Cultural Variation: Considerations and Implications

Dov Cohen
University of Waterloo

Cultural systems vary widely across the world. Partly this is due to different cultures’ occupying different ecological and environmental niches. But partly it is due to similar circumstances giving rise to multiple stable equilibriums, each with a distinct cultural form. Using insights and examples from various fields, this article illustrates the way that multiple equilibriums can emerge and the forces that push a culture toward one equilibrium point or another. Considerations of game theory principles, mutual interdependence, historical circumstance, dependence on initial conditions, and crucial choice points are highlighted in discussing the ways humans create and re-create their culture. Cultural traits develop within physical, social, intracultural, and intercultural niches, and implications of this for how culture might be studied and the benefits of combining an “equilibrium” perspective and a “meaning” perspective are discussed.

Cultures are often adaptations to the environment. However, in trying to understand how the diversity of cultures in the world is produced, there are issues that can prove devastatingly complex. This is because the process of mapping cultural adaptations to environmental circumstances is not so simple. Different environments produce different social systems, of course. However, different environments can also produce similar systems, and similar environments can produce vastly different cultures.

To examine these puzzles, this article brings together insights and examples from areas such as game theory, evolutionary biology, dynamic systems theory, political science, and economics as they bear on the issue of cultural evolution. An implicit argument here is that multiple equilibrium states (described by theorists from these fields) map onto multiple coherent meaning systems (described by anthropologists and cross-cultural psychologists; Binmore, 1998; Boyd, 2000; Henrich & Boyd, 1998; Shweder, 1993). Thus, in a system in which actors interact and adjust to each other, there are potentially many different stable social patterns or equilibriums that can emerge, and these differing social patterns often map onto distinct cultural systems of rules, norms, and sets of shared meanings and expectations that develop.

By adding an equilibrium perspective to the meaning perspective, one can better understand the possible forms cultures can take and the forces that push and pull a culture to be one way or another. Possible equilibrium states that can emerge as people interact with one another guide the cultural forms that develop, and, conversely, the history of cultural forms helps influence which potential equilibrium states will be reached. Cultural psychologists have argued that culture and individual psyches “make each other up” (Kitayama & Markus, 1999, p. 252; Shweder, 1990). And considerations of the mutual interdependence of actors, historical patterns and meanings, game theory principles, and crucial choice points and junctures can highlight the ways that humans help create and re-create their cultures.

Together, perspectives and insights from these various fields suggest possibilities for (a) understanding why predicting and explaining cultural variation is so frustrating and imperfect, (b) developing explanations for why sometimes very similar ecological and economic niches lead to dramatically different cultural traditions, (c) outlining some of the specific mechanisms guiding cultural re-creation and the “mutual constitution” of selves and cultures (Kitayama & Markus, 1999, p. 251; Moore, 1966; Shweder, 1990), and (d) pointing to potentially useful ways to study cultures and their stability and change over time, as well as highlight future areas of work to be done. These implications lead away from theories of ecologies and environments as strict determinants of culture and lead toward more complicated views as one considers questions of constraints, interdependence, and the evolution of social systems. The suggestion here is not that examining culture as a functional response to the environment is wrong but rather that this idea becomes more complex as one understands processes by which humans create and re-create cultural systems. Implicit in the discussions that follow is the need to examine the emergence and stability of cultural traits within four different types of niches. The physical environment is one of the niches in which cultural traits develop, and it is quite important. Yet, the discussions below also touch on three other types of niches that shape cultural patterning. Considerations of the social niche are important because humans operate in a social world of actors who interact with and adjust to other actors trying to do the same thing. As game theorists have noted, such mutual interdependence creates possibilities for multiple sorts of stable social patterns to develop in a given context.

Partly the choice of which pattern emerges and the stability of various patterns will depend on the intracultural niche that cultural traits inhabit. Cultural traits must exist within a niche occupied by other cultural traits. The contemporary and historical constellation of cultural patterns in a given society helps shape which traits

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Correspondence concerning this article should be addressed to Dov Cohen, Department of Psychology, University of Waterloo, Waterloo, Ontario N2L 3G1, Canada. Electronic mail may be sent to dcohen@watarts.uwaterloo.ca.
emerge at crucial choice points and junctures and which will be assimilated or accommodated when circumstances change or when new patterns emerge. Finally, as cultures come into contact with each other through invasion, migration, or simple exposure, cultural traits must survive in an intercultural niche where patterns are borrowed, adopted or rejected, or modified and selectively incorporated. As described below, all four of these types of niches (physical, social, intracultural, and intercultural) are important in considering how cultural adaptations develop.

This article has four sections that consider how adaptations arise in various circumstances. In the first section, I briefly review some of the ways that different physical ecologies and environments can lead to different cultural adaptations. In the second, I discuss the issue of multiple stable equilibriums and describe some of the reasons that societies with similar economies and ecologies have given rise to dramatically different cultural forms. In the third, I discuss the issue of cultural constraints and regularities, noting some factors that limit variation in cultural systems. And, in the final section, I turn to some general implications of the above for ways of studying culture and for potential future directions.

Part 1: Different Environments, Different Adaptations

Different economies and ecologies lead to different cultural adaptations (Diamond, 1999; Edgerton, 1971; O’Kelly & Carney, 1986; Triandis, 1994; Witkin & Berry, 1975). Important work has been done to show this, and any consideration of cultural differences must take this as a starting point. Just as different ecological niches have led to different adaptations in animal species, so have different environmental niches led to differences in cultural adaptations.

The Ecology of Manhood

As an example, the anthropologist David Gilmore (1990) described the ways that different environmental conditions lead to different conceptions of masculinity. In *Manhood in the Making*, Gilmore argued that there are essentially 3 P’s of manhood the world over—protecting, procreating, and providing. Environments differ greatly, however, in how challenging these tasks are. Where the environment is harsh and providing and protecting require courage and physical prowess (e.g., in places that survive on deep-sea fishing or big game hunting), cultures of masculinity emerge in which strength and toughness are valued. Where food is plentiful and easy to get and natural or human enemies are scarce, relatively androgynous sex roles emerge. In Gilmore’s (1990) examples, within the groups of the Semai (of Malaysia) and Tahitians, there is little distinction between male and female and there is little of the belligerence and macho posturing that characterize men in other cultures:

Few demands are made on Tahitian men. They do not hunt. There are no dangerous or strenuous occupations that are considered masculine. There is no warfare or feeding . . . The local lagoon supplies plentiful fishing without the need for arduous deep-sea expeditions . . . Arable land is also plentiful. (p. 205)

As a consequence, “there is absolutely no evidence that masculinity is itself a matter of any great concern for the Tahitians” (p. 208).

Examining the range of variation in male gender roles from the violent to the more pacific, Gilmore (1990) concluded, “the harsher the environment and the scarcer the resources, the more manhood is stressed as an inspiration and goal. The correlation could not be more clear, concrete, or compelling” (p. 224).

In work on the culture of honor in the U.S. South, Nisbett and Cohen and Reaves argued in a similar way that the pastoral conditions of the frontier South led to a culture of honor and an emphasis on masculine toughness that was vastly different from the less violent milieu of the agricultural North (Nisbett & Cohen, 1996; Reaves, 1998). As with many cultures in which herding is the basis of the economy, men in the South came to value their reputation for toughness, which was an essential deterrent in a world where a man’s entire wealth (i.e., his animals) could be taken from him instantly (Edgerton, 1971; McWhiney, 1988; Nisbett & Cohen, 1996; Reaves, 1998; Schneider, 1971). The precariousness of the herder’s situation demanded that a man establish himself as a character who was “not to be messed with.” The connection, then, between herding economies and toughness is a specific instance of the more general case in which a macho stance emerges in response to ecologies, economies, and circumstances that imperil one’s life, livelihood, and family (see also Daly & Wilson’s, 1988, *Homicide*).

Ecologies and Systems

Other findings have also highlighted the ways in which environmental circumstances lead to differing cultural “traits.” For example, Berry has argued that agricultural societies—which are sedentary and require coordination of effort and cooperation—lead to high degrees of conformity, whereas hunting and gathering societies lead to greater degrees of independence (Berry, 1967, 1979; Triandis, 1994, p. 228). Cold climates have been found to predict “tight” cultural arrangements that require more self-regulation and control on the part of the individual, whereas hot ones predict “looser” arrangements and more emotionalism (Pennebaker, Rime, & Blankenship, 1996; Robbins, deWalt, & Petto, 1972; Triandis, 1994, p. 161; see also C. Anderson, 1989; C. Anderson & Anderson, 1996, on heat and violence). And foraging economies tend to produce relative gender equality, whereas pastoral and agrarian ones, with their extreme divisions of labor, are associated with more male–female inequality (Friedl, 1987; Triandis, 1994, chapter 5).

At the macrolevel, different ecologies also predispose a culture to different social structures (Sachs, 2000; Sowell, 1996, chapter 1). At the very distal level, Diamond (1999) argued that the availability of domesticable plants and animals in Eurasia led to an early head start for these regions in the accumulation of food surpluses and thus the ability to form sedentary, relatively densely populated societies that could have specialization of labor. The development of such specialized, densely populated societies that could support armies and technology (and infectious crowd diseases) led them to develop the “guns, germs, and steel” by which they colonized the New World. At the less macro and more proximal level, Harris (1968) argued that similar technologies applied to similar environments tend to produce similar arrangements of labor in production and distribution, and these in turn call forth similar kinds of social groupings, which justify and
coordinate their activities by means of similar systems of values and beliefs. (p. 4)

At this level, for example, political scientist Samuel Huntington (1996a) noted,

Rich soil and good climate are likely to encourage the development of large-scale plantation agriculture and a consequent social structure involving a small class of wealthy landowners and a large class of peasants, slaves, or serfs who work the plantations. Conditions inhospitable to large-scale agriculture may encourage emergence of a society of independent farmers. In agricultural societies, in short, social structure is shaped by geography. (p. 69)

See also Wilson (1993), arguing similarly that individualism developed in northwestern Europe partly out of an ecology "where arable plots of land had to be hacked out of steep hillsides or dense forests" (p. 201). And see also Vandello and Cohen (1999), arguing for a connection between the different agricultural bases of the economy and the development of individualistic and collectivistic cultural syndromes within the United States.

Adaptations, History, and Lag

This view of differing cultural forms as adaptations to different environmental niches is an important notion shared with evolutionary biology. Further, there is another evolutionary principle that is important to consider. As Darwin argued, adaptations that are clumsy and imperfect are important pieces of the evolutionary puzzle (as discussed in Gould, 1980; Sulloway, 1998). For evolutionary biologists, such imperfections and clumsy adaptations were indications that we were not designed by an all-knowing Creator. Rather, these awkward adaptations indicated that the present species had a history and that relatively recent adaptations had to be grafted onto the more distant structures and adaptations of the past (see also Dawkins, 1996, pp. 159–160, 168). So too is it important to understand culture in this light. That is, it may not necessarily be productive to explain why a certain cultural adaptation is a response to present ecological and economic circumstances. Instead, it may be important to consider (a) what these adaptations were for in the past and how they have persisted and (b) how relatively new cultural adaptations had to be fitted to what the past has provided (Henrich & Boyd, 1998, p. 235; Linton, 1936, chapters 15 and 16).

