

Institutional conditions for diffusion

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Much social scientific inquiry seeks to specify the conditions and mechanisms underpinning the flow of social practices among actors within some larger system. Sociology, rural sociology, anthropology, geography, economics, and communication studies all have rich traditions of diffusion research.¹ Virtually everything seems to diffuse: rumors, prescription practices, boiled drinking water, totems, hybrid corn, job classification systems, organizational structures, church attendance, national sovereignty. Whether viewed as a hindrance to structural-functional analysis,² the deposited trace of social structure,³ or a fundamental source of social control and change,⁴ diffusion seems critical to social analysis.

Most sociological analysis treats diffusion as a primarily, or even exclusively, relational phenomenon. When diffusing practices and adopter identities are rich in social and cultural meaning, however, connectedness seems an insufficient explanatory principle. Our aim is to suggest how institutional conditions operating in wider social systems affect the rate and form of diffusion. We argue that diffusion is importantly shaped and accelerated by culturally analyzed similarities among actors, and by theorized accounts of actors and practices. These institutional conditions are argued to be especially rife in "modern" social systems, and help to account for the intimate connections between social-scientific interest in diffusion and its empirical prevalence.

Prevailing theory and its weaknesses

Diffusion connotes the socially mediated spread of some practice within a population. In Rogers's widely cited definition, diffusion occurs when "an innovation is communicated through certain channels

over time among the members of a social system.”⁵ This quite general formulation includes communication and influence processes operating both on and within populations of adopters.⁶ It excludes atomistic decision-making processes where actor choices are uninformed by the activities or choices of others.

The aspect of diffusion that most intrigues sociologists is the opportunity it offers for a network analysis. Considerable attention has been paid to mapping lines of effective communication and influence within populations, particularly via direct contacts between prior and potential adopters.⁷ Such point-to-point diffusion processes resonate with the “sociological realism” dominating contemporary sociological analysis. In such accounts, social entities (often seen as purposive, rational “actors”) and their network relations are understood as jointly providing a sufficient basis for the explanation of social behavior.

Relational models suggest that rates of diffusion should vary with levels of interaction between prior and potential adopters. When the adopted practice is socially meaningless (for example, in the spread of measles), physical proximity may be all that is required for transmission to occur. When adoption is socially meaningful, it is common to think of actors as making different choices cognitively available to each other, developing shared understandings, and exploring the consequences of innovation through each other’s experience.

Exchange dependence is generally thought to increase further the flows of elements. Narrowly, common conventions or protocols are needed or advantageous at the boundaries where exchange occurs. Handshaking arrangements aid in interpersonal (and electronic) exchange, and common accounting systems in inter-organizational exchange. Businesses benefit when they buy the kinds of keyboards secretaries are familiar with, and typewriting schools benefit when they train secretaries to use the kinds of keyboards businesses own.⁸ More broadly, similarities in internal structure may arise from transactions. The flow from secondary to tertiary education promotes common definitions of students, subjects, and grading, and the values arising from the exchange may homogenize internal structures too.

Theories of diffusion emphasize the rationalities involved. This occurs in part through attention to the characteristics of practices that spread widely. A core idea is that practices are adopted to the extent that they appear more effective or efficient than the alternatives. Further ideas

elaborate on conditions that facilitate rational choice: consistency with prior attributes or policies, the simplicity of the novel practice, opportunities for experimentation, and so on.⁹

In addition, diffusion itself is often described as a rational process. Learning from the experiences of others appears a sensible and even optimal strategy where means-ends relationships are not well understood or defy calculation.¹⁰ Where the actions of others objectively change costs and benefits (as when the fact that others routinely drive on the right side of the road increases the benefits of doing so), diffusion is again rational.¹¹ And in a more phenomenological vein, the process underlying diffusion can be seen as an inherently sense-making one, where actors jointly construct an understanding of the appropriateness and worth of some practice.

Sociological realism, with its focus on actors and relationships, has generated much useful diffusion research. Coleman, Katz, and Menzel’s work on the prescription of an antibiotic is a classic in this tradition.¹² Coleman and his colleagues demonstrated the relational basis of diffusion by noting that temporal patterns of adoption differed for socially integrated and socially isolated doctors. An S-shaped curve of adoptions among socially integrated doctors suggested a contagion process, where physicians learned about and adopted the drug through interaction with prior adopters. By contrast, socially isolated physicians adopted the drug at a constant rate, suggesting dependence on sources of information outside the adopting population.

Much continuing work seeks to specify further the relational basis of diffusion. A number of analyses treat diffusion as a spatial process, where the probability of transmission is some function of geographical distance.¹³ Others have used diffusion processes to examine social structure, generally conceived as a network of social relations.¹⁴ Relational analyses have become increasingly sophisticated: for example, Burt’s reanalysis of the Coleman et al. data argues that structurally equivalent actors – individuals whose relations to all others are similar – influence each other more than do directly connected actors.

Despite the vigor of these lines of research, problems remain. Empirically, many systems witness rapid and unstructured diffusion unpredicted by the above considerations. For example, the modern world system has been observed to exhibit remarkable homogeneity in organizational structures and ideologies. Ikenberry notes a few of the

policies that have diffused internationally – nineteenth-century free-trade policy, social Darwinism, Keynesian economic planning, liberal multilateralism, and privatization.¹⁵ Institutions like mass education and social security have spread rapidly among states, and even national sovereignty diffused among colonial dependencies.¹⁶ Yet levels of international interaction and interdependence are not self-evidently high, relative to national or local settings.

Similar patterns obtain in the American polity. Flows of educational practices among American states are rapid, despite a weak federal role and little obvious interdependence. Most prominently, despite the diversity, size, and lack of centralization of American society, commentators have for two centuries noted the homogeneity in character of American individuals and organization. De Toqueville, as we note further, had useful ideas to add to sociological realism.

