

**The Social Full House:
Circumscription and the Evitability of Complexity**

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The Rise of Civilization
May 18, 1999

Introduction

Throughout the history of anthropology, there has been great interest in explaining how societies increase in complexity and eventually form states. Beginning in the 19th century with Morgan's categories of Savagery, Barbarism and Civilization (19:40), and Spencer's simple, compound, doubly compound and trebly compound (38:48), one way in which researchers have attempted to deal with the issue is through the creation of taxonomies, often proposing a unilinear evolutionary path. The work of others such as White, Fried and Service has led to the now common four step system of Band, Tribe, Chiefdom, State (6:759). Dissatisfaction with this scheme has led to others, such as Townsend's minor variation of Band, Autonomous Village, Intermittent (or Recurring Alliances), Chiefdoms, States (6:761); and Smith's radical departure to Commonwealth, Confederation, Dominion, Bureaucracy, Technocracy, Transitional (6:759).

According to Feinman and Neitzel, though, "Despite the continued emphasis on the construction of typologies in both general and area-specific studies, relatively little consensus has been achieved concerning the nature of middle-range societies" (19:42), i.e., those societies between the simplest level and the state. In addition to quibbles over definitions and boundaries, a general dissatisfaction has arisen regarding the systems' unilinearity, with the very idea of a single cultural evolutionary pathway brought into question.

In addition to such classification schemes, others have proposed mechanisms for the formation of states. These tend to fall into three basic categories: voluntaristic (integrational), coercive (conflict/exploitative) and systems (multivariant). One such mechanism, Robert L. Carneiro's coercive-based circumscription theory, "is now standardly cited in introductory anthropology and archaeology textbooks and it has begun to permeate other disciplines besides"

(23:406). On top of its wider implication, Schacht claims that one of its virtues is its relative simplicity, allowing it to be summed up in one sentence: “In areas of circumscribed agricultural land, population pressure led to warfare that resulted in the evolution of the state” (35:439).

In addition to the enormous degree of popularity and praise that circumscription theory has received, however, it has also evoked its share of dissent. And while Carneiro has responded to many of his critics, successfully for the most part, key issues remain insufficiently addressed by both Carneiro and his critics. After summarizing previous challenges to circumscription theory and showing how Carneiro has dealt with them, I will pose a new problem relating to a misunderstanding of what the theory is intended to be. By calling upon its limits of applicability, an idea that Carneiro has used in his own defense, I will expose a weakness in circumscription theory itself and in Carneiro’s representation of it. Through a deeper analysis of this issue, also involving the concept of limits, I will demonstrate the inevitability of complexity, suggest a new approach to the study of cultural evolution in general and identify the proper place of circumscription and the study of cultural complexity within this larger framework.

Throughout this paper, any italics within quotes are original from the given source.

The Circumscription Theory — Challenge and Response

The first key element of circumscription theory is the environmental factor, which calls for the circumscription of agricultural land. A key criticism here is that the definition of circumscribed agricultural land is dependent on cultural variables that are subject to change, saying more about the surrounding environment than the agricultural land itself (35:439). In addition, none of the areas where states arose were perfectly circumscribed, or they could never

have been settled in the first place (35:439). To this, Carneiro responds that circumscription is a matter of degree: the more sharply circumscribed an area, the more rapidly it will become politically unified. Sharpness acts in two ways, first by making it difficult to expand the area of cultivation, and second by impeding people from leaving the region. It becomes easier for population pressure to build up, precipitating warfare over land and leading eventually to the rise of chiefdoms and states (5:499). Further, Carneiro suggests that it should be possible for states to arise in uncircumscribed areas, where overcrowding may occur if population growth is fast enough (5:499) (35:439).

This last defense is re-challenged by some critics as an indicator that environment should not be considered an essential factor in circumscription theory at all, that population is, in fact, the driving element. Indeed, the population element seems to have generated more criticism than almost any other aspect of circumscription theory. One such criticism revisits an idea mentioned above about the environment: population levels are “manipulated for and by economic and ideological means and ends” (12:782) and are therefore not independent (34:474), being at least partially culturally determined. To this, Carneiro explains: “The thesis advanced here is not that societies become more complex *only* by growing larger, or that as they grow larger they *invariably* become more complex. Rather, the contention is that if a society does increase significantly in size, and if at the same time it remains unified and integrated, it must elaborate its organization” (8:360). Thus, the cause of population growth is unimportant.