Such a historical perspective makes it easier to explain (a) cases of cultural lag or conservative lag (D. Miller & Prentice, 1994; Triandis, 1994) and (b) cases of cultural morphism or hybridization (Hermans & Kempen, 1998; Linton, 1937; Oyserman, 1993; Oyserman, Sakamoto, & Lauffer, 1998). With respect to lag, differing cultural forms in the present can derive in part from older circumstances and can become "functionally autonomous" from the circumstances that created them. Thus, for example, ideas about lag and functional autonomy make it easier to understand why the South retains its culture of honor even though the frontier and herding economy have all but disappeared (Cohen & Nisbett, 1994). Or in the case of cultural morphism, a historical perspective makes it easier to understand, say, the way new cultures derived from the blending of older European and African cultures in places like the Deep South of the United States or Brazil (Page, 1995; Sobel, 1987).

Beyond this, it has been argued that such morphing of cultural syndromes can create entirely new types of social systems. For instance, believed by Westerners to be inherently competitive and individualistic, capitalism has taken on a far more collectivistic face in Japan (cf. Bendix, 1962, chapter 3). "The Japanese . . . have invented a type of economics that behaves in ways that confound the predictive powers of Western observers" (as quoted in Huntington, 1996a, p. 226). Its "economy is unique because Japanese society is uniquely non-Western" (Huntington, 1996a, p. 226). As Wilson (1993) also argued, "it is easy to overstate [italics added] the contributions of commerce to the acceptance of more universal moral standards," such as individualistic "impersonal valuations" or the "abstract commitment to fairness," but "commerce may have encouraged universalistic [more individualistic] principles in the West without having done so in the East." (p. 210). For better and for worse, historians and political scientists have argued that market systems have been fitted to Japan's more traditional, collectivistic cultural forms (Huntington, 1996a; Pagden, 1998; Sayle, 1998; see Markus & Kitayama, 1991, pp. 239–244; see also Perkins, 2000; Pye, 2000; Wei-Ming, 2000, on unique features of capitalism in East Asia generally). Thus, social systems in the present must be understood in part as building on the adaptations of the past.

Part 2: Similar Environments, Different Adaptations

It is also extremely important to note that the environment → culture relationship is not a simple, deterministic one. That is, there are many cases in which similar environments produce dramatically different adaptations. Elsewhere, Boyd and Richerson (1985) and Henrich and Boyd (1998) have argued for the importance of conformist transmission in the development of between-groups differences and have noted the importance of describing the processes by which such differences are created and maintained in equilibrium.

The insights of game theorists, economists, and dynamic systems theorists are particularly relevant to understanding this puzzle of how different cultures emerge from extremely similar environments. Thus, in considering the evolution of cultural adaptations, it is also quite important to consider the notion of multiple stable equilibriums and the way these are affected by mutual interdependence in a social system, sensitive dependence on initial conditions, and crucial choice points and junctures.

Mutual Interdependence and Multiple Equilibriums

As economists, game theorists, and legal scholars have argued, a state of mutual interdependence leads to multiple possible equilibriums. The best strategy one can pursue depends on others, who as individuals must make similar calculations about what their counterparts will do. A stable equilibrium may be reached, but that does not imply that it is the sole stable equilibrium. In fact, starting at very similar initial conditions, there may be many very different equilibrium points that cultures can reach, depending on contingencies, choice, and punishment or enforcement of norms (Binmore, 1998; Fudenberg & Maskin, 1986; Henrich & Boyd, 1998; Kurian, 1995b; Linton, 1936; Maynard Smith, 1988, chapter 21; Schelling, 1978; Tilly, 1995).

Multiple equilibriums in social systems. The way that mutual interdependence influences people's public support for norms and values is one example of the way that such mutual yoking can have
dramatic effects on social and cultural systems. The economist Timur Kuran (1995b) recently made this argument with respect to understanding emergence and change in political systems. In his book, *Private Truths, Public Lies*, Kuran argued that it is not the case that social systems derive from a simple aggregation of individual preferences that persons make independent of one another. Rather, a considerable amount of people’s public behavior and publicly stated preferences is dependent on how they believe others will behave, whose behavior is, in turn, partially regulated by their own perceptions of public opinion.1

This mutual dependence makes it easier to understand the reasons why multiple equilibriums can develop and the mechanism that can produce both intransigent stability and rapid cultural change. The mathematicians have been worked out elsewhere (see Cooter, 1996, in press; Kuran, 1995b; Mahajan & Peterson, 1985, pp. 17–22; Schelling, 1978; see also C. Brown, 1995; Rodgers & Rowe, 1993). Briefly, however, consider the graphs in Figure 1.

The solid line in each case represents the number of people willing to behave in a certain way (or, in Kuran’s, 1995a, 1995b, examples, their willingness to support a certain institutional system) given their beliefs about what others will do. If (how people behaved was entirely independent of what they expected others to do, the line would be completely flat. However, this is rarely the case—because of either normative or informational influence—and the hypothetical slopes of the lines in the figure reflect this.

The S shape in the first panel of Figure 1 derives from the following features. The relatively flat beginning of the curve that intersects the y-axis at a point above zero (in this case, at Point C) reflects the supposition that for any given pattern of behavior or social system, there will be a certain number of people willing to support that system, even if no one else did. These would be the “true believers” (or, in the case of new ideologies or social movements, the innovators in Rogers’s, 1962, chapter 6; Rogers & Shoemaker, 1971, chapter 5) terms. The relative flatness at the top part of the S curve reflects the supposition that some people may refuse to support the system or behavior—again, no matter how many others are doing so. (These would be the “intransigents,” and in the top panel of Figure 1, the support for the system reaches its maximum at Point E, though theoretically it is possible to have no intransigents and have equilibrium at 100% support.)

In the middle, the curve slopes upward. This reflects the supposition that most people will support the system if, but only if, enough others do. Everybody has [his or her] own definition of how many is “enough.” And it can mean either enough to make it interesting [to do so] or enough to make it imprudent [not to do so]. (Schelling, 1978, p. 102)

There will be some whose threshold for “enough” will be low, and they will show their support early; others will have much higher thresholds, and they will join only if a relatively large percentage of their peers do so. The shape and steepness of the middle part of the curve reflects these differences. In the top panel of Figure 1, the curve slopes upward and crosses the 45° line at Point A. (For the sake of simplicity, the curve in Figure 1 only crosses the 45° line once between C and E).

A few things are clear. In the first graph, at points below the tipping point, A, there is not enough “expected” support for the system to sustain itself at that level. Thus, when expected support is at, for example, Level b (x-axis coordinate), only b – 5 people (y-axis coordinate) will support the system, thus reducing support to b – 5. However at the expected b – 5 level of support, only b – 10 people (y-axis coordinate) will support the system, reducing it to the b – 10 level. And the process can continue iteratively until actual and expected support level out at Point C. On the other hand, when expected support is at, for example, level d, then d + 5 people (y-axis coordinate) will support the system, thus bringing support to the d + 5 level. And at the expected d + 5 level of support, d + 10 people (y-axis coordinate) will support the system. This iterative process will continue until actual and expected support level out at Point E.

The important point to consider here is that social systems may start out at very similar levels in terms of people’s underlying values and preferences, but they may end up at very different equilibrium states depending on where they are with respect to a tipping point. That is, persons in Systems 1 and 2 may have very similar underlying preferences, with support for a given value at the A + 1 level in System 1 and at the A – 1 level in System 2, for example. However, one system may move very quickly to Level E whereas the other moves to Level C, producing vastly different outcomes from very similar starting points. Further, a second implication is that for any given system, very small shocks that temporarily nudge expected support one way or another can produce barely a ripple if the system is at a stable equilibrium point (Points C or E) or can lead to major changes if the system is at a tipping point (Point A; see, e.g., Kuran, 1995b, pp. 70, 249; Schelling, 1978, pp. 104–107).

Finally, a third implication of this mutual dependence is the way small shifts in the intercept or slope of the curve can produce huge differences in equilibrium points, as may be seen in the middle and bottom panels of Figure 1, where equilibrium is reached only at a very low level of support. In the middle panel of Figure 1, the slope of the curve remains unchanged but the intercept is moved slightly downward, reflecting a lower number of true believers who are willing to support the system even if no one else does. Again, the slope of the line in the middle panel remains unchanged, showing that more people would support the system if “enough” others did. However, the curve never again crosses the 45° line, indicating that for any given level of expected support, there will never be enough actual support for the system to sustain itself—except at the very low level in the bottom left-hand corner of the graph where the curve meets the line. In the bottom panel, the curve intercepts the y-axis at the same point as in the top panel. However, in this case, the slope of the line changes, reflecting a situation in which people’s own behavior is less acutely sensitive to their expectations of what others will do. In this case, again, for any given level of expected support, there will never be enough actual support for the system to sustain itself—except at the very low level in the bottom left corner of the graph where the curve meets the 45° line (Schelling, 1978).

1 There is, of course, a distinction between the group’s normative influence and its informational influence on an individual (Asch, 1993; Sherif & Sherif, 1956). However, for the purpose of the examples below, it does not matter which type of influence is exerted by the group (see Ridley, 1996, pp. 183–186). See also Bikhchandani, Hirshleifer, and Welch (1992), and Kuran and Sunstein (1999).
Political and social change in the 20th century. Kuran (1995b) argued that the “obstinacy of communism” (p. 118) and its sudden collapse, the “ominous perseverance of the caste system” (p. 128) in India, the Iranian revolution, the civil rights struggle in the United States, and the fall of apartheid in South Africa can be partly understood with reference to such public opinion dynamics as mutual interdependence and tipping points within a social niche. In Czechoslovakia, for example.

Emboldened by signals from the Soviet Union and the successes of opposition movements elsewhere, a few thousand people stood up in defiance, joining the tiny core of long-persecuted activists. In so doing they encouraged additional citizens to drop their masks, which then impelled more onlookers to jump in. Before long fear changed sides. Where people had been afraid to oppose the regime, they came to fear being caught defending it. Party members rushed to burn their cards, asserting that they had always been reformists at heart.

