France (nineteenth century)?" (White 1963b, p. 79). Later studies by White carried through on these concerns by focusing on the changing institutional logic of art worlds, job systems and economic markets (White and White 1993; White 1970; White 2002).

[2] We focus here on just one style of institutional analysis. It should be said that there are several other contemporary research projects that are also developing approaches to using formal models to analyze institutions. The "New Institutionalists" in organizational science is one example (see Powell and DiMaggio 1991; Greenwood et al. 2008). The use of Boolean algebra and fuzzy set mathematics by Charles Ragin (1987, 2000) is another important effort.

mid-1990s. Mische (2007) uses lattices to analyze how Brazilian individual youth activists representing different ideological perspectives were linked to various social movement organizations and significant political events during the late 1980s.

A third cluster of projects has focused on mapping out the institutional underpinnings of markets, industries and organizational fields. The reconceptualization of markets by White (1981) as socially constructed spaces in which producer firms monitor and orient their behavior toward one another provided the impetus for a whole new cohort of sociological studies of market dynamics emphasizing the relational logic of market competitors (White 2002, etc.).

A somewhat different stream of work has begun to emerge that takes these models further by using relational methods to measure directly the cultural meaning systems operating in markets using a variety of sophisticated data collection techniques. Porac et al. (1995) drew upon a series of interviews with the managing directors of Scottish knitwear firms to develop a precise relational mapping of rivalry relations within the industry. Ruef (1999) relied on an innovative textual analysis of the MEDLINE journal database to generate a relational mapping of organizational forms in the American health care industry from 1965–1994. Rawlings and Bourgeois (2004) use an extraordinarily detailed 1945 government dataset to collect data on credentials offered by American universities that they then use to create a relational mapping of that institutional space. Kennedy (2005) uses a sophisticated content analysis of nearly 30,000 (Lexis–Nexis) media stories about the computer workstation industry that he then applies to test empirically White's theory of market monitoring. Many other examples of this style of work could be cited, including a number of projects that move in very different directions than those referenced here.[3]

In this article our goal is to identify some of these broad trends and to unpack the key assumptions of this new line of institutional research.[4] We argue that there are two central principles that motivate the work—relationality and duality. Both of these are core theoretical and methodological precepts that have come out of the social networks tradition but they have been refashioned in this context to embrace a more holistic sociological vision, one that resonates with the agenda setting ambitions of the second author's efforts to reconstruct the theoretical foundations of contemporary sociology along genuinely relational lines (White 1992, 2008). We also contend that an effective analysis of institutions needs to take account of three analytic sites in which linkages occur between different orders of social experience, those specifying the linkage of agency to structure, of culture to practice and of linkages across levels of social organization.

In this article we go on to make two more particular claims about the nature of social institutions. First, we propose that the stickiness of institutions, those qualities of institutional life that lead them to be particularly enduring, is directly related to

[3] Mohr (1998) provides a preliminary review of these projects. Ventresca and Mohr (2002) provide a more detailed review of a number of empirical projects that use these types of methods to analyze markets and industries.

[4] The article began as a solo piece by White for the UC-SB conference. Mohr brought a fresh perspective and kept the focus on institutions, as well as introducing new constructs and a great many fresh examples.

their capacity to bridge these types of divides effectively. In what follows we illustrate this contention with an example of one institutional form that derives its resilience from its ability to stretch across levels of social organization and to combine fruitfully the social organizational properties characterizing different levels of social interaction under the same institutional roof. Second, we argue that the undoing of institutional stability, including the possibility for significant institutional change, may be dependent upon the sustained juxtaposition of multiple styles within the same institutional site. In a sense then, institutional stability derives from bridging while instability is the result of over-bridging.

We demonstrate these assertions by referring to several empirical examples that are widely divergent in period and ethos. We look at the logic of American academic science, Indian caste systems, the origins of rock and roll music and the early Christian church. Our account will necessarily be incomplete because, in spite of all this good work, there is still quite a bit that we don't know about how institutions work and we point to some of these unresolved matters towards the end of our essay.

Defining institutions

To begin, what is an institution? Traditionally social scientists have thought of institutions as the more enduring or recurrent features of social life. Sometimes the term is used to describe particular types of conventions or practices for managing social interactions (the handshake, turn-taking in conversations, etc.), at other times a broader constellation of activities, values, norms, social structures, and role systems are understood to define a kind of functional arena or field (the family, higher education, health care). And yet even at this level of specification there is a wide divergence in terms of actual definitions. There are two (related) reasons for this. First, institutions (by their nature) are fundamental, pervasive, and varied features of social existence. Thus any definition must stretch across a broad and deep expanse of social life. Second, every attempt to account for or specify such a phenomenon is immediately implicated in a much broader system of sociological theorizing. To speak with any specificity of the nature of institutions one must invoke a theory of actions, persons, social organization, cultural systems and the like and these issues are still very much in flux in contemporary sociological theory. In what follows we speak about institutions in the context of a broad theory of social action, worked out over the course of many years by the second author (White 1963a,b, 1970, 1985, 1991, 1992, 1995, 1997, 2000, 2002, 2008) that locates the concept within a field of related ideas and expectations about the nature and character of social life and a structural theory of social science.

Relational models of social institutions

A key assumption of this work is that social institutions are made up of different types of interlocking networks. This includes social networks that link actors together into various social relations and role systems. Network analysis has traditionally focused here, and there is a long and vibrant scientific tradition

demonstrating the implications of networks for social organizational processes.[5] But a complete specification involves more than this. Once one begins to unpack the social phenomenology of a network it becomes necessary to change the way one thinks about individuals, action, culture, and social process more generally.

White (1992, 2008) provides extensive theoretical specification that begins not with individual embodied persons, but rather with identities that can be generalized to include any source of action. A firm, a community, a crowd, oneself on the tennis court, encounters of strangers on a sidewalk, each may be identities. Identities are triggered out of events—which is to say, relational situations that emerge from the flow of social events, switching from one network situation into another, that produce a need for control over uncertainty and thus a control over situated actions and fellow identities. Lives are organized around this flowing movement from one network situation into another and these situations are themselves phenomenological sites that include certain other identities (in particular networks) organized around specific domains of activity (hence they are network/domains or simply netdoms). Active participation (control efforts) in these situations depends upon both the network logic and the shared conceptual understanding of what is going on in the netdom. The shared understanding (localized meaning) is produced through the interactions (and especially the switching back and forth across these interactional sites) and embodied in a shared repertoire of netdom stories that provide the basis for a common understanding of what is going on in the moment.

The situated meanings, the shared stories, the story plots that give heuristic structure to shared narratives, and the systems of values that provide a core categorical substrate for this process, all of these are cultural (symbolic) phenomena and they too are ordered in relational systems (Saussure 1959). Thus, in addition to social networks, institutional life is organized around cultural networks, relational structures that link meanings, values, stories, and rhetorics together into various structured configurations. An institutional analysis needs to attend to both of these types of structures, and thus to systems of discourse and systems of social interaction and to the linkages that tie them together.