The theoretical problem is that relational models underspecify the variety of effects that may be induced by interaction and interdependence. Granted, interaction can increase solidarity and similarity; it can also increase conflict and boundary formation. And while exchange can create some small boundary isomorphisms (e.g., trading roles and languages), it can also generate cultural divisions of labor of great stability.¹⁷ Where asocial processes, such as the spread of infectious disease are concerned, relational models are more than adequate. But where diffusion involves the social construction of identity, whether and when intensified relations promote homogeneity rather than differentiation seems unclear.

We need, at minimum, to formulate the wider conditions under which expanded social relationships lead to rapid diffusion. In doing so, we call attention to a class of quite distinct factors that act to increase and redirect the flow of social material.

Cultural linkages

We begin with the observation that linkages may be cultural as well as relational. That is, the cultural understanding that social entities belong to a common social category constructs a tie between them. Such ties, while easily represented in graph theoretic terms, invoke a different substantive imagery from that of direct relations like friendship and exchange.¹⁸ We argue that where actors are seen as falling into the same category, diffusion should be rapid.

Such effects may operate via perceptions built into the actors involved. The individual or organization's cognitive map identifies reference groups that bound social comparison processes. Rational mimicking requires prior and potential adopters be understood as fundamentally similar, at least with respect to the practice at issue. Perceptions of similarity may enhance rates of diffusion for additional reasons, as actors find themselves enmeshed in competitive emulation.

Categories are also defined and institutionalized at levels above that of the actor's perceptions, producing structural conditions that accelerate diffusion. This is the thrust of DiMaggio and Powell's discussion of institutional isomorphism.¹⁹ DiMaggio and Powell forcefully point to the homogenizing effects of coercive pressures from the state or dominant organizations within the field, imitation among organizations unable to calculate individually optimal strategies, and linkages to standardized and recalcitrant professions.

For example, rapid diffusion within the world system seems linked to the homogeneous cultural construction of contemporary nation-states. States subscribe to remarkably similar purposes – economic growth, social equality, the political and human rights of the individual.²⁰ States are also understood as possessing identical legal standing as sovereign, despite extreme disparities in military and economic capacity. And while these cultural definitions can be and are violated, they provide fertile ground for the rapid diffusion of public policies and institutional structures. Consider how much diffusion would be slowed if nation-states were wholly primordial, or if they occupied formally differentiated positions within a hierarchical global political structure.

In the same way, institutionalized conceptions of formal organization produce rapid diffusion. Standardized categories make it plausible for organizational analysts to provide recipes for successful management and motivate public authorities to dictate or provide incentives for approved forms. As these models gain a taken-for-granted or rulelike status, it becomes advantageous for organizations to comply in at least symbolic ways.²¹

Social-scientific researchers are of course part of the cultural system in question, and they share common understandings about the nature of the actors they study. Assumptions of similarity are thus built into almost all diffusion research. Where researchers study diffusion – that is, where they assume actors are not only connected but also ultimately

similar – flows between actors are, by our argument, more likely to occur.

The construction of cultural categories expands interaction among their members. Organizations systematically monitor their competitors or fellows, or are influenced by independent monitoring efforts. American states communicate through participation in the Council of State Governments; the United Nations and its specialized agencies play similar roles within the international system. Such forums serve as more than opportunities for communication, however; they are designed specifically to promote the homogenization of their members around models of progressive policy. For example, Strang and Chang argue that the International Labour Organisation has successfully promoted the expansion and modernization of social security programs, especially among the welfare laggards of the industrialized world.²²

Despite these forms of sponsored interaction, cultural linkages generally outstrip direct relations. The pervasiveness of similarity in modern systems means that diffusion is often less structured by interaction and interdependence than expected. Practices diffuse along the lines of social relations, but also to other actors broadly considered similar. American educational researchers, for instance, are often quite depressed about the likelihood that progressive reforms will diffuse from central nodes, but at the same time they are overwhelmed by the overall faddishness of the systems they study.²³

Theorization

Diffusion within cultural categories is accelerated and redirected by their *theorization*. By theorization we mean the self-conscious development and specification of abstract categories and the formulation of patterned relationships such as chains of cause and effect. Without general models, cultural categories are less likely to arise and gain force. And without such models, the real diversity of social life is likely to seem as meaningful as are parallelisms. Both points are central to the work of Mead, who stressed both the constitutive importance of the generalized other and the social control significance of the wider community's model of the internal structure of the "self."²⁴

Thus, the theorization of childrearing practices around elaboration models of the social and intellectual development of the individual

enhances the diffusion of these practices. The theorization of organizational control and communication processes expands the diffusion of associated reforms (novel budgeting and accounting practices, leadership training, matrix organizational forms). The theorization of environmental issues, or of educational structures, or of welfare policies speeds policy diffusion across national states. Marxist theorizations of world-history hasten the diffusion of socialist revolution (to unanticipated sites, a common outcome where theories are really compelling).

Theoretical formulations range from simple concepts and typologies to highly abstract, complex, and rich models. We make two general arguments. First, diffusion becomes more rapid and more universal as cultural categories are informed by theories at higher levels of complexity and abstraction. For example, the elaborate theorization of the individual, or the formal organization, or the national society should produce rapid diffusion (in contrast to relatively slow diffusion among "natural," untheorized entities such as the family or religious communities).

Second, theorization renders diffusion less structured by social relations and differences across adopters. General models facilitate meaningful communication and influence between weakly related actors, and between theorists and adopters. Diffusion may still require direct contact,²⁵ but in more modest amounts. Standard organizational forms spread widely, and into contexts where the technical need for formalization seems absent.²⁶

Theorizing is a strategy for making sense of the world. As such, it is employed in individual-specific ways by the potential adopters themselves. Further, interaction between potential adopters may construct shared theories of the world, the nature of the interacting pair, and the mutual relevance of different practices.

These forms of "bottom up" theorizing should impact diffusion, but in rather local ways. Individual-specific theories affect the individual's adoption patterns, but not those of other adopters. Shared understandings generated by an interacting pair may homogenize the actors involved, but not larger populations. Ideas about adopter-level theorizing thus provide a mechanism motivating arguments about the individual rationality of adoption or the effects of network relations.