Next, some suggest that pristine political evolution has emerged — in places as diverse as Mesoamerica, Mesopotamia, Peru, West Africa and the Hawaiian archipelago — apparently without resource shortage and hence without population pressure (23:412) (34:472) (45:4).

Carneiro responds: “There is nothing in the theory that mandates such a rapid evolution” (5:507), i.e., from autonomous village to full fledged state, that it could not occur over time, even in uncircumscribed areas as noted above. Regarding the arguments of Wright and Johnson about how the state arose on the Susiana plain in the presence of fluctuating, even declining, population, he echoes an earlier defense: “Circumscription theory is not obliged to account for this decline; nor, of course, does it suffer because such a decline in population kept states from arising out of chiefdoms” (5:507). To the suggestion that population density is a more appropriate measure than population pressure (13:517) (34:478-480), Carneiro does not seem to have much to say.

Probably the most widespread criticism of Carneiro’s analysis of the population factor is that he employs the exponential equation for unconstrained population growth, explicitly rejecting models involving equilibrium or homeostasis, treating growth as “inelastic — an intrinsic constant, unaffected by any external environmental, cultural, or social variables” (35:440). This is surprising indeed, given that the nature of circumscription theory is to show how various constraining factors affect cultural change. Cowgill is particularly vociferous on this count, saying that “Population growth is not an automatic tendency of either ancient or contemporary agrarian societies. It is not an automatic ‘prime mover’ which accounts for development episodes” (13:505), and that “We can never simply assume that stress or the threat of stress will automatically or even typically generate social or cultural development” (13:507). To this, Carneiro once again claims that it is not up to his theory to explain the rate of population increase, but “simply takes this increase as *given*, and uses it as one element in accounting for state formation” (5:503). Though not obliged, he is generous enough to offer a suggestion for the high growth rate, posing that sedentism made possible by agriculture permitted a reduction in the

practice of infanticide and other forms of population limitation (5:504). In effect, “with the coming of agriculture, the cork was out of the bottle” (5:505).

Cowgill also poses an opposite consequence of population pressure: “If there is serious stress due to resource shortages that can only be overcome by intense conflict with other groups, the response will be to halt population growth *unless* something other than inelastic fertility is stimulating that growth” (13:517). Indeed, Webb’s sentiment is extremely pertinent here: “It is doubtful that so significant a cultural evolutionary step as the birth of civilization was the consequence of a final struggle of desperate, impoverished, teeming masses” (42:451). But Carneiro defies the notion of self-constraint, logical as it may seem: “In theory, they might have done so; in practice, they did not. Examine any major area of the world where states arose and you will find [population growth]” (5:504).

A criticism of the warfare element completes the triumvirate, suggesting that war, like environmental circumscription and population growth, is not an independent factor but a symptom of underlying causes (12:782). Carneiro agrees that war is fought for reasons, but that only war fought for land acquisition led to supravillage organization (3:782), and therefore it must be maintained as a central tenet in any theory of state formation.

The issue of cause and effect, which could just as likely arise with respect to the other factors, is brought up with the suggestion that war can be a cause, not just an effect, of circumscription, inhibiting a society’s expansion (22:469). Carneiro concurs: “I have never said that warfare began with Neolithic population pressure. Its origin is much older... But as conditions changed, so did the causes of war” (5:505). When arable land went into short supply, warfare was redirected to land acquisition and, shortly thereafter, the subjugation of people. This,

though, does not address the criticism that war may act not only for political integration but disintegration (22:469).

A final criticism specifically about the warfare element addresses the belief that conquest warfare was absent in several cases of state formation, as in Peru, Mesopotamia and Melanesia (34:473). It is suggested that perhaps subjugation should be considered the key factor, as war is not the only way to compete with or dominate others (34:474) (35:443). Carneiro simply poses a different interpretation of certain archaeological facts to restore the necessity of war (5:509). Langton also comes to Carneiro's aid on this issue, suggesting that the threat of war may act as a stimulus to voluntary submission of autonomy, supporting circumscription theory in spirit if not in fact (30:492).

In addition to criticisms of the specifics of the theory, several general problems have been identified, some of which echo ideas noted above. Langton suggests that definitions pose a problem with respect to circumscription theory, much as they do in unilinear taxonomies, saying, "The theory purports to explain *political evolution*, yet it contains no clear specification of what the term means" (30:485). Another general criticism has to do with the operationalization of the theory, pointing to the need for a measurement of circumscription (35:439) (42:450). Graber suggests a solution to this, posing that observable demographic consequences of circumscription can help in quantification (22:459). The cause and effect issue comes out in the larger view as well, with Service suggesting that improvements such as hierarchical governments, irrigation and terracing "must have been in some measure contingent on the prior development of some kind of governmental leadership and control" (36:28).