A key assumption of a relational approach is that it is the relations (and the patterns of relations) that matter. Individual persons, agents, values, or story elements take on identities (and meanings) in and through their relatedness to others. It is not the inherent attributes or properties of objects that define them, but rather their relational location within a field of relations. Formal models of network relations are geared toward identifying structure preserving (homomorphic) reductions that allow simpler, core structures to be identified.

Duality and institutional orders

While a focus on relationality has long been the hallmark of formal network analysis, a second core methodological/theoretical principle emphasizing duality

[5] The most important advance in sociology in the half-century since Parsons's first book may be operational accountings of networks. For general surveys of the state of the art see Freeman et al. (1989), Watts (2003), and Wellman and Berkowitz (1988).

relations has more recently come to be embraced by network modelers. What is a structural duality? It is a relationship that inheres within and between two classes of social phenomena such that the structural ordering of one is constituted by and through the structural ordering of the other. White (1963a) began to develop formal approaches for mapping duality relations in his early work on kinship (the duality of matrilines and patrilines) and it was carried forward into his modeling of vacancy chains (1970; as the duality of persons and jobs) and early work on structural equivalence (in the duality of individuals and relations; Lorrain and White 1971).

An early essay by Breiger (1974) contributed a core formulation and extended the focus. Breiger took off from an insight in Simmel (1955) emphasizing the duality of individuals and groups. Simmel's insight was to see that individuals are largely defined by the social groups that they are members of but, at the same time (and dually), social groups are defined by the individuals who are included as members. With this as a starting point, Breiger developed a set of formal strategies for mapping out the structural implications of dually ordered social systems and those ideas have been carried forward vigorously over the last decade and a half (Breiger and Pattison 1986; Boyd 1991; Freeman and White 1993; Duquenne 1995, 1996, 1999; Houseman and White 1998; Pattison and Breiger 2002).

The early work of White and Breiger as well as many of the more recent extensions of these ideas by others has focused on duality as an articulation mechanism that links one order of social structure into another order (individuals and relations, individuals and roles, individuals and groups, etc.). In this sense, duality is a relational device for linking one level of social organization into another level such that the structural logic of one is revealed to be constitutive of the structural logic of the other (and vice versa). But a key insight of a broader relational theory of institutions is that duality is also a property that extends to linkages among different kinds of social orders. Thus, social structures can be dually articulated with cultural structures (and vice versa). Thomas Schweizer (1993) was an early proponent of this insight, and using data from an urban neighborhood in French Polynesia, a group of hunter–gatherers in Zaire, and a peasant community in Java, he demonstrated the power of this analytic strategy by modeling the relationship that inheres between the status logic of material possessions and the social ranking of individuals. In this work, the status meaning of possessions is interpreted by understanding which members of the community possess which types of goods. Simultaneously (and dually), Schweizer assessed the ranking of individual community members in the social order by observing which material goods they possess.

Following on this work a number of scholars began using formal methods for mapping duality relations that link social and cultural components of institutional systems. Mohr and Duquenne (1997) looked at how cultural categories of the poor were dually mapped with the social structure of treatment practices by progressive era poverty relief organizations. Mische and Pattison (2000) analyzed how the social organizations of Brazilian youth were dually ordered with cultural conceptions of change. Breiger (2000) studied the dual social relations of Supreme Court justices and the cultural categories of supreme court decisions. Bearman and Parigi (2004) map the duality between patterns in social structure and types of conversation topics. Yeung (2005) analyzes the duality of social relationships (in commune communities) with subjective (affective) meanings about the character and quality of the

interpersonal relationships.[6] In each case, the analytic task is to illuminate how one order of social phenomena is relationally linked to a different order of social experience in such a fashion that their structural inter-dependency is mapped. In the terms of Giddens (1979), the task is to substitute duality for dualism.

Three key theoretical sites of institutional analysis

We now move more specifically into the question of what constitutes an institution and how an approach emphasizing relationality and duality can be employed to model institutional processes. There are (at least) three critical issues that have to be addressed. These are core conceptual matters that run through the history of social theory. All have to do with the types of linkages that occur across different orders of social phenomena. They concern the problems of agency, meaning, and level. Our goal is to recast these issues in light of the relational approach to institutional analysis that we are describing here.

1. The duality of styles and institutions:

At least since Durkheim sociologists have pondered the question of how and in what sense institutions exist in any independent fashion given that it is individual agents who act and, through their actions, give life to social institutions. In social theory, this is often thought of as the problem of the duality of agency and structure (Giddens 1979). We think of this in terms of the duality that inheres between institutions and what we call styles. Start with the concept of style. Styles can be thought of as a fundamental specification of how individual agents live their lives through an ongoing process of combining understandings of situations with sets of practices arrayed across lives embedded within social networks (netdoms). Styles are thus an essential element for social action. More formally stated, a style is a patterning in profile and sequence of socio-cultural processes across some network population (White 1992, Ch. 5). Such regularities just reflect types of orderliness and of contingency being perceived and enacted across that network population. It is through the enactment by agents of styles that institutions come to have material existence.

But there is duality here. Styles are not idiosyncratic constructions isolated from social context. It is through institutions that styles come to be enacted. This is because a style can be understood only when viewed against the background of an institution that arrays and disciplines actors' perceptions of the social organization of values in which they are embedded. Actions may be erratic and zany under the usual pressures of contingency and chance from physical as well as social context, and by the flukes of maneuver for advantage. But the style that drives those actions, by invoking a fixed set of values correlated with a network in institutional accountings, it is this style that induces perceptions of regularity. The actors are thus constructing the social through, and thus because of, the institution that we can read from their

[6] This conceptualization of duality and its relationship to research coming from formal network analysis traditions is analogous (both theoretically and methodologically) to several other sociological projects, most obviously with Pierre Bourdieu's efforts to use correspondence analysis as a way to measure the duality of social and cultural structures. See Breiger (2000) for an especially useful discussion.

behavior. A network population conceives of behaving and misbehaving, evinces a style, in terms of the institution, that itself is the carapace left from the enactments of style.[7]

For example, each debate evolving among factions within research communities over theories in a science is shaped in terms of the institution immanent in its social organization, and conversely. Changes in invoking and expression of particular values may seem to be triggered by environment or by group and individual whim, but change in their structuring as a package across networks is difficult because style is constrained by institution.

As introductory example consider a case study of scientific research. Susan Cozzens (1989) dissects a controversy in neural pharmacology, which amounts to the social construction of a "discovery." Expressions of the values of honesty and of originality are being negotiated through various agencies. One can read an institution from this particular social formation for a sub-discipline of science. Multiple networks—of collaboration, of training and sponsorship, of gossip, of friendship and the like—are sources as well as products of rankings in this case of Cozzens. These rankings are both particular, as scientific pecking orders of investigators (Chase 1980) in specific subfields surrounding neural pharmacology, and also they are more general as status-layering, personal and institutional, in the larger scientific population.

This case also exemplifies how style spans across institutions in a complex network population. Mass-media news conferences were one sort of agency being invoked. Another was brokering and conciliating by other senior scientists. All meld into activations and adjustments of network and standing among the four different working groups vying for recognition as co-discoverers.[8] Dual to all this is the semantic negotiation of concepts and perceptions, in struggles over whether there is an "it" to be discovered, and over bounds and shape for this "it"—the "opiate receptor."