In the days following the fall of Czechoslovak communism, a banner in Prague read: “Poland—10 years, Hungary—10 months, East Germany—10 weeks, Czechoslovakia—10 days.” Underlying the implied acceleration is the fact that each successful challenge to communism lowered the perceived risk of dissent in the countries still under communist rule. This relaxation generated a domino effect, with a bandwagon in one country touching off even speedier bandwagons elsewhere. (Kuran, 1995b, pp. 273–274)

Reminiscent of this is Hannah Arendt’s (1964) analysis of the rise of Nazism in Eichmann in Jerusalem. Her controversial analysis attributed Nazi cooperation not to evil or to a deep-seated prejudice sufficient to trigger Nazism, but rather to “thoughtlessness” and mass conformity. Nazism was vulnerable where local resistance was met. When resistance to Nazism was found in Denmark and Bulgaria, she wrote, the “toughness of [German authorities] melted like butter in the sun” (p. 175). German officials sent to these places “went native,” becoming “no longer reliable” (p. 187) in Bulgaria, and in Denmark, engaging in “obvious sabotage of orders from Berlin” (p. 175). The “ideal of toughness,” she concluded, “except, perhaps, for a few half-demented brutes, was nothing but a myth of self-deception, concealing a ruthless desire for conformity at any price” (p. 175; cf. Goldhagen, 1996, however).

Less sweeping changes in cultural norms have also been studied in this light. D. Miller and Prentice (1994, p. 543), for example, cited the history of Prohibition in America as one whose dynamics were strongly affected by mutual interdependence:

Though strongly advocated and enforced by various constituencies in America, Prohibition never had majority support. It seemed to have public support, however, because people were reluctant to express their anti-Prohibition sentiment (Robinson, 1932). Once polls revealing the depth of private anti-Prohibition sentiment were made public, pluralistic ignorance was dissipated, and Prohibition swiftly ended. (Katz & Schnack, 1938, p. 543)

Other scholars have studied similar phenomena—such as the way the thousand-year-old practice of footbinding in China ended in just over a generation—and have termed the process norm cascading (Mackie, 1996; Picker, 1997; Rosen, 1997, pp. 177–178). In the province of Dingzhou, for example, 99% of the women had their feet bound in 1889, whereas almost none did 30 years later (Mackie, 1996, p. 1001; Rosen, 1997, p. 178). As

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**Figure 1.** Equilibrium points depend on the curve relating expected and actual support. Slight changes in the initial starting point or in the slope or intercept of the curve can have a big impact on where equilibrium is reached. In the top panel, for example, Point b is below the tipping point (A) and thus the system is likely to settle at equilibrium Point C. Beginning at points above the tipping point (e.g., Point d), the system is likely to move to equilibrium Point E. The middle and lower panels illustrate the effects of shifts in the intercept and slope of the curve for possible equilibrium points. After shifts in the intercept and slope, equilibrium is only reached in the lower left portion of the graph.
people realized their neighbors did not support footbinding and were willing to form antifootbinding associations, the norm massively changed (Mackie, 1996, p. 1011). Without specifying the processes involved, Shweder (1993) too noted that “after a few years of contact with the West, almost everything that was exotic about New Guinea seemed to have disappeared. . . . The sexual symbolism and avoidance customs of the culture seemed very deep indeed, until they just went away” (pp. 285–286).

Of course, explanations such as these positig hypothetical tipping points; massive pluralistic ignorance; and either hidden, latent, or unconstructed preferences may not be particularly helpful as one tries to predict the emergence and stability of cultural forms. However, they do point to some of the parameters that one needs to examine, including the number of true believers in a population and the extent to which people’s behavioral choices are dependent on their expectations about others for a given issue. (See, e.g., Triandis, 1994, on cultural differences in norms vs. private attitudes predicting behavior in collectivist vs. individualist countries; also Heine, Lehman, Markus, & Kitayama, 1999.) Clearly cultures vary on both these issues, and very relevant to the discussions of pluralistic ignorance above, they will probably also vary considerably in the extent to which people’s internal preferences will be transparent to others.

Broadly speaking, two sets of factors are probably relevant to this issue of transparency. One concerns the extent to which people are able to express their internal beliefs through their behavior. In societies with constraints on dissent—either because of totalitarian governments (Husarska, 1997; Kuran, 1995a, 1995b) or because of tight (vs. loose) social norms that brook no dissent or because of a positive value on harmony (Triandis, 1994)—one would expect people to be less likely to know the private preferences of their neighbors. The other factor, however, concerns the extent to which people believe that others’ behavior reflects their private preferences. In societies where the folk theory is that behavior follows from intentions (Lillard, 1998) and there is little recognition of the subtle (and sometimes not-so-subtle) forces causing conformity, one would expect people to be less aware of public–private discrepancies in attitudes (D. Miller & Prentice, 1994, pp. 544–546). Thus, the degree of pluralistic ignorance will be greater in social systems in which people are reticent to express their beliefs and also in social systems where people are improperly calibrated about how much other people’s external behavior reflects their private opinions. The relatively individualistic West presents an interesting case of where pluralistic ignorance exists, because even though people may be more likely to strive for “authenticity” by expressing their preferences (Heine et al., 1999), they also often dramatically underestimat how much people’s public behavior actually is driven by situational constraints (Choi & Nisbett, 1998; Choi, Nisbett, & Norenzayan, 1999; Ross & Nisbett, 1991).

For various reasons then, cultures may differ in transparency and in the shape of the curves relating actual and expect support. However, across cultures, the basic notion regarding multiple equilibriums arising from mutual interdependence is essential. People’s own behavior is affected by what they think others in their social niche will do, and those others must make similar calculations (with often very imperfect information) based on what they think everyone else is thinking. As described in the examples above, these considerations of mutual interdependence make it easier to understand how our social nature can cause two cultural systems (or a given culture at different points in time) to arrive at vastly different equilibrium points, even as their initial, underlying conditions were relatively similar.

Two Strategies: Tit-for-Tat and All Defect

Social interactions. The notion of mutual interdependence not only leads to discussion of multiple equilibriums for public norms, it also leads to important work on multiple equilibriums for social and antisocial behavior. As game theorists such as Fudenberg and Maskin (1986) argued, in repeated games, it is possible to sustain many different equilibrium points (J. Heath, 1998). However, two that have received particular attention, criticism, and refinement are Axelrod and Hamilton’s strategies of tit-for-tat and all defect (Axelrod, 1984; Axelrod & Dion, 1988; Axelrod & Hamilton, 1981; Binmore, 1998; Samuelson, 1997, pp. 17–21). Robust to the violations of some assumptions and not so robust to the violation of others, Axelrod and Hamilton’s work has proven useful in generating hypotheses about social relations and norms in a very wide range of settings (Axelrod, 1984; Axelrod & Dion, 1988; Putnam, 1993). Perhaps because of their resonance with algorithms of reciprocity (Levi-Strauss, 1980) or perhaps because equality matching is one of the pervasive forms of social relations (Fiske, 1992), tit-for-tat and all defect (or their derivations) seem to be particularly salient strategies for actors in social systems to settle on—even if they are not inevitable as outcomes. In tit-for-tat, one reciprocates for the very last action the other does. And in all defect, one simply looks out for oneself, in part presumably because one expects defection from others (Kelley & Stahelski, 1970; D. Miller, 1999, pp. 1055–1057). Both represent a form of reciprocity: Do unto others as they do unto you or do unto others before they do unto you.

Vandello and I have found Axelrod’s (1984) work extremely helpful in sorting out one of the puzzles in our findings on violence, conflict behavior, and social norms. Specifically, we have found his work quite useful for understanding the way in which dangerous environments can produce vastly different equilibriums in patterns of socality. In our work on the U.S. South, we have argued that the threat of violence has produced prosocial norms for interpersonal politeness, deference, warmth, and congeniality among southerners (Cohen & Vandello, 1998b; Cohen, Vandello, Puente, & Rantilla, 1999). When people are wary of violence, norms for friendliness emerge so that one does not offend (and invite retaliation) from others. With an effective law enforcement system absent, an individual responsible for his or her own self-defense finds it wise to avoid trouble. And such findings about the South fit well with what many anthropologists have noted: that is, that an emphasis on congeniality, “good company,” and conviviality are often found among many violent cultures (Cohen & Vandello, 1998b; Colson, 1975; Fiske, Markus, Kitayama, & Nisbett, 1998; Knauf, 1985). What can appear to be a “Rousseauian paradise” derives from a “Hobbesian” worldview, as people “walk softly [so as] not to offend others whom they regard as dangerous” (Colson, 1975, p. 37).

However, the puzzle, of course, is that “good company” and violence do not always go together; in fact, there are plenty of cultures in which the exact opposite pattern of sociality holds. That is, in many cultures of honor—from Mediterranean herding cultures to inner-city street gangs to the Hell’s Angels—a norm for
preemptive belligerence, toughness, and a “first strike” policy has emerged (E. Anderson, 1994; Campbell, 1965; Gilmore, 1990; Thompson, 1966). With respect to the inner cities, E. Anderson (1994) wrote,

Central to the issue of manhood is the widespread belief that one of the most effective ways of gaining rights is to manifest “nerve.” Nerve is shown when one takes another person’s possessions (the more valuable the better), “messes with” someone’s woman, throws the first punch, “gets in someone’s face,” or pulls a trigger. Its proper display helps on the spot to check others who would violate one’s person and also helps to build a reputation that works to prevent future challenges. (p. 92)

Instead of being reserved or polite, people may lash out, going on the offensive in an uncertain and unsafe world.

All cultures of honor have the underlying threat of physical violence. However, this threat can logically produce a culture in which politeness and geniality become powerful, stable norms (tit-for-tat beginning with cooperation), or it can logically produce a culture where toughness and preemptive belligerence become normative (all defect). This paradox of an underlying cause leading to opposite social norms is rendered intelligible by Axelrod’s (1984) suggestions about the prevalence and potential durability of tit-for-tat and all defect strategies in social systems in which people are responsible for their own self-defense.

Cooperative and competitive societies. Of course, Axelrod’s (1984) research has far broader implications than microlevel social interaction, and it has been productively applied to work exploring the problem of the “tragedy of the commons” and utilization of scarce resources (Hardin, 1968; Ostrom, Gardner, & Walker, 1994). Recently, political scientist Robert Putnam (1993) used an analysis partially derived from Axelrod to understand the good governance and prosperity of northern Italy and the relative poor governance and poverty of southern Italy. In Making Democracy Work, Putnam traced the success of the North to an ethic of cooperation and working together that persists through stable norms for tit-for-tat arrangements. He argued that the shortcomings of the South are due to a lack of this cooperative ethic:

The absence of civic virtue is exemplified in the “amoral familism” that Edward Banfield reported as the dominant ethos in Montegranzo, a small town [in the South]: “Maximize the material, short run advantage of the nuclear family; assume all others will do likewise.” (Banfield, 1958, as cited in Putnam, 1993, p. 88)

Thus, Putnam argued, the strategy of all defect with those outside the family is the dominant ethic of the South, and with its cooperative tit-for-tat counterpart in the North, it too seems entrenched as a norm.

How such cooperative versus competitive societies developed this way originally is another question. And the issue of how they got started leads to consideration of another important and general point.