In the end, though, the single most important general claim against circumscription theory

is its determinism. Carneiro claims that one theory should fit all cases (5:497), and there are many, both supporters and detractors, who agree with him. But others argue that it is “an essentially monocausal account of political evolution, and thus, at best, provides only partial insight into the panoply of factors shaping that complex process” (30:485). They claim various economic, ideological, technological and social factors must be incorporated into an explanation of state formation (13:513) (29:425) (42:450). Kirsch also poses that Carneiro pays to little attention to the time scales involved, claiming that circumscription must be viewed “*within the dynamic context* of (1) a rapidly increasing population and (2) a sufficient period of elapsed time to achieve a high density of land utilization” (29:425).

Others go further, suggesting that there are so many factors involved that the search for causal variables of any kind is pointless (13:513), most notable in the declaration, “*Down with prime-movers!*” (37:406) made by Service. Prime mover(s) or not, there is an additional claim against circumscription theory imposing “an unrealistic degree of inevitability and unilineality to political evolution” (42:450). Trigger, for example, appreciates that circumscription deals with constraining factors but feels that Carneiro handles them too restrictively, saying, “Unlike a determinant, which acts in a direct and mechanical fashion, a constraint is a factor that human beings must take into account to varying degrees when selecting an appropriate course of action” (40:555).

Many of these criticisms, however, are simply a matter of approach and interpretation. Of key importance, as Webb points out, is how to acceptably construct explanations, given that, “In a sense, of course, all this is a case of what-one-hunts-for-one-generally-finds, since the question at issue is precisely the sequential emergence of the fully overt coercion associated with the state

from a more voluntaristic antecedent condition” (42:452).

Indeed, a general thread that runs through Carneiro’s defenses has to do with the very intention of theory, concerned with what exactly is required to explain something. Carneiro appropriately identifies the theory for what it is — one of state formation. It does not intend to explain all cultural evolution, only the rise of states. It does not suggest that all cultures must develop into states, only those that find themselves in certain specific conditions. Accept these limits and, while there is still much to debate, Carneiro has done a serviceable job in defending himself and, more important, an admirable thing by stressing the limits of his own theory.

However, beyond admitting varying interpretations of data and the limits of the theory’s acceptability, as he makes his case Carneiro exposes a flaw both in the theory and in his presentation of it. The question that circumscription theory is designed to answer is if all cases of state formation share the same cause. The answer he finds, or at least argues rather successfully, is that the conditions posed in circumscription theory always lead to state. In the end, his arguments are precisely the wrong ones with which to defend himself. Carneiro has committed a classic logical flaw, and we can clarify the matter by looking at the situation in traditional logical terms.

Letting C equal the conditions poses in circumscription theory and S equal state formation, Carneiro poses that $C > S$. He tries to prove it, though, by defending that if there is a state, there was circumscription, or $S > C$. This is the converse of the original premise and therefore cannot be used as a proof. The only statement that follows from $S > C$ is its contrapositive, $\sim C > \sim S$, or if there was no circumscription, a state will not form. To prove himself, Carneiro must either demonstrate proof for the original premise itself or for its

contrapositive, $\sim S \supset \sim C$, or if a state has not been formed, then there was no circumscription.

The contrapositive premise, however, is clearly not true. Tainter provides a case: “Due to drought and disruption by national boundaries of the traditional cycle of movement, the Ik live in such a food- and water-scarce environment that there is absolutely no advantage to reciprocity and social sharing. The Ik, in consequence, display almost nothing of what could be considered societal organization. They are so highly fragmented that most activities, especially subsistence, are pursued individually... Although little is known about how the Ik got to their present situation, there are some indications of former organizational patterns... It appears that a former level of organization has simply been abandoned by the Ik as unprofitable and unsuitable in their present distress” (39:17-18). Carneiro would not deny that complexity can collapse (as he puts it, devolve), but here is a case of the very factors he poses in circumscription theory leading not to war and the state but to a society so simple that it is hardly more than a smattering of individuals.

Carneiro would deny that an individual exception disproves the rule, but 1) logically, it does, since only one exception is required to disprove a scientific theory, and 2) various examples set forth by Tainter and others tell similar stories of collapse. Carneiro makes the same mistake in his defense against Cowgill regarding the halting of population growth, putting the cart before the horse suggesting that, because all states arose from population growth, population growth leads to the state. While circumscription may apply in general and may be a better explanation than any other yet posed, it is not universally true. Indeed, it is likely that there have been countless cases of circumscription of some kind which did not give rise to increased complexity.