Our point is to note the interaction between style and a cross-sectional pattern of socio-cultural organization that we denote by institution. In this article, our argument is that style can best be understood when viewed against the background of an institution that arrays and disciplines actors' perceptions of the social organization of values in which they are embedded. The actors indeed are constructing this organization through and thus because of the institution that we can read from their behavior.

2. The duality of the social and the cultural:

A second key analytic site for a specification of a relational theory of institutions concerns the problem of meaning and the way in which the meaningful (interpretive) experience of everyday existence is dually linked to the physical (embodied) experience of agents linked through social structures. Meaning is essential to how agents negotiate everyday life. At the level of individual agents, what matters are the

[7] Many of these perceptions and enactments within the population occur in verbal discourse, and in a follow-on paper White specifies some interrelation between style and micro-dynamics of language.

[8] It is clear that many other individuals and organizations and scientific interest groups also push claims of—and upon—particular research groups like these.

ways that interactions in netdoms are interpretable and how switching back and forth across netdoms generates gradients of understanding (White 1995). At this level of social existence interpretive systems are organized as stories that are told to oneself and shared with others about the immediacy of events, actions, and agents that are known, witnessed, and participated in. Within any given network, meanings are shared through collective participation in repertoires of stories that serve to give an interpretive face to the lived experience of interactions. Stories are themselves constructed out of a patterned relation of meanings (these can be modeled as networks, see Bearman and Stovel 2000; and Smith 2007) and they also operate in sets, so there are relational semiotic systems both within and between stories. The duality that links these semiotic systems back to the embodied practical reality of social interactions establishes the foundation for the hermeneutics of everyday life.

The same is true of institutions except that with the institution we move up a level of social organization and also up a level of abstraction. Interpretive frames at the institutional level are not immediate and specific; they are general and abstract; and they are collective rhetorics that are known, shared, and embraced as orienting devices for the construction, consumption, and bundling of stories across different netdoms. By invoking a fixed set of stories and institutional arrangement thereof, rhetoric induces a perception of regularity for participants within an institutional realm.

Values are particularly critical for institutional rhetorics. Values are organized in relational (semiotic) systems that provide anchors for the interpretative understandings of what is going on within an institutional realm and provide a moral coding for those understandings that helps orient participants towards what is important, what is appropriate, and what will be valued by others who share this institutional space.

The first point to note about this is that values code from social network. Values can be read out of patterns among affective ties, or from patterns in chains of agency, instead of turning to style to parse meanings from stories and speeches. This is as true when participants do the reading as when observers do it. That is illustrated in the next section by the coding of purity stacking from patterns of ritual interchange among caste, and in the last section by the coding of outreach mission from the expanding-tree networks of an early church.

A value has some connotation of ranking, commutation, degree, being in or defining dimension. This has some cognitive basis (De Soto 1961; De Soto and Albrecht 1968; Shepard 1984). Such "dimension" partakes of ordering within social spaces of networks as well as of ordering in semantic space, and yet it also must ground institutional system in mundane space–time of biophysical perception (Gibson 1950, 1979).

Some values, as in asceticism, may appear to be removed entirely from social interaction. Values can have their own cultural pecking orders, with sacredness enveloping the high ones, but equally striking is their multiplicity of format, from commandments over to mere tones within scripts of interaction. Earlier theoretical perspectives were typically focused on values in themselves and in abstract form. Talcott Parsons, in his efforts toward a general theory of social action, pushed for transposability and separability of values so that the ultimate ends of different means–ends chains could constitute an abstract system of values. Thus for Parsons

ultimate ends can be cultural facets of coherent social action across a society. Parsons seeks to strip values out of styles tied to social organization.

This is a far cry from values embedding with networks in institutions, as can be found in Erving Goffman (1955, 1963, 1967, 1971, 1974) who identified an institution in everyday life among strangers. There is a "backstage" and a front stage where reality and valuation of even the simplest social acts must be negotiated afresh, endlessly.[9] Others, such as DiMaggio 1987; Habermas 1975; March and Olsen 1976, 1989; and Merton 1968, also push for explanation of meaning and value being in interaction with tangible organization. These others typically work, like the present article, with middle-range orders.

Within institutions values operate in sets. One can no more invoke a value alone than clap with one hand. Lessons in white lies of tact and adaptability go along with lectures on honesty as a natural package for ordinary living (White 1991). Or take values in working science: originality (a variant of scope) is a preeminent value, but so also is its complement and obverse in scientists' thinking and talk, the value of truth (a variant of purity). As here, the values in a set need not be seen as hostile but instead may be viewed as natural complements like hammer and chisel.[10] From one population, tribe, town, or factory, to another, even nearby, one may code a somewhat different set of values, and of course distinct networks. But the main shift will be in relative frequencies of use of a given set, and so it occurs in how given values are mapped onto sorts of interaction across networks.

The meanings of a package of values are to be inferred as much from the social architecture as vice versa. Networks can bring and indicate change as well as nest actors into shells that block action (Burt 1990). Change may be only a diffusion of small changes within the envelope of a style with values fixed. But the changes can be larger.

Return to the Cozzens example. There values do not operate as universal guides that have been transposed to this scene. The ordinary language terms of "priority" and "originality" dissolve in confusion amidst the bewildering struggles and claims, which manufacture, as convenient, new criteria of connection and information. To transpose—as a term in an algebraic equation or in a sentence—means to change to a new location without altering the value, whereas "priority" transposed to the opiate receptor case is indeed altered.

A second illustration comes from a case study of a social movement. Civil Rights values, seen to include purity and effectiveness, were woven into the social fabric of Movement organization. In the words of McAdam (1988, 237): "Activism depends on more than idealism…. Formal organizations or informal social networks must also exist to structure and sustain collective action. The volunteers were not appreciably more committed to Freedom Summer than the no-shows"—among the

[9] For a cogent overview of the phenomenological position, which situates Goffman with Sachs and Garfinkel, see Rawls (1989). For incisive appreciation and critique of Goffman see Burns 1991. Hallett and Ventresca (2006) provide a thoughtful discussion of how to reconcile these types of symbolic interaction approaches with a contemporary understanding of institutions.

[10] Until some proper calculus has been developed for analysis of discourse—perhaps along some such lines as Abell (1987) or Chafe (1994)—metaphor and intuition will have to serve. Consult Gibson (2003) for important recent steps.

college students initially recruited; so that it was position in mobilization networks that tipped who actually came, rather than intensity of individual beliefs in Civil Rights values. We see how institution is the basis for the correlation of style to overall social arrangement.

3. Dualities among nested levels of social life:

The third analytic site for a relational theory of institutions has to do with the sort of duality that links one level of social experience into another. In the history of social theory the problem of levels has been confronted in many ways. One thinks of the theoretical conundrums associated with the duality of self and other, of the individual and the group, of local social organization and field level organization, or more generally, the linkage from more micro to more meso to more macro levels of social experience. As suggested earlier, it was the problem of articulation of one level of social organization into another that originally led to Breiger's operationalization of his theory of structural duality. The problem is central for a relational theory of institutions because the concept of institution is in its essence a meso level social phenomenon.[11] Indeed, as we argue below, it is precisely the ability of a given institution to bridge effectively across levels of social organization that often distinguishes the more enduring and robust institutional forms from others that are more transitory.