Sensitive Dependence on Initial Conditions

Early influences and cultural persistence. As evolutionary biologists have noted, the new is built on the old (e.g., Gould, 1980; Rozin, 1998). This is also true of culture, which cannot be made from whole cloth every few years. Indeed, one of the striking things is how some cultural patterns do persist over time. Though two nations or states may have economies, ecologies, and circumstances that look very similar at present, the cultures of these two nations can look very different as a consequence of differences in their early beginnings. Sometimes this may be merely a case of culture lagging behind environmental changes. However, other times, it may be the case that initial conditions and circumstances can set two cultures on two entirely different paths, which may not converge even when circumstances change. Putnam’s (1993) work plausibly demonstrates this. Putnam argued that the cooperative ethic of northern Italy dates back to the medieval period and developed out of the communal norms and “horizontal” (egalitarian) institutions of the 12th and 13th centuries (guilds, neighborhood associations, parish organizations, etc.; see also Bendix, 1962, pp. 70–79). No such institutions or norms for mutual aid developed in the South of Italy, which was ruled by Norman kings in a top-down, autocratic tradition during the medieval period. Corruption and “vertical” (hierarchical) “patron–client” relations developed, but a horizontal cooperative ethic of civic virtue in which citizens work together with peers for the common good had no place to take hold. Proverbs capturing this ethos included, “Dummied is he who trusts another” and “When you see the house of your neighbor on fire, carry water to your own” (Putnam, 1993, p. 144).

Since the 12th century, massive social, political, economic, and demographic changes have taken place in all of Italy. Yet the tumult has failed to wipe away the norms and practices set up during the medieval period:

The southern territories once ruled by the Norman kings constitute exactly the seven least civic regions in the 1970s.... At the other end of the scale, the heartland of republicanism in 1300 corresponds uncannily to the most civic regions of today, followed closely by the areas still further north in which medieval republican traditions, though real, had proved somewhat weaker. (Putnam, 1993, p. 133)

Such findings emphasizing the importance of initial conditions are no surprise in a game theory analysis. Tit-for-tat playing against itself can lead to spirals either of all cooperation or all defection, depending solely on the first move of the players. However, the argument rests on more than this. That is, the notion here is that the initial conditions have altered the basic strategies of northern and southern Italians by creating very different sets of expectations, norms for civic virtue, social meanings, habits, and institutions for horizontal cooperation (Putnam, 1993). Such practices then become an enduring part of the “social capital” and “human capital” of a culture, which can be drawn on as people build organizations and institutions (Coleman, 1990; Fukayama, 1999; Putnam, 1993; Vandello & Cohen, 1999). More than being equilibrium states, the arrangements in these two regions are also stable cultural systems with their own consistent internal meanings and logic.

First effective settlements. More evidence for the persistence over centuries (and across continents) of initial cultural patterns can be found in historian David Hackett Fischer’s (1989) Albion’s Seed. Fischer’s lengthy, ambitious history traces many regional American folkways back to the conditions that shaped the culture of their founding British ancestors centuries before. Reaves’s and Nisbett and Cohen’s research on violence in the U.S. South drew on his analysis (Nisbett & Cohen, 1996; Reaves, 1998). That is,
Fischer argued that distinct elements of Appalachian culture can be traced back to patterns of culture brought by settlers from the borderland between England and Scotland. This border derived its cultural character from one decisive historical fact. For seven centuries, the kings of Scotland and England could not agree who owned it, and meddled constantly in each other’s affairs. From the year 1040 to 1745, every English monarch but three suffered a Scottish invasion, or became an invader in his turn. (Fischer, 1989, p. 623)

This endemic instability created the warrior ethic, the clan system, a sense of “nescient fatalism,” and an ideal of “natural liberty” and freedom that derived from the “anarchic violence [that] had long been a condition of life” (pp. 697–702, 777) in the borderlands. Again, such continuities can be seen today in Appalachian culture, at least with respect to violence (Nisbett & Cohen, 1996; however, see also Cohen & Nisbett, 1998). More generally, though, Fischer and others have made the case for the persistence of borderland folkways, Puritan folkways, Cavalier folkways, and Quaker folkways in contemporary Appalachia, New England, Virginia, and the Middle Atlantic region of the United States, respectively (Fischer, 1989; see also Gastil, 1971; McWhiney, 1988; Wirt, 1989, and especially the work of political scientist Daniel Elazar, 1972, on political cultures in the United States).

Many changes have occurred. In-migration and out-migration have greatly altered the composition of U.S. regions. However, many of the American regional differences begun in what Zelinsky (1973) called the period of “First Effective Settlement” (p. 120) have persisted. More generally, cultural geographers have noted the incredible importance of the culture of a region at the time of its founding (Zelinsky, 1973, pp. 117–120). The groups that get there first have a disproportionate impact, and subsequent migrants to the area may be forced to accommodate to preexisting norms. Thus, cultures travel with people, but strong cultures during periods of initial settlement assimilate as well as accommodate new cultures (Park, 1928; Sowell, 1981, 1996; see also Sherif & Sherif, 1956, for a laboratory analogue of both these points about assimilation and accommodation).

Original patterns and continuity through social organization. In our work on violence in the contemporary United States, (Cohen, 1998; Cohen, Vandello, & Randilla, 1998; Nisbett & Cohen, 1996) we have argued for the importance of understanding initial cultural patterns. Further, we have noted that consideration of these early patterns can explain some counterintuitive and paradoxical findings that directly contradict traditional social science theorizing.

It is a strong tenet of Western thought—from Hobbes (1651/1957) to Freud (1930/1961) to modern day social organization theorists (Courtwright, 1996)—that humans are naturally aggressive beings whose violent and antisocial impulses must be reined in by social institutions. Thus, stable families, cohesive communities, and religious adherence have been thought to be a necessary curb on people’s (usually men’s) aggressive tendencies.

However, if one takes seriously the idea that initial culture matters tremendously, then it is not so clear that social organization would lead to pacification. That is, if the initial culture of a region was violent and such violent norms crystallized during a culture’s formative stage, then the socializing forces of family, community, and religion would probably serve to carry these aggressive, honor-related norms forward rather than dampen them. Disruptive forces of social disorganization would create a space for cultural change, whereas stable social structures would more likely produce continuity in honor and violence norms. Indeed, that is precisely what has been found. In the North of the United States, more stable social organization (more traditional family structures, more cohesive communities, and more religious adherence) is associated with less violent behavior, less violent attitudes, and less violent collective representations. In the South, the opposite is true; that, is more social organization is associated with relatively more violent behavior, attitudes, and cultural representations. For example, if one examines honor-related homicides (i.e., those that occur in the context of arguments, brawls, and lovers’ triangles), one finds that places with cohesive communities and stable families have fewer honor-related homicides in the North, whereas such places actually have more honor-related homicides in the South (Cohen, 1998). Similarly, in the North, people who are closer with their families tend to hold less violent attitudes about honor-related matters, whereas in the South they tend to hold more provolence attitudes about honor concerns (Cohen & Vandello, 1998a; Cohen, Vandello, & Randilla, 1998; Ellision, 1991).

A similar argument about the importance of initial cultural patterning was made by Monkkonen (1998) in discussing contemporary U.S. and English homicide rates. That is, Monkkonen argued that U.S. culture is more violent than English culture because U.S. social and judicial norms crystallized at a more violent time in the nation’s history, compared with when English norms crystallized. Unlike many countries, Monkkonen argued, “structure building” (p. 8) took place in the United States during a relatively violent time in our past, and norms and institutions crystallized around these early practices, persisting today.

Butterflies and tsetse flies. The examples above point to ways in which large cultural differences in the initial stages still reverberate today. However, the insight by dynamic systems theorists that there is a sensitive dependence on initial conditions goes much further than that. Dynamic systems theories argue that for some systems, even tiny differences in the beginning of a process can ultimately have a massive impact. This is because interconnections and interactions can cause forces to reverberate, multiply, and trigger changes in ways that might not have been immediately apparent (C. Brown, 1995; Fischer, 1970, pp. 178–180; Henrich & Boyd, 1998, p. 235; Sharp, 1987; Sunstein, 1998; Walt, 1998).

The butterfly effect is the name that chaos theorists have given to the notion that a butterfly flapping its wings on the Great Wall of China can cause a tornado in Texas (Gleick, 1987; Paulos, 1995). The study of culture has its own versions of a different effect illustrating sensitive dependence on initial conditions, which might be termed the “tsetse fly effect.” More specifically, Triandis (1994) argued, based on work done in Africa, that “living in an environment infested by tsetse flies has far reaching consequences” (p. 23; in this case for gender roles, initiation rituals, and family structure):

Because the flies decimate the herds, it is difficult to keep cattle. With no herds it is difficult for babies to obtain milk. As a result, mothers feed their infants their own milk. In cultures with low-protein diets, a pregnancy during this nursing period could reduce the protein
choice of the milk to dangerously low levels.2 And thus,] this results in a long postpartum sex taboo—women are not supposed to have sex with their husbands for three years after giving birth. But, then, what will the men do? That makes polygyny functional! In turn, polygyny results in children’s sleeping in the same bed with their mothers until they are quite old. Male children thus become very attached to their mothers and so do not learn the male roles very well. To overcome this, the cultures develop severe initiation ceremonies that separate the “child” from the “adult” male. (p. 23)

Large differences in initial conditions may produce large differences further down the line. However, as in the example above, it is possible that small differences in the beginning (in this case, the presence of tsetse flies) can also produce dramatic effects later, through a long chain of reverberating causes and consequences.3 The process, however, is not a straightforward, predictable one, and thus it is crucial to consider the important issue of junctures and choice points.

Choice Points and Junctures

Plausible pathways. Though some long chains of events are quite robust (see, e.g., Dawkins, 1996), long chains of causal sequences are obviously far more fragile than shorter ones. In the case above, the tsetse fly to sex role chain is one possible chain out of many plausible ones. The process is not simple and inevitable, and the connection between tsetse flies and sex roles could probably be severed at one or many links.

In the chain described above, the problems at each step along the way admit to more than one possible solution or adaptation. Thus, it becomes a matter of probability whether a given pathway—from any one particular environmental circumstance to any one particular adaptational outcome—is chosen. For example, one could imagine many factors that might disrupt the causal chain from tsetse flies to sex roles described above. That is, one can imagine cultures in which cattle cannot be kept but in which nursing is done primarily by wet nurses instead of the natural mothers, removing the need for the postpartum sex taboo (Kluckhohn, 1965, p. 171). Further, in high-protein cultures, there may be no reason for long postpartum sex taboos to exist. Also, there are several cultures that try to avoid a second pregnancy by practicing coitus interruptus or by using abortion as “an alternative to sexual abstinence” (Whiting, 1964, pp. 523, 534).

In addition, questions about other plausible paths further in the chain arise: Why would a postpartum sex taboo necessarily lead to polygyny? Again, plausible alternatives include abstinence, or if not that, then norms for, say, prostitution or polite hypocrisy, where men are discreet about “cheating” but otherwise remain loyal to their wives (see Rauch, 1997, 1998, on the functionality of the “Main Street rule” for polite hypocrisy in modern culture). Also, even with customs of polygyny, why would father absence necessarily lead to children’s sleeping with their mothers instead of sleeping separately? And, even with father absence, why couldn’t systems be set up so that children develop bonds with a surrogate father or with other men of the village? Through its meaning-making power, culture can make any number of the above paths and choices sensible and plausible. There is more than one possible cultural adaptation at each step along the way, and the role of human choice, agency, or chance, as well as fit with existing cultural norms, is crucial.