Rather than stressing ubiquitous theorizing by potential adopters, we emphasize globally available models imported into local situations or used to inform the construction of new social arrangements.²⁷ More global theorizations are able to induce much broader diffusion processes, since their effects do not vary across sites or adopters. And they tend to be more distinctive (and thus observable) than individual theorizing, providing the basis for explanatory accounts that can complement or counter relational arguments and notions of individual utility maximization.

This focus leads to an emphasis on culturally legitimated theorists: scientists (including popular analysts disesteemed within the academic community), intellectuals, policy analysts, and professionals. The relevant groupings vary across national societies: in the United States academic researchers and professionals seem most central, while in most European societies more broadly construed and less institutionally defined intellectual communities may occupy a dominant position. These groups produce especially complex and highly integrated models. They are also free of pressing needs to apply their theories to concrete problems, which increases not only foolishness but also abstraction.

We do not suggest that the mere appearance of a general model within an intellectual community induces diffusion. In fact, it seems clear that diffusion is halting where practices are identified solely with the specialized theorist. For example, Cole contrasts the rapid diffusion of quality circles in Japan and Sweden with slow adoption in the United States.²⁸ He argues that quality circles were embraced in Japan by centrally placed corporations as a strategy for expanding productivity, and by organized labor in Sweden as a means of instilling workforce democracy. But in the United States, the main supporters of quality circles were politically and organizationally isolated foundations, management consultants, and academic analysts.

This kind of finding is probably quite general. But we would argue that the effects of theoretical models cannot be divorced from consideration of how compelling these models are to relevant audiences. Thus the small-group logic informing quality circles may have more strongly resonated with Japanese understandings of how human beings interact and work together than with the psychologically bounded, rationalized understandings of the individual that dominate American academic and commonsense theorizing. One might expect theoretically

articulated models of human motivation stressing individual properties would provide a more persuasive basis for innovations in the United States (helping to produce widespread counseling for the victims of job "burnout," psychological profiling, and aptitude testing).

The diffusion-generating power of theoretical models thus varies with the extent to which they are institutionalized – built into standard and authoritative, rather than highly specialized and marginal, interpretations and schemas. One reason for emphasizing the sciences and professions is that these communities are relatively central, prestigious, influential, and so not only construct models but are able to promote them vigorously.²⁹ But diffusion obviously requires support from other kinds of actors as well: state authorities, large corporate actors, grassroots activists. In some way, models must make the transition from theoretical formulation to social movement to institutional imperative.

As a model is institutionalized, it is codified in organizational routines, while the theorist or her disciples become self-interested reformers or nascent professionals or agents of the state. Analyses may then treat diffusion not as grounded in theorization but as driven by organizational routines and promoted by self-interested actors. We would instead emphasize the continuing role of a compelling logic in permitting such movements to gain support, and in defusing self-interested opposition.

Below we discuss ways in which theorization enters into diffusion processes: in accounts of adopters, in accounts of practices, and in diffusion mechanisms. We note expected consequences of theorization for observable features of diffusion patterns.

The theorization of adopters

Theorizing identifies and interprets regularities in ways that define populations within which diffusion is imaginable and sensible. This occurs when theoretical accounts identify forms of similarity within culturally recognized categories: for example, when psychological discoveries of the need for children to engage in creative play supports movement toward unstructured kindergarten curricula. It also occurs when theoretical accounts define and popularize new categories of actors: for example, when psychologists define dyslexia and by implication dyslexics, promoting the diffusion of new reading technologies.

All theorizations propose homogeneities within the populations or categories they analyze, because all models simplify the real diversity of social life. This is of course true for typological efforts, which explicitly aim at identifying categories and making salient what characteristics they share. But it is also true for explanatory models, which theorize parallelisms in structure and behavior across classes of actors or systems. It is even true of elaborate conceptual models intended to sensitize observers to sources of variation. Armed with Weber's depiction of bureaucracy, for example, observers have identified many "superficially" distinctive organizations as having much in common.

But only the most empty typological exercise simply clarifies bases on which social units can be grouped. Theories actively motivate certain groupings as meaningful and consequential. Theories are often precisely about the way similar systems respond in consistent ways to environmental inputs, and to modifications in structure and operations. Theories thus predict that similar practices can be adopted by all members of a theoretically defined population, with similar effects. They advise masses of individuals to adopt standard therapies; organizations to adopt stylized management schemes; and practically all nation-states to adopt standard schemes to promote economic growth.

The point is made nicely in William Ouchi's *Theory Z*, a discussion of the features of Japanese management styles that might be more widely adopted by American corporations. Ouchi writes,

To a specialist in the Japanese society and culture, the differences between Japan and the United States are so great that a borrowing of social organization between them seems impossible. To a student of business organization, however, the underlying similarity in tasks between Japanese and American business suggests that some form of the essential characteristics of Japanese companies must be transferable. The objective became to separate the culturally specific principles from those universally applicable to economic organizations.³⁰

Note that here a research tradition treating organizations as arrangements for accomplishing complex tasks explains why diffusion is sensible within the population "economic organizations," rather than within but not between the two populations "Japanese organizations" and "American organizations."

Actors theorized as equivalent may differ substantially along a variety of untheorized dimensions. In such cases, social rules and practices are

likely to flow in ways often decried as unrealistic or maladaptive. In American society, even individuals of extremely marginal status often acquire the standard stances and aspirations of citizenship. And organizations such as schools adopt standard forms despite wide variation in resources and constituencies.³¹ A striking feature of many social systems penetrated by theorization is ritualized isomorphism.

The theorization of diffusing practices

Just as the theorization of adopters defines populations within which diffusion can occur, the theorization of innovative practices expands their diffusion potential. Theoretical accounts of practices simplify and abstract their properties and specify and explain the outcomes they produce. Such accounts make it easier to perceive and communicate about the practice. And while sometimes theoretical investigation documents the flaws and unwanted side effects of an innovation, more often theorization documents the many virtues involved, in terms of standardized notions of efficiency or justice or progress.