The use of structural duality measures as a way of analyzing these types of linkages across institutional levels was initially theorized by Fararo and Doreian (1984). In what they termed "a formal theory of interpenetration" Fararo and Doreian sought to generalize and extend Breiger's bipartite graph model to a tripartite graph solution that enabled them to move beyond the duality of individuals and groups to incorporate the duality of groups and organizations also (defined as a series of connected groups).[12] But their ambition was more expansive than simply to enlarge the scope of structural duality metrics, Fararo and Doreian linked this endeavor back to classic analytic problems in Marx, Mead, and Simmel and proposed that such an analytic project could provide a way to create formal models of institutions by structurally linking the analysis of persons, collectivities, and cultural systems.

Other scholars have also focused on the articulation across levels as a key problem for institutional analysis. Indeed, a major focus of the new institutional approach to organizational analysis has been how to conceptualize the relationship between individual organizations and what Scott and Meyer (1983) define as organizational sectors or, in DiMaggio and Powell's (1983) formulation, the relationship between organizations and organizational fields.

[11] Indeed, Miller argues that it is a mistake to equate social conventions (such as the handshake) with institutions. "Social institutions need to be distinguished from less complex social forms such as conventions, social norms, roles and rituals. The latter are among the constitutive elements of institutions. Social institutions also need to be distinguished from more complex and more complete social entities such as societies or cultures, of which any given institution is typically a constitutive element" (2007, p. 4).

[12] Fararo and Doreian (1984) also reference the work of Thomas Wilson (1982), whom they acknowledge for having a parallel intellectual discovery with Breiger of the bipartite graph concept.

Figure 1 provides a visualization for these arguments. The three circles correspond to different levels of social organization (self, group, field) that are linked together by structural dualities. But within each circle, other relational dualities define the space. At the level of the self there is a duality that inheres between mind and body, of knowing and doing. In a group, there is a duality linking stories to social networks. At the level of an institutional field, there are systems of rhetoric and systems of social organization. Our contention is that institutions subsume these relational sub-systems and the various articulations that link them together. Consider the following examples.

Institutional endurance: village caste and academic science

A first institution is illustrated in two very different cultural guises, caste and science. In the first of these guises, change in either institution or style is generally thought to be precluded, whereas in the other dress the institution is generally thought to encourage change in both. Meticulous study of a particular system is required to support description of an institution. For caste we rely on the account of Mayer (1960) of a field of villages in central India that maps out networks of behavior and perception. The second illustration is from an utterly different discourse, academic science as a social formation in the United States, in which Cozzens's case earlier is a particular drama.

Accounts of Indian caste in general (Dumont 1986), emphasize the value placed on ritual purity and the strict demarcation of bounds for corporateness. A curious topology underlies and justifies both emphases, within the ongoing networks of kinship across villages. This topology very much depends on how networks weave together a corporate structure of purity. The topology can be tagged as a metonymy,

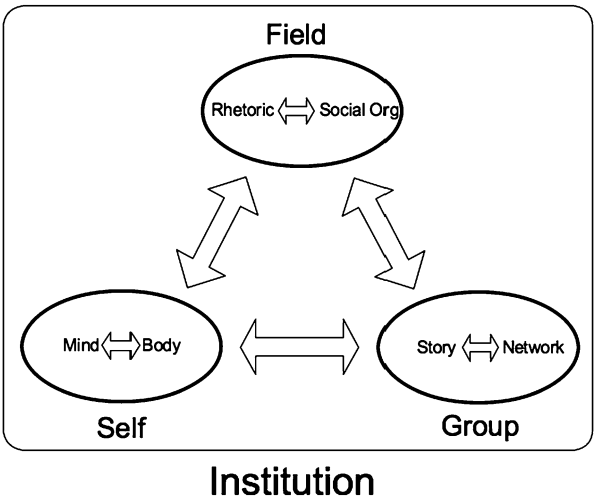

Fig. 1 Nested dualities within an institution

specifically a synedoche: "the smaller contains the larger." Later we will transpose this topology to modern academic science and claim a good fit.

Purity is operationalized with extreme explicitness in villages. There is a ranked series of substances whose passage from one to another grouping permits precise imputation of purity, hence of socio-cultural standing. The groups ranked are local and constitute a partition of all family units within a given village into specific caste groupings. As we saw earlier in the analysis of cultural status and social structure in the case of Schweizer (1993), this is a system that dually orders forms of social structure and the relational logic of cultural values. Rankings of each caste can be imputed from observed transactions, especially those on public occasions as in religious feasts and weddings. Party food, cooked in butter, comes at one extreme, then ordinary food, then raw food, and on through smoking pipes, drinking water and on down through garbage and feces.[13] A generally agreed linear order of village castes is supported thereby.

The village is the site of primary economic activity, farming and artisanry. Caste matters do not tie directly to most of this ecological activity. Nor do struggles over ownership, improvement, and change in property, which largely lie outside the scope of the village.

Through marriage kinship cuts across villages. The unit of intimacy is the subset within a village caste who have married into a like subset of an analogous caste in another village, or rather the many such intermarrying sets across a number of villages in the region. Call this the subcaste, a network construction hopping across the region. It is a "sub"-caste because within any particular village the persons in the given affinal network are but a subset of the several clusters of blood relatives that make up the whole caste in that village.

Paradoxically, the subcaste is larger than the caste. The reality is that inheritance and marriage, the engines of major change, lie within the subcaste and outside the village. There is both village exogamy and caste endogamy. The corporate reality of a subcaste interlinked through affinal ties across a whole region, this intimate corporateness is broader than the only caste unit that is actually embodied, that of the village. Indeed the subcaste may be comparable to the whole village in size.

Only the subcaste has explicit organization, a council and like agencies for regulating caste affairs. Wealth flows along subcaste lines, through marriage and inheritance, as do innovations, material and other. There are only the thinnest threads of purity calibration that can be spun out by the Brahman "priests," themselves scattered as local caste units in villages.

Some mobility can take place without disturbing perceptions of purity value. It is the mobility not of individual persons but of whole subcastes moving to new villages. They can do so because there are more distinct castes in the region than can ever be found together on the ground of a particular village. The Brahman argues primarily in terms of the four broad *varnas* of their scriptures; so a subcaste new to the village can appear and argue for a location in purity rank within that village in the only way that matters, getting the appropriate exchanges going.

[13] Explicit network modeling of such caste interaction data can be found in Marriott (1959, 1968).

Looking at Mayer's photographs of separate caste groups hunkered down in separate locales at feasts, one can almost supply the story sets used to account for and tidy up the value-ranking by purity. Not able to be photographed, but equally central, are the sprawling networks of kinship bonding across other villages that sustain and reproduce the system. A separate set of value facets is embedded in these ties among subcaste segments.