Choice, agency, and change in macroperspective. Historian David Hackett Fischer (1996) took this perspective seriously on the macroscale in The Great Wave, his sweeping view of world history since the 12th century. In this book, Fischer outlined a model of *autogenous change*, emphasizing microlevel decisions and processes to explain very macrolevel historical and cultural change:

It begins with an idea of a culture as a complex web of causal relationships which link material structures, cultural values, and individual actions. It also builds upon an idea of history as a sequence of contingencies, in the special sense of people making choices, and choices making a difference. Two vital elements in this approach are ideas of contingency and choice. (p. 246)

Fischer’s (1996) view of how price revolutions influence the “rhythm of history” depends very much on both material circumstances and human agency. A simplified summary of the model runs as follows: In periods of prosperity, optimism, and progress, people’s hopeful expectations lead to decisions that cause aggregate demand to outstrip supply. Small inflationary pressures lead to expectations of greater inflationary pressures, and these expectations lead people to make decisions that produce further price increases. Pessimism, imbalances, and inequalities cause social, economic and political instabilities. And people further respond to these circumstances with behavior characteristic of people in a state of anomic (violence, substance abuse, crime, out-of-wedlock births, family disintegration, etc.). Only when the crisis comes to a head and people devise new solutions or make choices that ease demand and restore stability does equilibrium slowly return (Fischer, 1996).

Fischer’s (1996) theory is

an historical idea, in [that] each stage contains within itself the seed of the next, and the one after that. The causal sequence is not fixed and rigid in its determinism. It develops as a chain of individual choices, and as a consequence its structure changes from one great wave to the next. (p. 251)

For a similar framework, see Tilly’s (1995) account of political revolutions as probabilistic and “path, time, and situation dependent” (p. 1605); Linton, 1936 (chapter 15); Sahlins, 1998 (pp. 408–412).

Human agency is only part of this probabilistic chain. The vagaries of chance in the natural world play a role as well. In Fischer’s (1996) description of the moment of greatest social disorder, he wrote:

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2 Whiting (1964) argued that a long postpartum sex taboo for mothers was one consequence of living in a culture with a low-protein diet, where subsequent pregnancies could reduce the protein content of the mother’s milk to critically low levels. Indeed, statements that pregnancies can “spoil” the milk of nursing mothers are frequently given “native explanations for extended postpartum sex taboos” (Whiting, 1964, p. 518).

3 Diamond (1999) also argued that “the only factor that prevented horses from spreading beyond West Africa was Trypanosoma disease borne by tsetse flies” (p. 164). Again, at a very macro level, this can have far-reaching consequences as “the arrival of the domestic horse in West Africa transformed warfare there and turned the area into a set of kingdoms dependent on cavalry” (p. 164).
Finally, a triggering event that might have caused a minor disturbance in another era creates a major crisis. The trigger itself might be a change in the weather [affecting food production]—the heavy rains of the early fourteenth century, or the cold years of the eighteenth century, or drought in the twentieth century. It might be an epidemic or a war. It could be a malevolent monarch, or an incompetent president, or an irresponsible demagogue, or a dictator driven by his own malevolence. More often—and most dangerously—it is a combination of disasters. Whatever they might be, these small events have sweeping consequences. They disrupt a cultural system that is dangerously unstable. (p. 248; see also Boulding’s, 1986, pp. 53–54, strain-strength model of cultural change)

In this context, the entire “Great Man” theory of history (in which some chance combination of genetics and environment produces a human being whose actions change the world) becomes a special case of more general probabilistic accounts just described. As Tetlock (1998) noted, “there are endless games one can play with counterfactual history” (p. 163; e.g., “What if Hitler had not been born?”), with some thought experiments being more productive than others (see also Fischer, 1970, pp. 172–186; Tetlock & Belkin, 1996; Tilly, 1995). However, the usefulness of these counterfactuals is in serving as a reminder of the more important general point: That is, paths to and from a social system at any point in time are not entirely predictable, and the process of cultural change is one influenced by historical circumstances, probability, and human agency (Linton, 1936, pp. 267–270).

**Borrowing and Assimilating**

Given the importance of initial conditions and paths chosen or forsaken, two cultures may not converge even as their later environments or material circumstances become more similar to each other. Further, even to the extent that norms and institutions are transmitted from one culture to another, the resemblance between them may prove to be only superficial. Arguing this point on a grand scale, Huntington (1993, 1996a) described the way in which the major civilizations of the world diverge, despite globalization and cultural transmission. Indeed, Huntington (1996a) argued that divergence continues sometimes because of such cultural transmission and borrowing:

Borrowing theory, as elaborated by Frobenius, Spengler, and Bozeman among others, stresses the extent to which recipient civilizations selectively borrow items from other civilizations and adapt, transform, and assimilate them so as to strengthen and insure the survival of the core values or “paideuma” of their culture [italics added]. (p. 76)

Thus, Huntington (1996b) argued,

Most of the world’s great civilizations . . . have existed for at least one millennium and in some cases for several. These civilizations have a demonstrated record of borrowing from other civilizations in ways that enhance their own chances of survival. [For example,] China’s absorption of Buddhism from India, scholars agree, failed to produce the “Indianization” of China; it instead caused the Sassinification of Buddhism. The Chinese adapted Buddhism to their purposes and needs. (p. 36)

Early Muslim Arabs made use of their “Hellenic inheritance” and early Japanese culture borrowed and assimilated aspects of early Chinese culture in similar fashions (Huntington, 1996a, pp. 76–77; see also Fairbank, Reischauer, & Craig, 1989, pp. 107–110, for a brief description of the Chinese “absorption of Buddhism” relevant for “the mundane life of the individual” (p. 108); see also Kitayama & Markus, 1999, pp. 271–273, on the selective incorporation of some aspects of Buddhism into Japanese society; Kluckhohn, 1965, pp. 58–61). Thus, Huntington (1996a) argued that the world’s cultures are fundamentally different for reasons that go far back in history, and, in a prediction yet to be confirmed or denied, he posited that they will remain so. Especially significant (both theoretically and practically) is his argument against the popular thesis that modernization (“industrialization, urbanization, increasing levels of literacy, education, wealth and social mobilization, and more complex and diversified occupational structures,” p. 68) inevitably leads to Westernization: “The West was the West long before it was modern” (p. 69), and being Western is not the only way of being modern (Huntington, 1996a, p. 69). “In addition to Japan, Singapore, Taiwan, Saudi Arabia, and, to a lesser degree, Iran have become modern societies without becoming Western” (p. 77; see also Pagden, 1998, pp. 40–41; Wei-Ming, 2000; Wilson, 1993, pp. 210–211; further see Patterson, 1999, pp. 61–63 on how very different concepts of “freedom” have been adapted to local folkways and needs). As Sahlins (1998) argued, instead of dismissing “people’s claims of cultural distinction (the so-called invention of tradition)” (p. 399), “one may as truly speak of the inventiveness [italics added] of tradition” (p. 408) or the “indigenization of modernity” (p. 410). That is, the inventiveness of tradition is shown in the way practices are often borrowed, changed, and modified to “renew and enrich the indigenous form of life” (p. 411).

The simple notion of modernization leading to a convergence on Westernization ignores the forces of history, the notion of multiple possible paths, and the genius of culture for assimilating new forms to old ones, Huntington (1996a, 1996b) argued. Similar conditions (in this case, modernization) can be associated with a multiplicity of cultural forms.

**Processes Involved in Cultural Maintenance**

Cultural persistence or cultural conservatism in the face of sweeping material changes (such as modernization) highlights again the way that very different cultures can be found in similar ecological and economic environments. A very important area for future research will be to help analyze the forces that create such conservatism and help explain how culture is constantly being re-created. Such an emphasis goes against much traditional social science theorizing, which treats “inertia” as a satisfactory causal explanation for persistence. However, the picture is probably far more complicated. As Moore (1966) noted,

There is a widespread assumption in modern social science that social continuity requires no explanation. Supposedly it is not problematical. Change is what requires explanation. The assumption of inertia, that cultural and social continuity do not require explanation, obliterates the fact that both have to be recreated anew in each generation, often with great pain and suffering. (pp. 485–486)

Psychological explanations for cultural conservatism are likely to involve issues potentially both of content (ideas) and, some argue, process (cognitive tools). In terms of content, scholars such as Weber have placed ideas at the forefront of analysis and have,
for example, described the way Calvinist asceticism and notions of a calling—as well as earlier individualistic, universalistic ideas embodied in Christianity—gave rise to capitalism, which itself may perpetuate some form of rationalism, at least in the West (Bendix, 1962, pp. 70–79; Weber, 1958; Wilson, 1993, p. 210). Kitayama and Markus (1999) also argued for the importance of ideas and models of the self in selecting for cultural practices and meanings that “afford” various “psychological processes and structures” (p. 255), including self-enhancement in the West and self-criticism in Japan (see also Heine et al., 1999, and Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997, for a description of some of these practices, affordances, and processes). Such “psychological processes and structures become instrumental in reproducing and reconstituting the cultural practices, meanings, and social situations from which they have been originally derived” (Kitayama & Markus, 1999, p. 257). The feedback from these psychological processes is likely to reinforce current cultural models. Change in such models will occur, but Kitayama and Markus argued that such change may well be gradual and partial. For one thing, core cultural representations are only infrequently contested as focal issues of public debate. For another, they may still be consistent with a large number of other existing cultural practices and meanings (p. 258).

in the intracultural niche (relevant to the first point, see also Kahan, in press; Kurian, 1995a; Lessig, 1998; Sunstein, 1995; Triandis, 1996; and relevant to the second, see also Linton, 1936, chapter 16; Triandis, 1996). (For another interesting analysis of the way Western models of the “rational,” self-interested individual can drive people’s expectations about others, can influence explanations they give for their own actions, and can ultimately become self-fulfilling by producing such self-interested behavior, see D. Miller, 1999, and D. Miller & Ratner, 1998; see also Schwartz, 1997, on “idea technology”.)

Beyond (or rather interacting with) issues of “content,” Nisbett, Peng, Choi, and Norenzayan (2001) recently argued that thinking styles or the cognitive tools and processes humans use also can be important in preserving cultural patterns. They argued that early on, ecological and economic factors such as the development of large-scale agriculture in China meant that “substantial cooperation with neighbors was necessary to carry out economic activities in an effective way” (p. 303). In contrast, ancient Greek societies, based on herding and fishing, had fewer constraints, with far less need for maintaining harmony. These social ways of life, they argued, had implications for the “metaphysical beliefs” and “tacit epistemologies” (p. 293) of the two cultures, affecting the tendencies of early Chinese and Greeks to focus either on the field versus the object; on relationships versus on categories and rules; on “dialectics,” compromise, and “the Middle Way” (p. 295) versus formal logic; on the continuity versus on the discreteness of objects in the world; and generally, on holism versus on analysis in cognition (Peng & Nisbett, 1999; see also Choi & Nisbett, 2000; J. Miller, 1984). Consistent with the work of Witkin, for example, Nisbett et al. argued that the relative field dependence of Easterners compared with Westerners on cognitive tasks could result from Easterners’ habitually attending to the social environment and from the greater need in collectivistic cultures to pay attention to others and to relationships.