For example, much educational research is devoted to identifying administrative, curricular, and pedagogic reforms, demonstrating their effectiveness, and specifying them in generalizable and transferable ways. Much operations research is devoted to the specification of optimal decision-making procedures for complex problems. Much medical research is devoted to locating and advocating therapeutic techniques and developing these in ways that facilitate their diffusion.³²

The theorization of the adopting population and that of the diffusing practice could have separate, additive effects. But in fact, the two are often theorized jointly. This has the powerful effect of matching the adopter to the practice, and the practice to the adopter.

Such a theory of a social form (such as an "organization") emphasizes certain features as central and relevant, while treating others as variable, or unnecessary, or derivative. Practices related to theoretically emphasized and articulated activities become privileged candidates for diffusion. And a theory of a practice typically specifies conditions necessary for its effective operation.

To illustrate, consider the interplay of organizations and theories about organizations. A tradition of research³³ and professional practice (in

accounting and managerial science) conceptualizes organizations as information processing systems. Many proposals for organizational structure and practice are inspired by this theorization. Strategic planning schemes, information gathering and processing technologies, budgeting and goal-setting routines, and organizational structures designed to combat bounded rationality flow rapidly.

On the other hand, theories conceptualizing organizations as groups engaged in cooperative interdependent action privilege alternative kinds of flows. Small armies of human relations and resources consultants, industrial psychologists, and personnel specialists suggest organizational reforms. Job enlargement, job rotation, suggestion boxes, and management training diffuse.

Theorization as a diffusion mechanism

Finally, theorization enters not only through the social construction of the adopter and the practice, but as a diffusion mechanism. Most concretely, theorists may become central conduits of diffusion. For example, members of the Harvard economics department were active in bringing Keynesian fiscal policy to Washington, and American economists helped spread Keynesian policies through much of the post-War world.³⁴

These efforts lead diffusion to flow along the lines of relations linking theorists, rather than along the lines of relations linking adopters. Hirschman thus notes that West Germany and Japan did not adopt Keynesian policies in the post-war era, even though American occupation made for very high levels of interaction with and dependence on the United States.³⁵ He explains that military officers and corporate managers dominated American delegations to Germany and Japan, while economists played more central roles in delegations to countries where the American presence was less massive.

Generally, knowledge of the relational structure, orientation, and influence of relevant theorists seems useful in mapping diffusion. We should emphasize, however, that the main consequence of theorizing an activity is not simply to add a new set of relational structures channelling diffusion. Theorists have little impact when their analysis is unpersuasive. And compelling theoretical arguments may diffuse very rapidly themselves, attenuating point-to-point diffusion. The very aim

and character of theories means that they are less tied to concrete actors than are the practices they describe. Where potential adopters internally reproduce and act on the basis of the theoretical model, we might describe theorization itself as the diffusion mechanism.

Consequences of theorization for diffusion

We have argued throughout that cultural linkages, and particularly those informed by compelling models of behavior, should accelerate the pace of diffusion within the populations they describe. Theorization should affect the content and form of diffusion as well.

If theorization shapes diffusion, what flows is not a copy of some practice existing elsewhere. When theorists are the carriers of the practice or theorization itself is the diffusion mechanism, it is the theoretical model that is likely to flow. Such models are neither complete nor unbiased depictions of existing practices. Instead, actual practices are interpreted as partial, flawed, or corrupt implementations of theorized ones.

For example, the peculiar organization of American education (the absence of unified national authority, considerable local autonomy, and the P.T.A.) is less copied around the world than are abstract models of a liberal, expanded, and unified curriculum. Individuals take on abstracted models of the theorized individual (in forming standard opinions and ideas about political efficacy) as much as concrete properties individually observed.³⁶ New nation-states adopt organizational forms built up and legitimated as models in the United Nations and its specialized agencies.³⁷ They embellish existing models rather than mimic extant forms, so that over time more and more individual rights and state powers are written into national constitutions.³⁸

Theorized diffusion is also likely to be relatively unconstrained by relational structures. Theorization provides a substitute for close, inductive examination of the experiences of others. It facilitates communication between strangers by providing a language that does not presume directly shared experience. It provides rationales for adoption that run counter to simple interaction-based processes like direct mimicry and superstitious learning (where adopted practices are temporally rather than causally linked to desired outcomes).³⁹

At an arelational extreme, theorization helps innovation masquerade as diffusion. It is a common theoretical gambit to claim that the elements proposed for diffusion are actually found somewhere. Contemporary organizational innovators in the United States may strategically present their ideas as standard practice in Japan, while in previous decades the United States was the supposed source of many organizational innovations. Proposals for social reform often claim to be built on the Swedish model, while theorists have seen the future work in the Soviet Union, Cuba, China, and even Nicaragua. In all these cases we often have not so much faithful copying as theoretically mediated diffusion or disguised innovation.

Finally, we note the complex relationship between theorization and rationality. Theorization specifies why the potential adopter should attend to the behavior of one population and not some other, what effects the practice will have, and why the practice is particularly applicable or needed given the adopter. All this permits the actor to see through the confusing evidence of others' mixed successes and detect the "true" factors at work. In short, theorization may be regarded as turning diffusion into rational choice.

However, theorization as described here will produce patterns of behavior quite different from those generally flowing from rational decision-making at the individual (adopter) level. As we have emphasized throughout, global theorization defocuses individual variability, assuming equivalences that are perceptibly inaccurate given local information. Behavior using such models as scripts will produce much more homogeneous action than would decisions generated from personal information. And global theorization diminishes the perceived relevance of local examples of success, exorcising "superstition" but diminishing the rationality of diffusion from a naive perspective. The unpersuaded observer will see in theorized diffusion only ritualized isomorphism.