American academic science

There is a close parallel with the organization of American academic science. For village read university, and for village caste-group read department in a university. Purity becomes prestige, itself a stand-in for degree of ultimate truth. Subcaste translates into specialty, which is at the heart of science as research, as generator of originality. With this translation, the statements above on Mayer's village caste system can be carried over into the social setup of American academic science.[14]

A pecking order for scientific disciplines is operationalized only among departments within the particular university, physics or mathematics often being top and sociology near the bottom.[15] Degree of scientific purity may be attributed to this order. Ritual pervades this scene, whereas action and excitement and intimacy grow along research networks spreading outside the given university. Sprawling networks of collaboration and intimacy in actual research reach across the nation on specific subjects. Specialties are concretized in them. For specialty as subcaste read invisible college (Crane 1972).

Seen from outside within its university, a given department has meaning and indeed coherence. The meaning comes within and expresses a hierarchy of purity and accomplishment, which can vary from one to another university. The hierarchy is enforced by deference behaviors in committee meetings and luncheon interchanges. It is also enforced and expressed in larger and more solemn ceremonials, at which symbolic capital can be exchanged like any other.[16] Contents of interchanges can be typed analogously to the discriminations from high to low in the material exchanges among castes within a village, and there is a parallel range of meeting contexts within a village.

Seen from its inside, a university department of science, analogous to a village caste, is a shambles of unrelated specialties. Different collections of specialties will make up that discipline's departments in various universities. And universities differ in their exact menus of departments. All this is parallel to the caste/village/subcaste formation. A specialty spreading across scores of departments is typically much

[14] It may be that the dissection below carries through as well to the humanities, with whose organization we are less familiar. Better analogues to the humanities, as well as to professional schools and the like, may be the ethnic enclaves that crosscut villages and castes in a region like Mayer's.

[15] This pecking order varies a little among universities. Sociology, for example, is higher at public universities than in Ivy League schools.

[16] Consider, for example, the Feast of Grades meetings annual in Arts and Sciences Faculties, at which higher honors for graduating students are negotiated and solemnized. One might speculate that in the university, as in the village, these local ceremonials absorb energies and distract attention from flows of main action and resources through corporative networks.

larger than a given university department—just as a given subcaste spreading into scores of villages has more members than are in that caste in a given village.[17]

Each specialty is the prime world of motivation for its working scientists. And when recruitment of new (faculty) members to the given department comes up, it is recruitment largely along invisible-college networks of specialties active in that department and competing with each other. Just so do marriages and children get formed through networks within a subcaste quite separate from the other subcastes that together in the eyes of that village make up the weavers (or the blacksmiths or whatever) as a single caste entity. One specialty is linked to its departmental counterparts in other universities differently from the way another specialty is—another reason why they tend to operate separately and independently within their own department. Again there is a parallel to Mayer's descriptions for subcastes.

Familiarity of the reader with our academic setting can supply detail and conviction, though excellent case studies like Cozzens's cited above can help. For overviews to supplement case studies and personal experiences, see, for example, Merton 1973, and Mullins 1973. For longitudinal perspective on values, showing how careers play out in science see Cole and Zuckerman 1979, and Menard 1971.

Now we can summarize: Because the caste illustration is a vivid one, this first institution is easy to recognize in other contexts such as modern science. A general value—call it purity—is here operationalized in the strongest kind of social ordering, a ranking close to the full linear ordering of the mathematician. But this purity is confined operationally to a small locality, usually a geographic one defined by mundane activities. Purity thus is operationalized only for small populations separately, since linear order can be enforced only through transitivities in chains of behavior that cannot be monitored in larger groups.

And yet the local level of social organization is insufficient. What makes this institutional form robust is precisely the way in which the structural logic of each level (and the articulations among them) contributes independently to the overall coherence of these domains of social life. Everyday intuition suggests that corporate membership should play the role of locality, but in fact subcaste sprawls out across localities without, however, interfering with behaviors whose patterns are sufficient to enforce purity among subcastes within a locality. For either science or caste, other value facets, such as intimacy and wealth, variously accompany the localities and corporate memberships. What persists and reproduces itself as a robust social formation, an institution, is some peculiar balancing of interpenetrations capturing the duality of cultural values and social networks as well as a complex structural mapping that links the local and the field levels of social organization.[18] Throughout all of this, one finds individual identities enacting styles that trace out the meaningful articulations of these various dually articulated structures.

The view of caste described here required a new generation of anthropologists who were alerted to networks as analytic and phenomenological bases of social

[17] Even the numbers are quite comparable, for sizes of units and subunits and spread of networks.

[18] In this respect, it is interesting to recall that Durkheim (1933) saw professions as important in modern societies precisely because they provided a mechanism for re-inscribing the kind of moral sensibility that had traditionally been viable in the local community but at a higher level of social organization.

topography and perception. They came to see values as byproducts from social pattern rather than as exogenous cause. It became clear to them that particular values in a package were tied together and mapped very differently in the sprawl of corporate networks than in the prestige layering within a locality.

Sociologists of science have been bringing in this same new network perspective, and their results can be mapped into the same institution as village caste. So one can argue for common predictions as to some matters. The styles accompanying this institution yield a social organizational system that seems peculiarly resistant to attempts at external control. Anecdotes on caste and science suggest this as does the institution's having a balanced and stable yet decentralized skeleton.

Caste is indeed argued (Ghurye 1961; Hocart 1950) to be the resilient formation to have survived repeated waves of external invaders. And the structuring of American academic research science may well be a reaction against the emerging dominance of American universities by autocrat Presidents in the early 1900s. It is not particular values taken as abstract symbols that account for this obduracy; it is a style that embeds value facets operationally into a certain sort of balanced formation as institutional system. Indeed, our conjecture is that it is precisely the way that institutions bind these multiple elementary components into a larger system of dually articulated relational structures that defines the very essence of institutions as enduring social formations.

Institutional transformation: styles as vehicles of change

All of this then raises the question of how and in what ways change is enabled or facilitated within an institutional order. The ideology of science holds that change of formulation is easy, a convergence of individual perceptions and cognitions subject only to verification of the truth of findings prompting such reformulation. The social organization of active research in science is in "invisible colleges," each a cluster of networks of workers whose themes cohere around a subfield within any recognized major discipline. In actuality, as studies of invisible colleges show, reformulations, even minor ones, are matters of contention.

The main point is that no conceptual, that is to say cultural reformulation, can take place apart from some change and adjustment in social organization among those concerned, producers and critics and users. And a major reformulation requires a wholesale revamping or even replacement of an invisible college. This is no easy matter. A new paradigm usually turns out, upon examination, to be associated with a whole new invisible college (Kuhn 1970).

It is often argued that invisible colleges emerge because of the difficulty of building within a whole discipline a critical mass for and sympathy toward a new line of work. The devil here is the existing, possibly ossified Establishment ensconced within separate departments of the discipline around the country. Certainly no one department is large enough to mount work on the scale of an invisible college. But it is not at all clear that a department is a bad place for generating new ideas; indeed the crossing of sub-disciplines which departments afford would seem almost a precondition for innovation.

The hieratic layering imposed on departments at a given locale may offend and hurt, or exhilarate, but it has almost nothing to do with the bulk of research, which is not implicated across departments. The really extensive and possibly pernicious stratification is that of individuals by reputation cumulated from research networks of invisible colleges (cf. sociology of science cites earlier). What departments do is afford long life to invisible colleges by giving them multiple bases that become very hard to control, much less to change or abolish by any other authority.[19] All can still be well, of course, for innovation and reformulation if leading figures in the invisible college are pure of heart. In short, ideology reigns.