Nisbett et al. (2001) argued that the resulting cognitive styles—broadly emphasizing either analytic tendencies or holism—may then reinforce the social syndromes of independence, legalism, and rationalism (in the West) or those of interdependence, compromise, and relational focus (in the East) that gave rise to the thinking styles in the first place (see also Bendix, 1962, pp. 68–69, 385–416). For example, an emphasis on confrontation versus compromise may be reinforced by Western beliefs in a single right answer versus Eastern beliefs in multiple truths and that contradiction is natural (Peng & Nisbett, 1999; see also Schimmack, Oishi, & Diener, 2000). Or the Western emphasis on the person versus the situation may be reinforced by the Western tendency to focus on the central actor or object versus the Eastern tendency to focus on the field of forces (Ji, Peng, & Nisbett, 2000; Norenzayan & Nisbett, 2000).

Quoting Resnick (1994, pp. 476–477), Nisbett et al. (2001) proposed that “the tools of thought . . . embody a culture’s intellectual history. . . . Tools have theories built into them, and users accept these theories—albeit unknowingly—when they use these tools (p. 306).” The feedback loop between thinking styles (which embody theories and models of the social world) and the theories and models themselves is such that within a given intracultural niche the cognitive styles, belief systems, and social practices support one another (Nisbett et al., 2001).

Also consistent with this, Kitayama and Markus (1999, pp. 261–263) noted that processes such as cognitive dissonance (which seem far less prevalent in the East, according to Heine & Lehman, 1997; Heine et al., 1999) help reinforce the notion of a self that is stable, is autonomous, and acts in accord with its own desires. That is, by dissonance and self-perception processes’ bringing attitudes in line with behavior, they reconfirm and reinforce a (content) model of persons as independent, consistent, and acting in accord with internal dispositions. (See also Cialdini, Wosinska, Barrett, Butner, & Gornik-Durose, 1999, on consistency principles in a U.S. and a Polish sample.) Similarly, Cohen and Guz (in press) discussed how differences in individual phenomenological experiences of self may reinforce, and be reinforced by, differences in Eastern and Western ideologies about the individual and the group. Specifically, it was shown that Easterners exhibited a greater tendency than Westerners to cognitively take an “outsider’s” perspective on the self (in their memories and in their emotional perceptions). Such differences in cognition and phenomenology at the microlevel probably help sustain a tighter, more collectivistic culture and ideology in the East at the macrolevel. The phenomenological experience of taking an outsider’s perspective on the self probably reinforces cultural ideas about the self as embodied in a larger group context where “face” and the opinions of watchful others are of great importance. More generally, issues of both cognitive content and process—and their intertwining—must be considered in future research that examines the mechanisms by which cultural systems are actively re-created.

Part 3: Regularities and Constraints

Given what has just been said about the diversity of cultures that come from different environments (in the first part of the article) and even from similar environments (in the second part of the article), why aren’t the world’s cultures even more irregular than they are? There are a number of plausible answers to this that can
be given at different levels of analysis. Three of these factors have to do with the properties of systems (path convergence), optimality, and evolutionarily constraints on the human animal.

Path Convergence

Just as there may be more than one plausible path from a point, there may be more than one plausible path to a point. For example, economists and legal theorists have worked on this problem with respect to the issue of norms, and again considerations of mutual interdependence can become focal. Cultures may have similar features, deriving from vastly different underlying causes.

Behavior from prescriptive and descriptive norms. Patterns of behavior can be driven by either descriptive norms (describing what “is” modal) or prescriptive (internalized, “ought”) norms (Kelman, 1958; McAdams, 1997; cf. Cialdini, Kalilgren, & Reno, 1991, on injunctive, descriptive, and personal norms). With respect to this issue, scholars such as Schelling (1978), Kahan (1997), Kurian (1995a, 1995b), and others have pointed out that a norm may hold sway in a culture either because (a) a large proportion of people (p1) believe in the norm and some small proportion of people (p2) go along with it because they (correctly) think others believe in it or (b) a small proportion of people (p3) believe in the norm and a very large proportion of people (p4) go along with it because they (incorrectly) think others believe in it. Thus, to put the argument simply, social norms can arise both when people are deeply committed to a norm and when people merely think that others are deeply committed and act accordingly.

D. Miller and Prentice (1994; Prentice & Miller, 1996) argued that this is another one of the reasons for conservative lag or the stability of cultural norms across time. Cultural norms at Time 1 may be a certain way because of people’s underlying attitudes, and these norms may persist at Time 2 merely because of misperceptions. People may believe the norms still have widespread support, even though many or even a majority privately reject them. In the United States, segregationist norms persisted even after White attitudes had changed partly because

Whites believed that changes in their own thinking were not shared by other Whites. Mistakenly assuming that the majority of their White peers continued to support segregation, they acquiesced in the status quo despite no longer privately supporting it (Fields & Schuman, 1976). (D. Miller & Prentice, 1994, p. 543)

In our own work on violence norms, we have found suggestions of this same sort of conservative lag operating among southerners, at least for some parts of the population in some classes of situations. Southern college students who are insulted believe that others will think less of them for failing to respond to an insult; however, there is no evidence that others watching this situation actually do (Cohen, Nisbett, Bowdle, & Schwartz, 1996; Vandello & Cohen, 2000). Further, southern college students are no more likely than their northern counterparts to encourage people in a conflict to be aggressive. Yet, southerners from this same population see others in this situation and are more likely than northerners to project aggressive intentions onto them, particularly when the situation is ambiguous (Cohen & Vandello, in press; Vandello & Cohen, 2000). Thus, even when these southern college students don’t endorse aggression themselves, they project it onto the “generalized other” (Cooley, 1902; Mead, 1934; Triandis, 1989, p. 507; see also Smith’s, 1759/1976, projections onto the “impartial spectator” [p. 110]). The result is that they may end up acting contrary to their private beliefs and in concordance with bellicose norms that they erroneously believe hold sway (Cohen et al., 1999).

Such an analysis sheds light on why examination of public behavior and public representations regarding violence can produce big North–South differences in the United States, whereas examinations of private attitudes produce much smaller effects (Cohen, 1996, 1998; Cohen et al., 1996; Cohen & Nisbett, 1994, 1997; Cohen & Vandello, 1998a, 198b). (see also Cohen, 1997; Peng, Nisbett, & Wong, 1997). Male-on-male aggressiveness norms and behaviors may be prominent in a given culture not because people believe them any longer but because people think that others still believe them. Two cultures (or a given culture at Time 1 and Time 2) may have the same surface manifestation, even as the underlying dynamics driving overt behaviors are quite different (Vandello & Cohen, in press).

Sociologist Elijah Anderson (1994) and legal theorist Dan Kahn (1997, 1998) have provided a similar, though not identical, analysis of inner-city culture. They have argued that the vast majority of people in the inner city (the “decents” [p. 82], in E. Anderson’s terms) do not hold to violent norms, yet they are forced to play by the code of honor laid down by a small minority of inner-city residents (the “streets” [p. 82], in E. Anderson’s terms). The result is that many decent end up looking like streets in their public behavior:

When a person ventures outside, he must adopt the code—a kind of shield, really—to prevent others from “messing with” him. In these circumstances, it is easy for people to think they are being tried or tested by others even when this is not the case. (E. Anderson, 1994, pp. 89–90)

The “rules of the street” may not be privately believed by most people, but that may not make the public norms any less real—either because one fears the shame of others or because one fears their potential attacks. Honor cultures in particular may come into existence or may survive either (a) because enough individuals believe in the code or (b) simply because enough individuals believe that enough other individuals believe in the code (see Colson, 1975; Gladwell, 1996, 2000; Milgram, 1992, pp. 17–18; Wilson & Kelling, 1982).

Payoffs. In the examples above, it was argued that a person may behave violently because he fears violence from others if perceived as a wimp. As Daly and Wilson (1988) noted, “violence may breed more violence… simply by raising the perceived risks of nonviolence. A rational man in a violent milieu will be quicker on the trigger than the same man in a more pacific setting” (p. 286).

Thus, in this and other mixed-motive interactions between two rational competitors, the payoffs may be structured such that undesirable outcomes (such as violence) become likely. This situation, however, may be just a special case of the more general limited goods problem. Of importance, this more general problem involves limited goods and payoff structures that create certain inevitable states of equilibrium for a system—regardless of people’s underlying attitudes or dispositions. In terms of the issue of path convergence, different cultures—with different underlying distributions of attitudes—may arrive at the same equilibrium.
point, simply because of the payoff structures that are inherent in the problems they face.

Legal theorist Robert Cooter (1997) provided an excellent example of this for social systems that face a variety of limited goods dilemmas. Cooter argued that sometimes, even if more people internalize a norm for altruism, honesty, cooperation, or playing by the rules, it may do little to change social behavior in the aggregate because (a) there can be real costs or benefits to cheating versus following norms and (b) there are "adventitious" actors whose decision about whether to cheat or follow the norms depends on these payoffs.

It is often not possible or feasible to monitor and enforce every single transaction, so systems often persist at a level where some cheating or norm breaking occurs. In this case, cheaters will sometimes get more than their fair share. However, there will not be so much cheating that the system collapses, that enforcement increases, or that the norm changes for most people. In Cooter's (1997) stylized example,

Assume that 60 agents commit to cooperation whereas the remaining 40 cooperate adventitiously or appropriate [cheat], depending on which behavior earns a higher payoff. Assume that the payoff for cooperating equals the payoff for appropriating when 80 agents cooperate and 20 agents appropriate. Thus, an equilibrium is reached in which 60 agents cooperate from commitment, 20 agents cooperate adventitiously, and 20 agents appropriate. Now assume that one of the appropriators "gets religion," internalizes the norm, and starts cooperating. The system is now in disequilibrium with 81 cooperators and 19 appropriators. Thus, the marginal payoff for cheating becomes slightly higher. Equilibrium is restored when one of the adventitious cooperators changes strategy and starts appropriating. In the new equilibrium, the aggregate levels of cooperation remain 80 and 20 respectively. Only the identity of one cooperater and one appropriator has changed. (p. 961)

Obviously, more than one person can "convert" with no change in the system because, in Cooter's (1997) example, for every cheater who gets religion, there is an adventitious agent who will take his or her place. The equilibrium can remain the same, even though at least one or more of the people have become true believers. In fact, in the example above, up to 20 people can get religion and be replaced by adventitious actors without producing any change in the surface manifestation of the system (80 people behaving cooperatively and 20 people cheating).