Modernity and diffusion

By the above logic, diffusion should be most rapid where theorization is central to the construction of both units and specific elements, where partial theorizations articulate with each other, and where a network of congruent theories forms a hegemonic cultural frame. The outstanding instance of this in the contemporary world is modernity itself. A core

substantive point in our argument is thus that the more social entities are constructed and legitimated as modern entities (and particularly as modern "actors"), the more social materials flow among them.

A specification of the conventional meanings of "modernity" makes the logic of this situation clearer. Modernity connotes the organization of society and the nation-state around universalized notions of progress and justice, as built up of rationalized organizations and associations, and as composed of autonomous, rational, and purposive individual citizens. And it implies the integrated functioning of these elements so that collective goods are enhanced by individual and organizational progress and contribute to such progress.

Analyses from a modern point of view can call attention to dissimilarities across local contexts, and hence to differing strategies appropriate to each. But in a more basic sense such analyses are a powerful force for homogenization. Modern theories advocate a more universalistic moral order, a more scientific and standardized analysis of nature and means-ends relationships, and a more ahistorical view of human nature and human society. The construction of actors around these notions makes them more similar, in easily perceived and communicated ways.

From this point of view, the rapidity of flows among contemporary social actors becomes comprehensible. After all, they have the same legitimate purposes, so they are susceptible to the same social demands. They depend on the same technologies legitimated on the same grounds, so flows of improved techniques can be rapid and little-constrained by traditional loyalties. And they have the same relatively scientific conceptions of basic resources, remarkably similar definitions of human nature, collective authority, and social control, permitting "innovations" in these areas to flow rapidly.⁴⁰

We would thus argue that the more societies are organized as nation-states (and not as "primordial" religious or ethnic groups) the more social structures diffuse among them. Within nation-states, the more collective action occurs within rationalized formal organizations, the more they become isomorphic with each other and with the rules of both nation-states and world society. And at the individual level, the rise of expanded and unified notions of citizenship, capacity, and moral worth (in short, the world-cultural construction of "actorhood") leads individuals rapidly to adopt attitudes and practices from each other, and from national and world centers.⁴¹

The density of globally organized analysis has expanded rapidly, particularly since the Second World War. In the late nineteenth century, Japan sent delegations to the major Western societies to observe modern institutions: parliaments, police forces, the army and navy, and so on.⁴² They chose from among the menu of extant systems, selecting models like the British navy and the French police and military (the latter fortunately exchanged for the Prussian model some years later).

In the late twentieth century, theorists do the travelling. When state socialism collapsed in Eastern Europe and the Soviet Union, Western academics rushed to the rescue, bearing analyses of optimal economic and political arrangements.⁴³ In the contemporary world, communities of researchers and theorists actively help to construct new policy domains, issues, and interests (see especially the recent work on the role of epistemic communities in national policymaking).⁴⁴

Rules and practices linked to prevailing theories of the modern are most likely to diffuse. Thus a mechanism to enhance the productivity of the physically challenged will flow more readily than will one justified by paternalistic notions of charity. A scientifically rationalized medical therapy will flow more than one backed only by testimonials. Forms of political participation grounded in the rights of the individual will diffuse more rapidly than ones grounded in the rights of social collectivities.⁴⁵

The sciences and the professions are central to the modernizing project. They are devices for turning local and parochial practices into universally applicable principles that can "rationally" be adopted by all sorts of superordinate authorities, implemented by subordinate ones, and copied by modern entities everywhere. As social rules and practices come under scientific and professional analysis, they become potential candidates for rapid diffusion in the modern system.

For instance, it is clear that modern arrangements of mass education have flowed very rapidly around the modern world system. These flows have been more rapid in the post-World War II period, in which both the political and economic benefits have been scientifically defined and elaborated.⁴⁶ Education is prestigious, is thought functional for all sorts of goods, and is seen as both individually and collectively beneficial. Every country, now, has highly legitimate reasons to pursue educational expansion.

Diffusion and the substance of modernity

We have motivated the relationship between modernity and diffusion in formal terms, as arising out of the effects that any dominant, integrated conception of the social order might have on flows of social material. But the impact of modernity on diffusion seems to go beyond the simple effect of standardization. It has to do with the substance of the sociological vision embodied in the modern.

Modern perspectives locate much value and responsibility in social "actors," both individual human beings and purposive rationalized organizations. The sovereignty and the competence of these actors is celebrated. Social structures that rest upon the self-interested choices of autonomous actors are formally demonstrated to generate optimal outcomes.

The cultural construction of empowered actors carrying ultimate values seems especially favorable for diffusion. Such actors are assumed to have the capacity to innovate and reform; they also have the moral duty to do so. And as highly valued entities, actors can sensibly look to one another as models for their action. In the more liberal, more egalitarian, and more reductionist versions of modernity, actors are powerfully drawn to copy each other and identify with collective standards. This, in fact, was de Tocqueville's argument about the homogeneity of individuals and groups within the American polity.

Modernization and diffusion research

Diffusion research is built fundamentally around assumptions of modernity. Diffusion analyses nearly always investigate the spread of "innovations": boiled drinking water, improved seed corn, new prescription drugs. Both the anthropological and sociological traditions of diffusion research are grounded in the study of marginally modern peoples exposed to modern practices. But in the contemporary world, marked by the obliteration of non-modern communities, both practice and adopters are likely to be modern.

The modernity of both practices and adopters is so pervasive in contemporary diffusion research that its consequences are generally ignored. But the cultural match between practice and adopter may substantially alter patterns of diffusion, an effect noted in an earlier

generation of studies in rural sociology. For example, Marsh and Coleman found that network centrality predicts early adoption within progress-oriented communities, but not within communities opposed to innovation.⁴⁷ Becker showed that items with "high adoption potential" (defined in terms of attractiveness and communicability to professionals) were adopted early by centrally placed authors, while items with "low adoption potential" were adopted early by social isolates.⁴⁸

In both cases, the researchers connected their findings to the social meaning of the diffusing items and the adopters. Where adoption is highly prestigious, because the practice is obviously modern and the community values modernity highly, relationally central actors initiate adoption. Where the practice is less obviously modern or the community devalues modernity, it will be the "marginal men," those relatively unconstrained by community norms, that adopt early. Clearly the predictions of simple relational models will go astray if they are not made conditional on the larger cultural context.⁴⁹

Analytic strategies

Several research strategies seem useful in empirically examining the ideas discussed above.