Hence change of style, which is also to say change of institution, is difficult. Such change comes only through messes and fights, and emerges out of chaos. In analytic terms, change can be construed as superposition of distinct styles, here of separate invisible colleges, which for a while overlap and interpenetrate around some new theme or topic. A genuine reformulation, we argue, will prove not to be encapsulable within either of the existing invisible colleges. The new formulation could take over, colonize one of them, the other breaking back off. But more commonly, we suspect from existing studies, the new formulation breaks apart from both antecedents (which thereby disengage) and sets up on its own.[20]

As an example, take the new biophysics after World War II. Or, more recently and close to home, take the emerging new invisible college of social studies of science, which descends from an unquiet and temporary merger of Mertonian and Garfinkel notions and disciples. The list of possibilities is endless.[21] But is this just a peculiarity of this particular modern Western enterprise, science? We argue: no. Exactly the same line of argument, with obvious changes in parameters of scale and wealth and timing, should apply for field investigators of the Indian village caste scene. In fact, details of castes do change much more than the stereotype allows for.

Within a village, a given caste changes only through influences that come in, via dowry and inheritance and notions, along networks of subcaste. More broadly and regionally, a caste makes itself known through the impact of various constituent subcastes, so that it is their changes, ironically, that count. These changes are not common and do not occur easily just because of the way subcastes interlock through village subunits. The record is that major change in subcaste comes through the same kind of merger and split we conjectured for science.

[19] Ironically, invisible colleges do provide a way, about the only way, to change local styles of departments, which tend toward an extraordinary degree of ossification when there are no active subdisciplines within to shake them up.

[20] A reader, Paul DiMaggio, comments: “Interesting…. What about centralized efforts to use universities rather then departments or networks to implement change by seeding subcaste members in many different departments. I'm thinking of the Ford Foundation's support for behavioral political science in the 1950s. It's relatively easy for a centralized agency to convince a university administration that they should take chair money for a new type of person; and because the subdisciplines are spread out, the cost to any department of admitting one new member of a previously unrepresented tribe is low, and easy for the university administration to leverage. Insofar as the networks control the central agency (e.g., NSF), this won't work, so it may be a special case.”

[21] And of course each would require sustained inquiry with careful definition and measurement.

Institutional transformations: rock and roll and the early Christian Church

We turn now to a second set of examples of institutional change, a set of examples that extend our previous comments to illuminate more fully the role of juxtaposed multiple styles in transforming existing institutional structures. Our argument here is more of a conjecture, but we suggest that a new institutional system requires an intermediate period of overlay and melding between two existing ones, with one or both of these possibly separating out again for subpopulations.[22] We test this conjecture in diverse cases. New institutional systems correspond to radical changes in style, to innovation, and we search for such innovations in style to test if the conjecture holds.[23]

More precisely, our conjecture is that major innovation in style can emerge only from the superposition, for a time, of two or more existing styles, with attendant institutions. The new style can result in any of several stances vis-à-vis the old styles. There may follow an untangling and rejection between the original two, along with the persistence of the novel style. It seems fair to characterize this in shorthand by the aphorism "styles mate to change" (White 1991).

Another institution, reminiscent of that implied in McAdams's study of civil rights mobilization, underlies the two remaining studies of style change. Catholic Christianity emerged out of encounters between pre-existing Judaic sects, baptismal and Pharisiac (cf. e.g., Dix 1947; Flusser 1988; Schoeps 1969). Doctrine, its existence and its change as a structure of values, is inextricably intertwined in each with its social networks and dimensions of ranks as formed among localities. We argue, as before, that such styles are so locked in that they can change only through turbulent overlay one upon another.

Turbulent overlays were exactly characteristic of the network of cities that constituted Asia Minor and the Syriac region for these sects. In modern terms we would refer to the people involved as lower middle class, often artisans, who had become strangers to peasant life and tribal contexts. For centuries there was a diaspora of what we today would call a religion among Hebrews across these cities. Associated on the fringes were God-fearing Gentiles, who did not fully partake of the behavior proscriptions and prescriptions or the orientation to a single central site in Jerusalem.

Consider this scene when several streams of the infant Christian movement were already established as styles. Their own separate emergences often are too obscure in the historical record to pursue further. For example, the basic facts of heresy and schism between "Gnostics," who were furthest from Judaic concepts, and "Christians" continue to be debated (e.g., Grant 1966; Robinson 1988).

Take the Ebionite Church as one stream. This use of the term Ebionite is anachronistic. The basic point of Schoeps (1969) is that the Ebionite Church of Transjordan and Arabia, as a fossil form of Jewish Christianity, held in suspension for several centuries a synthesis of styles different from what we call Christian—and then recruitment of new populations and social networks by Mohammed amidst a

[22] Abbott (1988) makes a similar argument about the genesis of new professional groups.

[23] Note that in this view fashion is part of style rather than innovation in style.

new turmoil of social mobility triggered a fully separate new style, the Moslem one. Ebionite is the definite form that came out of the traditionally Jewish strand led in the nascent Christian movement by James, brother of Jesus; its prolonged survival gives us confidence in its reality as a full-blown style, intertwining social and doctrinal value patterns.

Where in the world, literally and figuratively, socially and doctrinally, did Catholic Christianity come from? That is the question. Pauline Christianity is the mission movement already described as an illustration of the second institution. It was overlaid with and in conflict with the Ebionite movement. For some period the two, although discernibly separate, were thoroughly intermixed. Each was genuinely trying to convert and take over and merge with the other, which is the best evidence for intermixing.

The argument is that only such an interim period of intermixing could prompt a radical new style, which we call Catholic Christianity. While the Pauline movement exemplified the second institution, the Ebionite style was very much corporatist, of the first institution above, akin to caste and working science. Some argue that not just this Jewish (Ebionite) Christianity but Judaism itself, in the rabbinic form that we have come to take for granted, was triggered by and in part a reaction to the nascent Christian movements (e.g., Segal 1986). That is a parallel claim to ours about the generation of Catholicism out of that same stew.

The literature is, of course, immense on the distinctiveness and emergence of Christianity in the lineage today called Catholic. We focus on the specific social and organizational formations involved, one strand of the literature, and for just the first generations (see, e.g., Dix 1947). The argument for social and organizational embedding of doctrinal values is a common one. The more familiar variant of this argument is ontogenetic, following what we call a style through a long evolution and family tree. It is represented magnificently by Gottwald (1979).

Focus now on a single change, the emergence of a new style. The conjecture is that different styles (here in religion) must not only overlay but *subsequently must repel and blow apart* as part of the cause and signal of the new style.[24] No particular authority need be cited to convince you that the formations, old and new, remaining after the explosion that created the post-Pauline Church were antithetical one to another! We continue to live among new such turmoil.

The bishop is the key to the emerging Catholic style. The developed Church after the first century is beyond the scope of our middle-level analysis, far too layered and complex. But even in its early period the distinctiveness of the bishops is apparent.