The innocence of faulty logic, though, is not the least way in which Carneiro betrays his defense. While he may argue very appropriately about the limits of his theory’s applicability in

response to opponents who he feels have misunderstood him, his own general attitude toward complexity is partly responsible for the very misunderstandings he attempts to correct. In his first full proposal of circumscription theory, Carneiro claimed that theories of state formation based on the race, the “genius” of the people or “historical accident” have been discredited (9:733). Yet pages later he says that the step from village autonomy to supravillage integration was “difficult, for it took 2 million years to achieve. But, once it was achieved, once village autonomy was transcended, only two or three millennia were required for the rise of great empires and the flourishing of complex civilizations” (9:736). While the words “great” and “flourishing” can technically be read in this context without a value judgment, the tone of the sentence as a whole suggests that culture was struggling toward some destiny and finally passed its most difficult test to reap the rewards of a quantum leap in complexity, as if the genius of the people was in fact at work. The same article ends with the statement that circumscription “helps to elucidate what was undoubtedly the most important single step ever taken in the political evolution of mankind” (9:738). Indeed, 18 years later, when defending circumscription theory in a special issue of *American Behavioral Scientist* devoted to the subject, he has expanded his pride in the development of complexity, calling it “the single most important step ever taken in human history” (5:510). For Carneiro, the rise of the state is clearly not just an interesting development worthy of objective study. It is important, to be valued and prized.

As Graber and Roscoe point out in their introductory piece to the special issue of *American Behavioral Scientist*, the development of complex social hierarchies “has brought humanity the possibility of unparalleled material well-being at the same time as it has facilitated exploitation on a hitherto unknown scale and brought life on earth to the brink of global

extinction” (23:413). While an anti-complexity bias is no more justified than a pro-complexity one, in the present era we can at best stand a cautious middle ground with respect to societal complexity. Graber and Roscoe exemplify the middle ground in their statement. Carneiro clearly expresses an attitudinal bias in favor of complexity, adding value judgment and a tinge of destiny to state formation. In doing so, he reinforces a prejudice of complex societies over simpler ones, one which various researchers agree has no place in objective social science (24:11) (39:41). More importantly for his theory, Carneiro foils his defense against those who criticize the theory for its slant toward inevitability.

Perhaps Carneiro’s admiration for Herbert Spencer has gotten the best of him. Not only has Carneiro edited a book of Spencer’s thoughts on the evolution of societies (38), but among these thoughts are precursors of circumscription theory. There might be no problem with this, except for the fact that Spencer was one of the key early proponents of social Darwinism, a complex of political ideas which have been discredited for their misapplication of Darwinian evolutionary theory, regardless of what one may think of their moral considerations.

In his introduction to the Spencer book, Carneiro outlines three different forms of social Darwinism. The first is the elimination of the unfit to benefit society biologically, posing that the state should do nothing to relieve the poor, who are less fit to survive. The second suggests that an economy will run properly only when individuals are allowed to pursue private interests unhampered by regulation. Carneiro argues, successfully, that these are both political statements and should therefore not reflect poorly on Spencer’s sociology. A third form of social Darwinism, however, is that of war being won by the larger and more complex society, and hence leading to increased complexity over time. Thirty years after writing the introduction to this book, Carneiro

wrote a letter to the editor of *Natural History* magazine. The letter, headed by the title “Unpalatable Truth,” responded to Stephen Jay Gould, his colleague at the American Museum of Natural History. Gould had devoted a column to explaining how Darwinism has been misunderstood and misused in the political arena, with Spencerian social Darwinism standing as a “a grossly overextended application of biological evolution to human history” (21:20). In the letter, Carneiro appears to agree with the criticism of the first two kinds of social Darwinism, but suggests that the third is a scientific fact, essentially defending his circumscription theory. Is circumscription Darwinist because two entities compete, i.e., go to war, and one comes out victorious? Did the more fit entity survive? Whether or not this is true, the matter is complicated, no pun intended, by Carneiro’s campaigning for complexity elsewhere.