Better specify relational models: Some of the arguments above predict the absence of diffusion effects across conditions generally thought to promote adoption. For example, theorization implies insensitivity to patterns of interaction and interdependence. Recent advances in the capacity directly to model relational structures and individual level effects in diffusion research make it possible to test for the role of network linkages.⁵⁰ We may then wish to ascribe some portion of the residual variation to the impact of the sorts of cultural processes discussed in this article. For instance, notions of a larger "world polity" gain plausibility when it can be shown that the cross-national expansion and content of mass education seems unrelated to exogenous factors such as level of economic development and unmediated by relations such as those connecting metropolises and former colonies.⁵¹

This research design is fairly weak, since residual variation is employed as evidence for an argument of central interest. It is always possible that structures of interaction or interdependence are poorly specified. Positive evidence would be more persuasive.

Specify theorized linkages: A second strategy, which is methodologically a variant of the first, provides such evidence. Theorized similarities can be measured and treated as a particular kind of channel of diffusion, methodologically playing the same role as interaction or interdependence in the models above. Or the location and relational structure of theorists may be used to predict patterns of diffusion. It would then be possible to examine the impact of social definitions on diffusion in a more positive vein.

Examine variation among populations: A third strategy takes a somewhat different tack. One can compare the diffusion of some practice across different populations, where the population as an aggregate is measured in terms of interaction, interdependence, and socially constructed similarity. Further we can qualitatively capture the degree to which the social construction of the population is theoretically informed, and the degree to which relevant theories are institutionalized. In general, it becomes possible to examine the degree to which the rate of diffusion, or other aggregate characteristics of the diffusion process, are functions of both relational and cultural characteristics of the population.

Examine variation among diffusing practices: A fourth strategy compares the diffusion of different kinds of practices across the same population, contrasting more and less "modern" practices, or more or less theoretically privileged practices. One could also study practices before and after they are theorized or become understood as "modern." For example, Tolbert and Zucker found that the adoption of civil service procedures became disconnected from city characteristics once the reform movement had been authoritatively and discursively institutionalized.⁵²

Examine the content of diffusion: An alternative approach is to examine the content of adopted practices, rather than the timing of adoption. Content analyses of diffusing policies may be particularly useful in examining evidence for theoretically mediated diffusion. Similarity in content to known theoretical models provides direct evidence of such connections.⁵³ In addition, if actors are drawing on a theorized model rather than on each other, variability in adopted content should be low and covariances should be time stationary (i.e., average differences between adopted practices should not increase with the interval between their adoption times). The latter holds because "transmission errors" do not cumulate over time when actors respond to an external

model. Comparisons could be drawn across populations or practices, in line with the strategies outlined above.

Conclusion

We have argued that flows of social elements in a wider system are enhanced by the cultural codification of adopter identities, by the rise of theorized models of adopters and practices that motivate diffusion, and thus by the rise of universalized and integrated models of the "modern." We see such cultural factors as adding to relational understandings of diffusion, as pointing to distinctively patterned outcomes, and as suggesting alternative designs for diffusion analyses.

These arguments give importance to legal, and especially professional and scientific, cultural materials. These forms of theorization, and their rise to dominance in the modern world, greatly speed the diffusion of rules and practices. They define or construct social entities as comparable, and theorize the universal and beneficial relevance of new and otherwise alien social materials. By reconstituting adopters and by redefining social elements, modern theorization greatly expands the motives and rationales for society-wide and worldwide standardization. As these forms of theorizing penetrate more and more aspects of society (from agricultural extension services to educational innovations to the rights of wives and children), standardizing flows increase.

Following Tocqueville, we call attention to the anomalous character of modernity. Its careful analysis of the bounded individual, the rationalized organization, and the purposive society create powerful standardizing forces. The diffusion processes involved directly oppose the internal rationalization sought by the modernizing project and presupposed in its analysis. The modern actors whose uniqueness and autonomy are most celebrated are precisely those most subject to the homogenizing effects of diffusion.

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Notes

1. For a general review, see Everett M. Rogers, *Diffusion of Innovations* (Detroit: The Free Press, 1983).
2. Raoul Naroll, "Galton's problem: The logic of cross-cultural analysis," *Social Research* 32 (1965): 429-451.
3. Ronald S. Burt, "Social contagion and innovation: Cohesion versus structural equivalence," *American Journal of Sociology* 92 (1987): 1287-1335.
4. Ole-Jorgen Skog, "The long waves of alcohol consumption: A social network perspective on cultural change," *Social Networks* 8 (1986): 1-32.
5. Rogers, *Diffusion of Innovations*, p. 14. We use the terms "practice" and "innovation" interchangeably to refer to the diffusion item, which may take a variety of forms (a structural element, a policy, an attitude, and so on).
6. Reviews of mathematical models include David J. Bartholomew, *Stochastic Models for Social Processes* (New York: Wiley, 1982); Vijay Mahajan and Robert A. Peterson, *Models for Innovation Diffusion* (Beverly Hills: Sage, 1985).
7. An alternative approach treats actors as immediately sensitive to the number of prior adopters, rather than indirectly affected via a point-to-point transmission mechanism. See Mark Granovetter and Roland Soong, "Threshold models of diffusion and collective behavior," *Journal of Mathematical Sociology* 9 (1983): 165-179.
8. Paul A. David, "Clio and the economics of QWERTY," *American Economic Review* 75 (1985): 332-337.
9. Frederick C. Fliegel, and Joseph E. Kivlin, "Attributes of innovations as factors in diffusion," *American Journal of Sociology* 72 (1966): 235-248. Also see Rogers, *Diffusion of Innovations* (1983).
10. Abhijit V. Banerjee, "A simple model of herd behavior," *Quarterly Journal of Economics* 107 (1982): 797-817.
11. W. Brian Arthur, "On competing technologies and lock-in by historical events: The dynamics of allocation under increasing returns," *Economic Journal* 99 (1989): 116-131.
12. James S. Coleman, Elihu Katz, and Herbert Menzel, *Medical Innovation* (New York: Bobbs-Merrill, 1966).
13. Examples include Torben Hagerstrand, *Innovation Diffusion as a Spatial Process* (Chicago: University of Chicago Press, 1967); Seymour Spilerman, "The causes of racial disturbances: A comparison of alternative explanations," *American Sociological Review* 35 (1970): 627-649; David Knoke, "The spread of municipal reform: Temporal, spatial, and social dynamics," *American Journal of Sociology* 87 (1982): 1314-1339; Kenneth C. Land, Glenn Deane, and Judith R. Blau, "Religious pluralism and church membership: A spatial diffusion model," *American Sociological Review* 56 (1991): 237-249.
14. See Noah E. Friedkin, "A formal theory of social power," *Journal of Mathematical Sociology* 12 (1986): 103-126; Burt, "Social contagion and innovation"; Kathleen