The Pauline mission style permitted feedback between, on the one hand, pattern of network and ranking and, on the other hand, explicit value facets of holiness, of doctrine (as a cultural form). There could be a spiral of intensification leading to relapse and split. Such a style has trouble continuing indefinitely to reproduce its social formation. Such a formation invites attempts by organizational entrepreneurs to contrive further explicit social pattern, what we call formal organization.

Then in a church as now in modern politics, superposition of diverse local conflicts creates a fertile soil for growing issues. But "issues" are a cultural form not

[24] Formally, the argument takes the familiar philosophic form of the dialectic: synthesis emerging from thesis and antithesis.

existent until there is shift from the mission form proper. The overlay of mission form with the Ebionite strand of church, overlay in part in persons and networks as well as doctrine, was requisite to appearance of what we would recognize as issues. This cognitive situation once created can lead to unraveling in one or more of the overlaid styles.

A rule of thumb for splits can be suggested. Heresies, where there is a serious divergence of explicit doctrine, of the structure of values, engender new organizational devices. And indeed the list of early Christian heresies—Gnosticism (Grant 1966), Arianism (Newman 1876), Priscillianism, etc.—is also a list of successive new organizational devices installed, from apostolic succession and bishoprics on through the first Council of the whole church. Schism, on the other hand, comes from *agreement* on values. When doctrinal disagreement is sufficiently reduced, ethnic and political control and agency attempts may coalesce in such a way as to blow the social formation into separate fragments. This is the clear pattern in the early Church and continues through the Donatist schism (Frend 1952; Willis 1950) down through the last great schism, between Orthodox and Roman (Meyendorff 1966).

The bishop at first was merely what we call today the priest, but this was already a revolution in the Pauline formation. In the latter, sacerdotal authority was with the traveling apostle, not in the locally-rooted authority. The bishop–priest's combination of the two authorities supplies the key in helping to contain, as well as generate, doctrinal disagreement and confusion. The bishop could define purity, holiness, and yet he was rooted. Two fixed points of the emerging Church doctrine were one bishop for one city, and anathema on the translation of a bishop from one city to another.

That completes the sketch of one example supportive of the main conjecture, with respect to an institution different from the previous (caste/science) institution. At least one more example, as different as possible, will help separate the conjecture from particular context. We now pick a modern example, one where establishing simple facts is no longer like pulling teeth.

White pop and black pop into rock'n roll

Styles and their institutions emerge in all contexts, from the most secular to the most sacred. Every new Kuhnian paradigm in a science comes in accompanied with a new institution, that is, a repackaging of values together with a realignment of networks of work and cooperation into a new invisible college. Rock and roll music, hereafter Rock'n Roll, is a style, in that it is a package of values with a profile of performances in an accompanying social world, but with an institutional form more akin to that of a missionary church rather than academic science. Rock'n Roll music came in as a lyrical, rhythmical, and organizational vehicle for a fresh package of values infiltrating an emerging network population, the pre-teens, which was becoming newly recognized as a corporate entity for commercial purpose (Ennis 1990). Rock'n Roll emerged as a full innovation in style.

The appearance of Rock'n Roll as an innovation in style paired with a new package of values and accompanying social formation across all the participant roles

is a recent and clear example of our conjecture. In the account by Ennis (1990), around 1950 there were six pre-existing streams of popular music, each with its own base of audience, producers, performers, and disseminators, with some overlaps.[25] Three streams were for black Americans: black popular, Gospel, and Blues/jazz. They had distinguishable but intertwined and supportive performance and audience and creator networks. Not just their listeners were segregated from their counterparts in the other cluster of three streams, but also their radio stations, recording companies, agents, critics, playing clubs, and performers. Call these three the Black cluster (analogous to the Pauline missionary institution described above). The other cluster (analogous to the Ebionite Church) was the white people's music. This too had three streams—mainstream disc-jockey,[26] Country and Western, and Folk.

In the early 1950s, quite suddenly, a few songs and music pieces in one cluster began to attract attention in the other. White borrowed Black. The values as well as the music, the lyrics of one genre as well as the tunes, for a bit obtained a foothold in the other cluster's social networks of attention and appreciation. At first a song crossed over only after being "arranged" and re-sung according to conventions and by performers familiar to the other cluster. But even in the first period the original performance and recording earned a place, even a place on (the bottom of) the "hit" chart of the other stream.

The real causal nexus, Ennis claims, was differential attention to the crossovers by outlets that were relatively marginal and localized within its home stream. Outlets and networks in Memphis, Tennessee, happened to be prominent enough on the black as well as white sides to be catalytic in the overlay. The main key were those radio stations that were small in the national picture but plugged into regional networks of playing clubs and also into networks of smaller record companies. A crucial catalytic role was played by the disc jockeys, whose interest was in the development of distinctive new combinations.[27] One might draw an analogy to the role of bishops above. But, as in the church case, the changing nature of audiences was as important as select leaders.

A particular performer, Elvis Presley, became the seed for the hailstorm that was the truly new style that was to come out of the temporary overlay of white and black styles. He was the seed not simply because of his musical talent but because of his audience. Presley specialized in a hitherto unattended-to fringe, the pre-teens, present alongside each of the initial six streams, but generally disdained.

No single theme in the Presley message was different from ones in the mainstreams, but Presley's combination of themes was very different. Moreover, it was explicitly tagged as different and as tied to a particular population, the pre-teens.[28] The commercial potential had been recognized by clever agents since the pre-teen mob scenes around the young Frank Sinatra. What was required to realize potential was not a single gimmick, but a re-tuning and a re-growing of social and

[25] For a systematic parsing of production systems of art, see Becker (1982).

[26] Until the late1940s, Tin Pan Alley had monopolized this stream

[27] Until Tin Pan Alley got the jockeys' independence suppressed through manipulation of Congressional investigating committees and through abusive use of delays in a Federal court case: the complex story of the rise and fall of disc-jockeys is also told by Ennis (1990).

[28] In Rock'n Roll a main point is not to deviate from your pre-teen kin, to hold onto the common style whose detailed balance among values may gyrate blatantly over time, at least as seen through adult critics' eyes.

performance networks. There soon followed renewal of a rejection between the six pre-existing streams (styles). There was no enlargement of the canon; instead a retreat. But out of the overlay had come this new style for a new audience.

An unfailing indicator of the newness of a style is its rejection by established critics. For Rock'n Roll, as it began to get established and make inroads, there was a veritable frenzy of critical attack. Rarely has there been such a universal shower of opprobrium, presumably because of the peculiarly segregated—yet related—status of the pre-teens in the general population. There was a resonating crescendo of denunciation of the new style as being perverse in content and inane in form. Later, much later, a Leonard Bernstein will rhapsodize about the creative aspects of the new music (in the Beatles).