Cooter (in press) used this example to illustrate the "ineffectiveness of self-restraint" (p. 18) or the ineffectiveness of working solely on shaping internal attitudes and dispositions. The more general point is that two social systems with very different underlying dynamics of values and beliefs can end up looking quite phenotypically similar. This may be due partly to the effects of expectations and reputational concerns as discussed in the previous section (Kuran, 1995b; D. Miller & Prentice, 1994; Posner, 1996; Vandello & Cohen, in press). Or it may be partly due to the inherent payoff structures for either following norms or cheating in given social dilemmas (Cooter, 1997, in press). (For parallel examples of the way a certain amount of "cheating" may be endemic in some biological systems due to inherent payoff structures, see also work described in Dawkins, 1989, pp. 248–252; Tinbergen, 1974, pp. 134–137; Zahavi & Zahavi, 1997, pp. 9–10, 185–195).

Evolutionary Constraints

There are also constraints on systems arising because of the constraints on the human animal. Human beings are not blank slates on which any cultural form can be written, and ideas about culture must take this into account (see Barkow, Cosmides, & Tooby, 1992; D. E. Brown, 1991; Cosmides & Tooby, 1989; Rozin, 1982, 1998; Tooby & Cosmides, 1989; Sperber, 1990, p. 37; Wilson, 1993).

As Barkow (1989) argued, drawing on the work of Cosmides and Tooby (1989),

our "obvious" rules underlying exchange and reciprocity are not inevitable—they are products of natural selection, and ultimately they are related to inclusive fitness. Other logical grammars of social exchange are certainly possible, but only this one exists, because its rules in effect constitute something like an evolutionarily stable strategy in that, in the long term, they maximize the inclusive fitness of each participant. (p. 3)

In some ways culture is kept metaphorically on a "genetic leash" (Lumsden & Wilson, 1983) and is not free to wander haphazardly:

A few cognitive traits are so superior . . . so as to be highly developed in everyone . . . People invent words at a prodigious rate to label sights and sounds (but not odors). With near unanimity they enjoy sugar, avoid excrement, and marry outsiders. (p. 148)

Lumsden and Wilson argued that
gene–culture coevolution . . . is nicely illustrated in elementary form by the case of incest . . . The [rules] that turn the mind away from incest lead also to cultural patterns that reinforce the rules—taboos and frightening mythological stories. The coevolutionary process is set in motion: persons who conform to the aversion and taboos leave more healthy offspring; the genes underlying the avoidance of incest remain at a high level in the population; and the predisposition is sustained. (p. 119; see also Lopreato, 1984, pp. 314–321)

Growing out of evolved human capacities for language, sociality, survival, and so on, universal cultural syndromes should thus be most likely to be found in response to such common human adaptive problems as getting along in groups (reciprocity norms and elementary modes of sociality; Fiske, 1992), avoiding contamination (some disgust norms), producing healthy offspring (incest taboos), and raising one's young to maturity (parental love and investment), for example. With respect to the incest taboos, again, Lumsden and Wilson (1983) speculated that
even if a society could somehow begin anew with brother–sister incest as the norm, it would probably develop a cultural antagonism toward the practice in a generation or two. Eventually, the society would incorporate taboos in the form of rituals and mythic stories to justify and reinforce the aversion. . . . The genetic leash pulls the culture back into line. (pp. 64–65)

However, in many cases, the leash from genes to culture may be quite a long one, particularly because many important belief systems are likely to be "immune to any objective evaluation" and only "weakly affected by evolved predispositions" (Richerson & Boyd, 1989, pp. 197–198, 202). Richerson and Boyd (1989, pp. 198–204) offered religious beliefs as one such example of a profoundly influential system that is immune to fact checking and
is without clearly fitness-damming consequences. Nevertheless, in considering the possibilities, it is essential to consider the leash—and the possibility of the mutual leashing of culture and genes—as one examines genetic and cultural coevolution (Durham, 1991; Fiske, 2000, pp. 82–92; Flinn et al., 1994; Maynard Smith, 1988, chapters 8, 14; Richerson & Boyd, 1989; Rozin, 1982, p. 242; Rozin, 1998, pp. 122–123).

Optimal Solutions: Culture's Hexagons

Regularities also appear in the world because the world has its own constraints and there are optimal solutions that are independently developed in many different systems (Dawkins, 1996). Citing D. W. Thompson (1942), Gould (1980) argued that some "abstract forms are optimal solutions to common problems. They are evolved repeatedly in disparate groups because they are the best, often the only, path to adaptation" (p. 41). In the physical world, repeating hexagons appear often in nature. Why? Because triangles, parallelograms, and hexagons are the only plane figures that fill space completely without leaving holes. Hexagons are often favored because they approximate a circle and maximize area within relative to the supporting walls (minimum construction for greatest storage of honey, for example). (p. 41)

Similarly, some cultural adaptations will be like hexagons, in that they are found repeatedly because they are optimal human-made solutions to common adaptive problems. Dennett (1995) argued that "if a trick is that good, then it will be routinely rediscovered by every culture, without need of either genetic descent or cultural transmission of the particulars" (p. 487). And he proposed this simple thought experiment:

Imagine creating a roomful of roughly rational robots (smart, but with no genetic ancestry at all) and [ask] yourself if they would soon settle into the behavior in question.... If so, it is not so surprising that human beings everywhere do it, too, and it probably has nothing to do with their primate heritage, their mammalian heritage, even their vertebrate heritage. (Dennett, 1995, p. 487)

Dennett offered territoriality as one such example. There may be an innate predisposition toward territoriality. But Dennett argued territoriality is also a "Good Trick." A territorial strategy "makes so much sense in so many human arrangements. It is, if not a forced move, close to it" (p. 487). (See also Dawkins, 1989, chapter 5; Maynard Smith, 1982, on the logic and stability of a territorial strategy; Sulloway, 1998.)

The argument is that these optimal solutions will be independently invented the world over. This is without transmission across cultures. If one does allow for transmission across societies, these optimal solutions should become even more common as the best adaptations are adopted under a "truth wins" decision scheme in various cultures (Burnstein & Vinokur, 1977; Laughlin & Ellis, 1980; Linton, 1936, chapter 16; Watts & Strogatz, 1998) or as conformist transmission increases the chance that adaptive solutions will be found (Boyd & Richerson, 1985; Henrich & Boyd, 1998). Optimal solutions are not always adopted (Edgerton, 2000), but in the long run, they probably stand a better chance than those that are less efficient (Diamond, 1999; Wright, 2000a, 2000b).

Part 4: Implications for the Study of Culture

In closing, the foregoing has some implications for how culture might be studied by psychologists as the field continues to advance. The research and theorizing described above has implications for how predictable one might expect relations to be between environmental, ecological, or economic circumstances on the one hand and cultural forms on the other. It has implications for the way one might combine both a meaning perspective and an equilibrium perspective in studying culture. It has implications for examining the clusterings of cultural traits as a function of the niches in which they emerge. And it has implications for potential future directions of research in areas such as the mechanisms of cultural stability, diffusion, and re-creation.

To the extent that one can predict cultural features from current environmental circumstances alone, discussions of other sorts of causal processes may be irrelevant. However, (a) to the extent that cultural features derive only from more distant environmental conditions, one needs to examine the more social mechanisms of cultural perpetuation or the cultural re-creation processes that Moore (1966) noted, and further (b) to the extent that either past or current environmental conditions are causally important but can lead to a variety of adaptive cultural traits, one needs to consider carefully the issues of mutual interdependence, multiple equilibriums, and factors relevant to various types of cultural niches. Implications of these notions for how researchers conduct cross-cultural research and think about such issues as we move forward are described below.

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4 Indeed, to the extent that religion encourages reciprocal altruism, it may be fitness enhancing (Richerson & Boyd, 1989). See also Irons (in press) and Wright (2000a, pp. 87–92) on the potential benefits of an "irrational" commitment to religion, as well as Nesse (2000) and Frank (1988) more generally for the ultimate fitness advantages of seemingly irrational commitments and beliefs.

5 Of course, this is also not to say that a solution must be optimal for it to spread. Dawkins (1989) proposed the concept of a meme—a unit of culture that would cover concepts as wide as an idea, a way of doing things, a proverb, an image, or even an infectious advertising jingle. And clearly suboptimal or even harmful memes have spread (Mackay, 1841/1995). Sperry (1985, 1990) has argued that there is a need to develop a model (or more probably, multiple models) in creating an "epidemiology of beliefs" (p. 25). Thus, the spread of different sorts of beliefs and representations probably depends on many different and potentially interacting factors, including the nature and inherent attractiveness of the representation, the hegemony or the credibility of the source of the meme, the susceptibility of a population to a particular type of representation, the "copying fidelity" (Dawkins, 1989, p. 17) of particular memes, and the possibility of "mutually coadapted meme complexes" (or memes traveling together as a package; Dawkins, 1989, p. 199; Barber, 1995; Bartlett, 1950; Cavalli-Sforza & Cavalli-Sforza, 1995, chapter 8; Cohen & Nisbett, 1997, Study 2; Hatfield & Rapson, 1996 [cf. Dion & Dion, 1993; Levine, Sato, Hashimoto, & Verma, 1995]; C. Heath, Bell, & Sternberg, 2000; Kluckhohn, 1965, pp. 42–73; Linton, 1936, pp. 264–267; McGuire, 1964; Morris & Peng, 1994, Study 2; Rozin, 1988; Sowell, 1996, pp. 47–48; Spiteri, 1990, 1996, chapter 5). Sorting out the various contributions and interactions of these factors as well as those discussed at length previously is likely to be an important area of future research on cultural spread.
**Predictability**

Examining culture as a functional response to the environment, ecology, and economy must be the starting point. However, as the preceding discussion might indicate, understanding adaptations solely in terms of a linear, X causes Y relationship will probably not take researchers fully to where we want to go. Correlations between our independent environmental variables and our dependent cultural variables are likely to be attenuated for at least three reasons. First, new adaptations are grafted onto existing ones, not generated from scratch, in response to current environmental circumstances. Second, similar environmental conditions can often lead to very different cultural outcomes because of mutual interdependence among actors, the possibility of multiple equilibriums, sensitive dependence on initial conditions, choice points and junctures, and probabilistic chains of causal events. And, third, range is restricted on the dependent variable side because (a) there is often path convergence, (b) culture is constrained in the possible forms it can take, and (c) optimal solutions are often independently discovered or transmitted across cultures. For all these reasons, simple, linear X (environment) causes Y (culture) accounts are likely to be imperfect.

**Coherence**

Given what has been described above, predicting cultural adaptations from environmental circumstances is likely to be a complex task. However, just because cultural systems lack perfect predictability, this does not imply they lack coherence or sense. Indeed, an implicit theme of this article has been the way that multiple stable equilibriums (described by game theorists, economists, and the like) map onto multiple coherent meaning systems (described by anthropologists and cultural psychologists). The genius of culture is the way it can make meaning and sense in radically different worlds. (As Shweder, 1993, described it from a “postmodern humanistic perspective,” different cultural sensibilities can be “thought of as multiple equilibria states, as coequal even if divergent forms,” p. 297.)