Now Gould is not one to shy away from an unpalatable truth. Our most accepted understanding of biological evolutionary theory is that the hallmark of evolution is not complexity but variation. In Full House, Gould uses an ingenious approach toward looking at trends in biological evolution to demonstrate precisely why this is the case. He hopes his argument will help humanity complete the Darwinian revolution “when we smash the pedestal of arrogance and own the plain implications of evolution for life’s nonpredictable nondirectionality — and when we take Darwinian topology seriously, recognizing that *Homo sapiens*, to recite the revised litany one more time, is a tiny twig, born just yesterday on an enormously arborescent tree of life that would never produce the same set of branches if regrown from seed” (20:29). Yet Gould himself points out that biology and culture, while both being systems of inheritance that may evolve, operate differently and that culture may in fact have a drive toward complexity.

The conflict is set in two seemingly paradoxical stances, taken by members of the same

research institution. On one hand, Carneiro is willing to admit the hard truth about the contribution, indeed necessity, of war and coercion in developing cultural complexity, and simultaneously holds this war-derived complexity as a dear and destined quality. On the other hand, Gould comes as close to anybody to proving that variation, not complexity, is the hallmark of biological evolution, but simultaneously concedes that cultural evolution may indeed have mechanisms which drive toward complexity. If culture is shown to be bound to increase in complexity, Carneiro may end up justified in his stance, and the work of many who attempt to relate biological evolution to cultural evolution may be invalidated. Yet in a world in which complexity is critiqued and civilization deemed by some to be increasingly harmful to the planet, the verdict in favor of cultural complexity might appear to be a death sentence.

These issues are crucial for the continued study of cultural development in general and specifically for Carneiro and his circumscription theory. Perhaps, though, the matter is not as black and white as it seems. A closer look at the concept of evolution in both biology and culture may lead toward a resolution in the gray area. If the two sides may each be thought to hold a paradox, bringing them together each may contribute to the resolution of the other's apparent contradiction, revealing both logic and compatibility.

Evolution in Biology and Culture

As Hallpike points out, "since Huxley's paper of 1956, comparing cultural and biological evolution... there has been an increasing number of publications from biologists and biologically minded anthropologists, trying in one way or another to apply Darwinism to social evolution," noting in particular the rise of sociobiology (24:14). Inasmuch as biology and culture are both

systems of inheritance which evolve, it is not unreasonable to attempt to seek what they hold in common. Indeed, they may both hold some things in common with inorganic evolution, which Hallpike cites Spencer as having pointed out in great detail (24:31). Nevertheless, few would claim that the mechanisms of inorganic evolution “could be even remotely comparable to those of biological and cultural evolution” (24:31), and thus even the application of biology to culture is called into question.

Gould says, “Natural selection may be one of the most powerful ideas ever developed in science, but only certain kinds of systems can be regulated by such a process... driven by differential survival and reproductive success of some individuals in a variable population” (21:22). Hallpike continues the thought: “While there are good empirical reasons for treating organisms as efficient, functional, self-regulating systems, there is very much less reason for regarding societies in the same light because they are composed of separate, conscious individuals who are linked by information exchanges and not by bonds of an essentially physical nature. They are thus inherently less stable than organisms, for which metamorphosis beyond certain rigid limits results only in death” (24:25). Hallpike outlines various ways in which societies resemble organisms, differ from organisms, and resemble species rather than organisms (24:33-4), concluding in the end that “while biological systems have two distinct development processes, phylogeny and ontogeny, in social systems these are one and the same” (24:35).

In addition to suggesting simply that too little time has passed for us to invoke natural selection as the controlling cause of cultural change since the dawn of agriculture (21:22), Gould provides a concrete, two-part explanation for why Darwinian evolution cannot apply to culture. First, the topology of biological evolution involves “continuous division of species into

independent lineages that must remain forever separated on the branching tree of life,” while culture operates in the opposite manner through borrowing and amalgamation. Second, the mechanism of inheritance for culture is Lamarckian. Though abandoned in biology, inheritance of acquired characteristics explains very well how anything useful can be passed on by direct education, allowing evolution to be much more rapid for culture than natural selection in biology, which requires Mendelian inheritance based on small-scale undirected variation over large periods of time (20:221) (21:22). In the end, culture may thus have a drive toward increasing complexity.

But how can we be sure that biology does not, in fact, have a drive toward complexity, especially when the paleontological record so clearly shows that increasingly complex lifeforms have evolved over time? Gould explains that “Our strong desire to identify trends often leads us to detect a directionality that doesn’t exist, or to infer causes that cannot be sustained” (20:30). In statistics, we tend to depict populations either as average values or as extreme examples, when neither is appropriate. When looking at the trend of biological evolution over time, correcting this mistake reveals that progress does not define the history of life, that there may not even be a trend at all. Full House is devoted to the exploration of this subject, but a summary of his argument, based on limit phenomena, will suffice here.