Discussion

We began by arguing that a new style of institutional analysis is emergent and pointed to a number of recent projects in which scholars have brought to bear the formal modeling technologies of social network analysts and deployed them to analyze the broader logics of social institutions. We have suggested that this work draws upon two central methodological/theoretical principles—relationality and duality. Relationality posits that social existences (and thus institutions) are made up of systems of interlocking relational networks (both social and cultural) and that these constitute the content of what happens in a given institutional space. Duality provides the means for modeling component institutional systems across different orders of social existence. In this respect the duality between agency and structure (as formulated here in our discussion of the duality of styles and institutions), culture and practice (or networks and rhetoric) and the more micro, more meso, and more macro orders of social organization (here, local communities such as departments or villages and broader interlinked social orders such as societies or professional communities) are argued to be essential to any efforts to model social institutions. We went on to suggest that this analytic framework would be useful in allowing us to evaluate specific empirical examples and in particular we proposed that the more a given institution expressed these characteristics, the more institutionalized (and hence more resistant to change) that it would be.

We then proceeded to illustrate these principles through an examination of case studies. Our suggestion about the nature of institutional stability was illustrated through our discussions of castes and academic disciplines. Our main contention has been that institutional systems stitch the concrete together with the abstract, the cultural with the social, value networks with social networks, styles of action of individual agents with disembodied structures of institutional fields (Swidler 1986; Fuchs 2001). Such weaving across social and cultural duals occurs only with difficulty and infrequently, but once accomplished they effectively resist change. Indeed, we have argued that more robust institutional forms, those that are particularly enduring and resistant to change, are identifiable by the degree to which structural dualities link complementary institutional subsystems together into tightly articulated relational wholes, quite the opposite of the view of Niklas Luhmann (Fuchs 2001). The more tightly a system of values is dually ordered with a

system of social relations, the more a local system of social organization is articulated into an extra-local system of social organization, the more an individual's style complements and is structured by the broader institutional system, the more resistant to change that institutional system will be.

We also addressed the question of how change occurs within established institutional systems. The question is important since it reflects something of a counter-example to our main contention. And so we asked how it is that scientific change occurs within the context of what is an otherwise highly institutionalized system of social organization. Our observation here was that the tightly integrated duality of social and cultural forms would imply that significant changes in knowledge would in fact require significant changes in social organization, a contention we illustrated with discussions of new scientific sub-disciplines. To explore this conjecture further we then shifted our focus to a different institutional form and to two different case studies, the rise of the Christian church and the emergence of Rock'n Roll.

Change in these types of systems is difficult because the values mapped in an institution cumulate and interlock in meaning. Change is difficult, as well, because these interpretations are buttressed and manifested in coordinate social arrangements. And change is difficult, third, because there are few institutional templates. The dual arrangement in an institutional system does not survive constant efforts at fresh control and manipulation from participants except for a few templates. Put another way, change in values requires change in style and thus in style's social fitting. We have suggested that only another style, laid down on the same population, can provide resonance and protection for such new arrangements and shifts in value packages of style.

In closing, we want to draw attention to three lacunae in the current formulation, issues that are critical to advancing a coherent project for modeling institutions. As before, they can be ordered around the theoretical domains defined by problems of agency, level, and meaning. The first of these might be described as an inherent limitation of institutions as an analytic focus. Giddens (1979) describes this well when he notes that institutional analysis has to be distinguished from what he calls the analysis of strategic conduct. By Giddens's account these represent:

> …. two principal ways in which the study of system properties may be approached in the social sciences: each of which is separated out, however, only by a methodological *epoché*. To examine the constitution of social systems as strategic conduct is to study the mode in which actors draw upon structural elements—rules and resources—in their social relations. 'Structure' here appears as actors' mobilization of discursive and practical consciousness in social encounters. Institutional analysis, on the other hand, places an *epoché* upon strategic conduct, treating rules and resources as chronically reproduced features of social systems. It is quite essential to see that this is only a methodological bracketing: these are not two sides of a dualism; they express a duality, the duality of structure.

Our goal in this article is to sketch out some key abstract principles of institutional analysis. But in highlighting institutions in this fashion we have slighted what is perhaps the far more important question of how agency, and especially collective

agency, influences the ways in which these structural relations are constituted. In the new edition of *Identity and Control* (White 2008) the concept of institutions is largely supplanted by the concept of control regimes. This is not to say that institutions do not exist, clearly they do. But rather, their operative features can be more fully conceptualized when they are located within a recognition that the patterning processes described throughout this article emerge out of the actions of situated agents who operate across these social organizational sites in a series of successive (semi) coordinated actions. One might say that what we describe in this article as institutions are true enough, but only in an abstracted sense of an already constituted set of social arrangements, and that the lived experience of individual agents who maneuver across this social terrain do so in conjunction with others who are constantly in the process of exerting or seeking to exert control. Thus, in practice, a given institution only comes into being, becomes reified and later de-reified through the actions of agents who seek control. Our discussion of institutions in this article, in this sense, reflects precisely the sort of *epoché* that Giddens describes. We describe an approach to thinking about institutions, but in doing so we hold up to the light only one side of the duality of structure and agency, or in our terms, the duality of style and institutions.

The second issue reflects another kind of *epoché*. We focus here on particular institutions as if they were discrete and independent from one another. In fact, of course, institutions are just as complexly interwoven and dually articulated, one to another, as are the institutional sub-systems that we have emphasized here. Individual agents rarely operate (at least for very long) in discrete institutional sites. Instead, agentic experience is characterized by a constant switching back and forth across a complex tapestry of institutional contexts. Moreover it is precisely the contrasts generated by these crossings that make self-recognition possible (as a meta-self that is distinct from any particular institutionally defined role) as well as an interpretive perspectivity, a kind of agentic traction, which is key resource for social interactions in any specific netdom. This multiplexity and over-determination of logics is as true for institutions as it is for agents. Friedland and Alford describe these interpenetrations as institutional contradictions and they see them as central to the very character of institutional existence in modern societies. "Some of the most important struggles between groups, organizations, and classes are over the appropriate relationships between institutions, and by which institutional logic different activities should be regulated and to which categories of persons they apply. Is access to housing and health to be regulated by the market or by the state? Are families, churches, or states to control education? Should reproduction be regulated by state, family, or church? … Do the rights of citizenship apply to the economy or do those of the market apply to the state? Can money be used to acquire grace or expiate wrongdoing?" (1991, p. 256). According to Friedland and Alford it is the politics of institutional contradiction that generates institutional change. In our terms, institutional contradictions facilitate the overlapping of styles which promotes institutional change. In short, it is not enough to attend to articulations that link levels within a specific institution, we also need to consider the structural dualities that join one institution to another, both within and across level.

Finally, though we have emphasized the duality of the symbolic and the material, in practice we stand upon a long tradition of structural analysis that has privileged

the interactive over the interpretative. We know a great deal about how social networks are organized and what those organizations mean. We know quite a bit less about how stories are structured and how those structures matter. As we indicated at the start, many more social scientists are using network tools to map out meanings and to model dualities that link systems of understanding to systems of interaction, but this work still has a long way to go. Of course this is a limitation that reflects the bias of a particular intellectual style. The very opposite is true of the humanities, where there is a long hermeneutic heritage that has produced sophisticated technologies for the analysis of rhetoric, narrative, and discourse that is often projected onto overly simplistic mappings of social structure (Friedland and Mohr 2004). If there is a lesson in all of this, it is probably that duality is easier said than done, and institutions are easier to imagine than they are to model. Our goal in this article is to lay out some of the core principles that will help facilitate a more effective practice for modeling institutions.

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