Again, in our own work on violence, we have seen the importance of bringing together an equilibrium perspective and a meaning perspective. Tit-for-tat systems in which politeness and the threat of violence go together make perfect sense (Cohen & Vandello, 1998b; Colson, 1975). And opposite worlds—all defect systems where violence and everyday belligerence go hand-in-hand—are also perfectly coherent (E. Anderson, 1994). More than being equilibrium states, these arrangements are also stable and meaningful cultural systems that make sense to people in them—even if they are not understood by people from other systems whose norms have crystallized around a different equilibrium point (Cohen et al., 1999).

Further, the power of culture to make meaning gives it a tremendous integrating capacity, so that many possible arrangements of cultural “traits” become plausible and coherent. Triandis’s (1994, 1995, 1996) work provides an excellent example of this. He has shown that cultures can be described as collectivist or individualist and also as horizontal (egalitarian) or vertical (hierarchical). There is a tendency for collectivism and verticality to go together (the cross-national correlation between Hofstede’s measures of power distance and individualism was −.67; Hofstede, 1980, p. 213; Triandis, 1995, p. 46; see also Vandello & Cohen, 1999, pp. 286–289). However, despite this tendency, all four resulting combinations of these traits—even the unlikely ones, horizontal collectivist and vertical individualist—can be integrated to form meaningful, coherent wholes. Specifically, these combinations map well onto Fiske’s (1992) four elementary modes of sociality: communal sharing (horizontal and collectivist), equality matching (horizontal and individualist), authority ranking (vertical and collectivist), and market pricing (vertical and individualist; see Fiske, 1990, 1992; Triandis, 1995, 1996, for other mappings). Through its integrative, meaning-making power, culture turns these possible combinations into plausible combinations. More generally, culture makes the possible into the plausible. As Shweder (1993) put it, very different possible “sensibilities” can become meaningful, because “there is more than one cultural logic out of which to fashion a way of life” (p. 305). Describing this cultural coherence and noting the way that various meaning systems may map onto various social equilibriums is one part of what psychologists can contribute to the study of culture.

**Implication for Study**

**Areas of research: Processes of stability and change.** A major implication is that, as researchers, we need to study cultures as systems. We need to study the way they cohere and have meaning. We need to understand the way they change over time, and we need to look at the process of how cultural forms emerge, persist, and evolve. More specifically, we need to understand the crucial roles that history, chance, initial conditions, choice points, and mutual interdependence play in shaping a culture. And we need to understand the constraints that human animals and the world place on such systems. In essence, the goal is to understand the forces and processes that bring systems to one equilibrium point or to another and understand the way that culture gives sense and coherence to different equilibrium points.

As the examples illustrating the principles of mutual interdependence and sensitive dependence on initial conditions have highlighted, small “causes” can have big effects. Yet, at the same time, one also is in awe of the tenacious stability of some cultural forms and their ability to regenerate themselves in a robust number of circumstances. Clearly, one of the most intriguing areas of future research can concern (a) what types of cultural syndromes are subject to rapid change and what types are particularly tenacious, (b) when and in which contexts they are remarkably stable or tenous, and (c) what the most important mechanisms are in producing change or stability, assimilation or accommodation, diffusion or extinction. As Moore (1966) argued, culture is constantly being re-created. But whether and how it is being re-created, in line with existing arrangements or in potential opposition to them, is the relevant issue.

The anthropologist Ralph Linton (1936, chapter 16) distinguished between a culture’s integrated stable core of universals and specialities (ideas and habits shared in common by all members of a culture or by all members of a social category within a culture) and the culture’s more fluid collection of alternatives at the periphery (shared by many people but not common to all or to any particular category). This distinction can be quite useful in thinking about where one might expect to find cultural stability versus change. However, the boundaries between these categories are, of
course, permeable, and it is not always clear what one should call the "core" values and practices (given the inventiveness of tradition and the ability to assimilate new forms to deeper levels of meaning; Huntington, 1996a; Linton, 1936; Sahlin, 1998). A promising area of research, then, would not just examine cultural traits in isolation but would also look at the way they interconnect, examine the density and depth of the relations between cultural traits, and analyze how they are affected (or unaffected) by change in various parts of the social system and material world (see also Kluckhohn, 1965, pp. 38–39).

Cultural traits in physical, social, intracultural, and intercultural niches. Following from these points, a promising strategy to guide analysis and hypothesis generation is to consider cultural traits within both local and global sets of niches. Implicit in this article have been four levels of niche adaptation: adaptation to the physical niche, the social niche, the intracultural niche, and intercultural niche. At a basic level, a niche for cultural traits is created by the physical environment. Environmental circumstances and human evolutionary constraints guide humans in finding solutions to basic evolutionary problems that must be solved (survival, living in social groups, reproduction, etc.). Again, important work has been done describing the physical niches leading to certain types of cultural development, and as Kluckhohn (1965, pp. 65–70) hypothesized, the more extreme these environmental conditions are, the more influence they are likely to have in shaping culture.

The niche that is created by the physical environment is one guiding the selection of cultural traits, but so is the niche created by the social environment. A defining element of human beings' nature is that we live in social environments and must operate in a world that we and others create together. A recurrent theme throughout this article has been the way in which such mutual interdependence leads to multiple possible equilibriums. As described in the article, game theoretic principles are potentially quite useful here in considering the equilibriums that can arise as people act in an environment based on how they think others will behave, while those others are themselves making guesses about how best they should behave in the social environment. The norms of a society and these potential equilibrium points often mutually reinforce each other: Cultural meaning systems spring up to give coherence and "sense" to different equilibrium points; also current meaning systems, values, and expectations themselves guide which equilibrium points will become likely solutions to the problems.

The above point leads to considerations of the intracultural niche that cultural traits inhabit. Any given cultural trait has to fit in, or at least be able to survive, in a niche of other cultural traits. Here it is especially important to consider the ways in which cultural traits connect to and reinforce one another. The notion of mutually reinforcing sets of cultural traits that form meaningful wholes is important as we consider what traits will survive and perpetuate themselves in a cultural system. As examples, Nisbett, Peng, Choi, and Norenzayan (2001) have shown the way that interdependencies in social relations and interdependence or holism in thought processes mutually reinforce each other. Heine, Lehman, Markus, and Kitayama (1999) have described the way tight cultural norms that require one to live up to group standards are connected with habits of self-criticism, an ethic of self-improvement, and ideologies of a malleable self in the East. Triandis (1996) and Fiske (1990) have described the meaningful cultural forms that arise when individualist or collectivist, horizontal or vertical cultural features combine with each other. And our own work on violence in the U.S. South has explored the way that norms for politeness and norms for violence can mutually reinforce each other in a cultural system. Norms for violence can potentially lead to and sustain enhanced norms for courtesy and politeness as people are polite to avoid the enmity of others (Colson, 1975). And in return, southern norms for politeness can also potentially sustain high levels of violence because these politeness norms (a) can make insults or affronts all the more offensive when received and (b) can sometimes prevent people from directly and frankly working out their interpersonal difficulties before a conflict explodes (Huntington, 1996a; Cohen et al., 1999; Schelling, 1966). Thus, both the norms for civility and for honor-related aggression help sustain each other within this particular cultural setting (see Cohen et al., 1999; Cohen & Vandello, in press, for more details and discussion). More generally, the point is that attention must be paid to the way various syndromes within a culture support and reinforce each other.

There are considerations that also must be given to intercultural niches. Cultural traits need to survive in a world in which cultures come into frequent contact either through exposure to each other, invasion, or migration. The perpetuation of cultural traits and larger cultural patterns depends, then, in large part on the extent to which strong, cohesive cultures either resist outright changes to the cultural pattern or are able to borrow, selectively incorporate, and assimilate newer cultural traits to existing and more traditional patterns of meaning (Huntington, 1996b; Kluckhohn, 1965; Linton, 1937; Sahlin, 1998). China, which has had a "culturally unified population for a longer continuous period than any other civilization of the world" (Linton, 1958, p. 210) provides a striking example. In terms of its resistance to cultural (if not physical) invasion, Linton (1958) argued that over the centuries,

the Chinese have been conquered and ruled by several foreign dynasties, but have always managed to impose their own culture on their barbarian conquerors and eventually to absorb them and re-establish their own line. . . . The conqueror who established himself over this huge, culturally united, civilized population inevitably found himself swamped, acculturated, and ultimately absorbed. (p. 230, see also chapter 9 generally; Fairbank et al., 1989, chapter 7)

In terms of its ability to borrow and absorb ideas, Huntington (1996a) has argued, Chinese culture has been able to assimilate elements from other regions (e.g., Buddhism) and use these as support for distinctive modes of Chinese thought (see also Fairbank et al., 1989, pp. 107–110).

The existence of these four types of niches implies, again, that linear patterns between environments and cultural traits and between one trait and another may be a starting point. However, in thinking about cultural traits as existing in social, intracultural, and intercultural niches, we should also be looking at the way data cluster together. Through humans' social nature, our mutual interdependence leads to multiple possible equilibriums. These equilibrium solutions take place within a context of other cultural forms. Current cultural practices and meanings guide the selection of new cultural forms, and they are in turn guided by them as culture re-creates itself. And within an intercultural context, social practices spread, change, or may be assimilated. Clustering of
various cultural traits should arise (a) because cultures give a coherence and meaningfulness to the way various cultural syndromes fit together at multiple, different equilibrium points and (b) because these traits often arise out of shared social, intracultural, and intercultural niches. Data from Inglehart and colleagues' (Inglehart, Basanez, & Moreno, 1998) World Values Survey showing distinct clusterings of values among Confucian, historically Catholic, and historically Protestant societies, for example, illustrate both these points about sets of cultural syndromes cohering in meaningful ways and arising out of shared or similar niches.

The four types of niches described above (physical, social, intracultural, and intercultural) represent a crude and fuzzy distinction. The boundary line between an intracultural niche and an intercultural one is often arbitrary. Constraints of the “physical” environment and the “social” environment work together. Cultural traits affect how groups select their physical and social environments, what it is possible to achieve in them (Edgerton, 2000), and so on. Yet, the proposed division may be a useful one in guiding hypotheses about the forces that are important as one thinks about issues of cultural perpetuation and change.

The point in thinking about these issues is to understand cultural equilibriums in context. With this in mind, the goals of interdisciplinary research might be to see cultural forms in all their functional or jerry-built richness, to examine the meaning systems that make radically different equilibriums coherent, to describe the mechanisms and processes by which people perpetuate a culture or bring about rapid or slow change, and to highlight the conditions and circumstances under which such mechanisms and processes re-create (and sometimes change, sometimes reinforce) the existing cultural pattern. From many subdisciplines within the field, psychologists have much to contribute to this agenda. Considerations of the way multiple equilibriums are driven by human interdependence and of corresponding cultural meaning systems that shape people’s psyches are in turn shaped by them within various physical, social, intracultural, and intercultural niches should be important as research continues to advance.

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