- Carley, "Structural constraints on communication: The diffusion of the Homomorphic Signal Analysis technique through scientific fields," *Journal of Mathematical Sociology* 15 (1990): 207-246; David Strang, "From dependency to sovereignty: An event history analysis of decolonization," *American Sociological Review* 55 (1990): 846-860.
15. John Ikenberry, "Explaining the Diffusion of State Norms: Coercion, Competition, and Learning in the International System," Paper presented at the annual meetings of the International Studies Association, London, 1989.
 16. For welfare, see David Collier and Richard Messick, "Prerequisites versus diffusion: Testing alternative explanations of social security adoption," *American Political Science Review* 69 (1975): 1299-1315. For education, see the papers in John W. Meyer and Michael T. Hannan, editors, *National Development and the World System* (Chicago: University of Chicago Press, 1979). For national independence, see Strang, "From dependency to sovereignty"; David Strang "Global patterns of decolonization, 1500-1987," *International Studies Quarterly* 35 (1991): 429-454.
 17. Frederik Barth, editor, *Ethnic Groups and Boundaries: The Social Organization of Culture Difference* (Boston: Little, Brown, 1969); Abner Cohen, *Custom and Politics in Urban Africa: A Study of Hausa Migrants in Yoruba Towns* (Berkeley: University of California Press, 1969).
 18. Culturally recognized similarities may induce high levels of interaction, and thus might be motivated as proxies for high levels of direct relations. We instead argue for the direct impact of culturally defined similarity on diffusion.
 19. Paul J. DiMaggio and Walter W. Powell, "The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields," *American Sociological Review* 48 (1983): 147-160.
 20. George M. Thomas, John W. Meyer, Francisco O. Ramirez, and John Boli, *Institutional Structure: Constituting State, Society, and the Individual* (Newbury Park: Sage, 1987).
 21. John W. Meyer and Brian Rowan, "Institutionalized organizations: Formal structure as myth and ceremony," *American Journal of Sociology* 83 (1977): 440-463.
 22. David Strang and Patricia M. Y. Chang, "The International Labor Organisation and the welfare state: Institutional effects on national welfare spending, 1960-80," *International Organization* 47 (1993): 235-262. For a parallel argument about science policies, see Martha Finnemore, *International Organizations as Teachers of Norms: UNESCO and Science Policy*, unpublished doctoral dissertation, Stanford University, 1990.
 23. John W. Meyer and W. Richard Scott, *Organizational Environments: Ritual and Rationality* (Newbury Park: Sage, 1983).
 24. George Herbert Mead, *Mind, Self, and Society* (Chicago: University of Chicago Press, 1934).
 25. For a discussion of the diffusion of social movements wedding ideas about cultural constructions with an analysis of interaction patterns, see Douglas McAdam and Dietrich Rucht, "Cross National Diffusion of Social Movement Ideas and Tactics," presented at the annual meetings of the American Sociological Association, Pittsburgh, 1992.
 26. Meyer and Rowan, "Institutionalized organizations."
 27. There are many unexplored complexities in the relationship between individual theorizing and legitimated collective theorization. For example, it is often noted that theories gain appeal by running counter to common sense, or emanating from exotic locales. On the other hand, theories resonating with standard thinking are

- more accessible and reproducible. We do not make much effort here to speak to the relationship between different forms of theorizing, or the broader issue of what characteristics make for especially compelling theories.
28. Robert W. Cole, "The macropolitics of organizational change: A comparative analysis of the spread of small-group activities," *Administrative Science Quarterly* 30 (1985): 560-585. We thank Paul DiMaggio for suggesting this example and the general issue of purely professional social movements.
 29. The sciences and professions are also globally connected and legitimated, making their impact particularly broad. The extra-national character of the sciences in particular is longstanding: see Robert Wuthnow, "The World-Economy and the Institutionalization of Science in Seventeenth-Century Europe," in A. Bergesen, editor, *Studies of the Modern World-System* (New York: Academic, 1980), 25-55; Phyllis Riddle, "University and State: Political Competition and the Rise of Universities, 1200-1985," unpublished doctoral dissertation, Stanford University, 1989.
 30. William Ouchi, *Theory Z* (New York: Addison-Wesley, 1981).
 31. John W. Meyer and Brian Rowan, "The Structure of Educational Organizations," in M. Meyer et al., editors, *Environments and Organizations* (San Francisco: Jossey-Bass, 1978), 78-109.
 32. The taken for grantedness of these efforts may make them appear trivial examples of theorization. But consider the work required to construct the professional communities involved (for medicine, the social mobilization attending the Flexner Report), the mistakes that these communities may promulgate (the virtues of oat bran, recent news that we should stop drinking milk), the difficulty of overcoming common practices and entrenched interests (movements against smoking and drinking), and the the possibility of alternative theoretical logics (holistic models of health).
 33. Distinguished contributions to this perspective include Herbert A. Simon, *Administrative Behavior* (New York: Macmillan, 1957); James G. March and Herbert A. Simon, *Organizations* (New York: Wiley, 1958).
 34. See the papers in Peter A. Hall, editor, *The Political Power of Economic Ideas: Keynesianism across Nations* (Princeton: Princeton University Press, 1989). For an analysis emphasizing the capacities of adopters rather than cross-national diffusion, see Margaret Weir and Theda Skocpol, "State structures and the possibilities for 'Keynesian' responses to the Great Depression in Sweden, Britain, and the United States," in P. B. Evans, D. Rueschemeyer, and T. Skocpol, editors, *Bringing the State Back In* (Cambridge: Cambridge University Press, 1985).
 35. Albert O. Hirschman, "How the Keynesian Revolution was Exported from the United States, and Other Comments," in P. A. Hall, editor, *The Political Power of Economic Ideas: Keynesianism across Nations*, 347-360.
 36. Ronald L. Jepperson, "National Scripts: The Varying Construction of Individualism and Opinion across the Modern Nation-States," unpublished doctoral dissertation, Yale University, 1992.
 37. Connie McNeely, "Cultural Isomorphism among Nation-States: The Role of International Organizations," unpublished doctoral dissertation, Stanford University, 1989.
 38. John Boli, "World polity sources of expanding state authority and organization, 1870-1970" and "Human rights or state expansion? Cross-national definitions of constitutional rights, 1870-1970," in G. M. Thomas, J. W. Meyer, F. O. Ramirez, and J. Boli, editors, *Institutional Structure*, 71-91 and 133-149.
 39. James G. March, *Decisions and Organizations* (Oxford: Basil Blackwell, 1988).

40. John Boli-Bennett and John W. Meyer, "The ideology of childhood and the state," *American Sociological Review* 43 (1978): 797-812.
41. Jepperson, "National Scripts."
42. D. Eleanor Westney, *Imitation and Innovation: The Transfer of Western Organizational Patterns to Meiji Japan* (Cambridge: Harvard University Press, 1987).
43. Jeffrey Sachs, "My Plan for Poland," *International Economy* 3 (1989): 24-29; Merton J. Peck and Thomas J. Richardson, editors, *What is to be Done? Proposals for the Soviet Transition to the Market* (New Haven: Yale University Press, 1992).
44. Peter M. Haas, "Do regimes matter? Epistemic communities and Mediterranean pollution control," *International Organization* 43 (1989): 377-404. Also see the 1992 issue of *International Organization* devoted to epistemic communities, edited by Haas.
45. As noted by a reviewer, attempts at modernization generally carry some traditional baggage. Nationalism, the prime political expression of modernity, is constructed in part by the selective regeneration (or invention) of various traditions. See Benedict Anderson, *Imagined Communities* (London: Verso, 1983); Eric Hobsbawm and Terence Ranger, *The Invention of Tradition* (Cambridge: Cambridge University Press, 1983). National projects involve the recording of traditional stories, the revival of old forms of dress and dance. Once sanctified as expressions of national identity, such forms may be retained even where they appear economically or politically costly. These kinds of practices are often valued precisely because they are distinctive, and may diffuse in only formal ways (i.e., proclamations of national costumes may diffuse, but not the clothes themselves). And where modernizing projects are overcome by aggressively xenophobic appeals to the ethnically or religiously distinctive, we might expect generalized resistance to diffusion. On the other hand, it is easy to understate how stylized the cultures involved often are. This is most true for contemporary organizations, which may hire outside experts to sensitize organizational participants to the putatively unique culture of the organization.
46. John W. Meyer, Francisco O. Ramirez, and Yasemin Soysal, "World expansion of mass education, 1870-1980," *Sociology of Education* 63 (1992): 128-149.
47. Paul C. Marsh and A. Lee Coleman, "Group influences and agricultural innovations: Some tentative findings and hypotheses," *American Sociological Review* 61 (1956): 588-594.
48. M. H. Becker, "Sociometric location and innovativeness: Reformulation and extension of the diffusion model," *American Sociological Review* 35 (1970): 267-282.
49. Relational models can account for these kinds of results by arguing that centrally placed actors in modern communities typically have extensive relations to the outside world, while in non-modern communities it is the marginal men who have outward-looking relations. See Herbert Menzel, "Innovation, integration, and marginality: A survey of physicians," *American Sociological Review* 25 (1960): 704-713. Marsh and Coleman (and we) would prefer to frame an explanation in terms of the location of actors within communities of discourse.
50. One approach to modelling complex relational structures directly is to estimate diffusion processes within an event history framework. See Peter V. Marsden and Joel Podolny, "Dynamics analysis of network diffusion processes," in H. Flap and J. Weesie, editors, *Social Networks Through Time* (Rijksuniversiteit Utrecht: Utrecht NL, 1990), 197-214; David Strang, "Adding social structure to diffusion models: An event history framework," *Sociological Methods and Research* 19 (1991): 324-353; David Strang and Nancy B. Tuma, "Spatial and Temporal

- Heterogeneity in Diffusion," *American Journal of Sociology* (forthcoming).
51. John W. Meyer, David Kamens, and Aaron Benavot, *School Knowledge for the Masses: World Models and National Curricular Categories in the Twentieth Century* (Philadelphia: Falmer, 1992). Also see Meyer, Ramirez, and Soysal, "World expansion of mass education, 1870-1980."
 52. Pamela S. Tolbert, and Lynne G. Zucker, "Institutional sources of change in the formal structure of organizations: The diffusion of civil service reform," *Administrative Science Quarterly* 28 (1983): 22-39.
 53. Content analyses of diffusing practices also permit insight into network transmission patterns. In exploring diffusion patterns among the states, Walker notes that the California Fair Trade law was "followed either verbatim or with minor variations by twenty states; in fact, ten states copied two serious typographical errors in the original California law." See Jack Walker, "The diffusion of innovation among the American states," *American Political Science Review* 63 (1969), 881.