In short, life necessarily began at the simplest level of complexity, a wall before which life could not arise and cannot exist. Variation necessarily formed an increasingly skewed distribution, with the level of the most complex lifeform moving farther away from the wall of minimal simplicity because this was the only direction available for movement. Despite this increasing maximum level of complexity, the greatest number of species, by far and ever-increasing, continues to the present day to exist near the wall of minimal simplicity. The spread of

variation has its cause in the wall of minimal simplicity, and thus the extremes of maximum complexity can only ever be considered a consequence of the wall and not of any driven trend toward complexity. In the last analysis, it is myopic to characterize the full distribution of life's variation by an extreme value at the end of the distribution where the fewest number of species exists.

Through this view, we can understand that, as more complex lifeforms arose, both the maximum and mean measurements of complexity increased. But rather than indicating a directional trend toward complexity, these are merely side effects of the presence of the wall of minimal simplicity. It would therefore be entirely unrepresentative of the system to generalize based on the maximum or mean measurements. The mode stands as the most appropriate indicator of what is typical for the system, and the mode of life on earth remains situated in the realm of the bacteria. Claims for progress can only be based on the idea of an entity on the move, but an average value is not an entity, only an abstraction based on the underlying reality of variation. As Gould says, "We cannot confuse a dribble at one end with the richness of an entirety — much as we may cherish this end by virtue of our own peculiar residence" (20:149).

Inasmuch as evolution can only allow individuals to adapt to local circumstances, simplicity might just as easily be an adaptation as complexity, depending on a given environment (20:139). Indeed, that evolution can produce a parasite for each entity which increases in complexity exemplifies this fact (20:145). Thus, what seemed to be a paradox in Darwinism, that natural selection offered no statement or mechanism for general progress and yet complexity appears to increase as time passes, is resolved simply by an appropriate analysis of the trend of variation. Biological complexity is a passive trend, an epiphenomenon of variation, rather than a

driven trend in its own right.

Despite all this, Carneiro has stated that increasing complexity is, in fact, the hallmark of biological evolution (7:126), claiming that “Through this increase in the complexity of organic forms, larger, more varied, and more successful kinds of life evolved and spread over the earth” (7:112), and even “That greater complexity is a major means of producing adaptation is proved by the fact that so many complex organisms exist” (7:113). This is, in fact, not at all what happened. Variation drove evolution, and it therefore cannot necessarily be said that later kinds of life, whether more complex or not, are more successful than earlier ones. They are simply later. More importantly, it cannot be said that a complex lifeform is more successful than a contemporaneous simple lifeform. Indeed, Carneiro commits his favorite logical flaw once more, using the presence of complexity as proof of its nature as an active, adaptive trend.

Spencer’s theory is similar to Darwin’s “in so far as both regarded competition as the driving force of an evolutionary process leading to optimal adaptive efficiency” (24:84) but Spencer’s was a directional process and Darwin’s was not. Confusion remains to this day, and no small part of it owes to the fact that the very term evolution was propelled into biology by Spencer’s advocacy, despite Darwin’s preference for the more descriptive and accurate descent with modification (20:137) (21:29). To propose determinism is no sin and, indeed, any theory may be considered determinist in the loosest sense. However, directionality is not automatically involved in every process. In biological evolution, descent with modification occurs based on random variation, which allows individual adaptation only to local environments. If what is adaptive in one environment may be maladaptive in another, complexity cannot be taken as absolutely superior.

To what extent can Gould's analysis of limit phenomena be applied to cultural evolution, even as Gould himself cautions about different evolutionary systems? Driven as it is by Lamarckian inheritance, "human cultural change is an entirely distinct process operating under radically different principles that do allow for the strong possibility of a driven trend to what we may legitimately call 'progress' (at least in a technological sense, whether or not the changes ultimately do us any good in a practical or moral way)" (20:19). Indeed, unlike previous attempts to apply biology to cultural study, this is simply about understanding the nature of trends in general and applying a proper analysis to achieve understanding, just as Gould came to his approach only after realizing that the lamented disappearance of .400 batting in major league baseball actually indicated an increase, rather than the long-believed decrease, in athletic performance. If this approach can bear fruit in such disparate applications as baseball and biology, surely we may be able to glean something from it in the cultural realm. As Durham suggests, "there will obviously arise many analogies, especially imperfect and partial ones, between organic and cultural evolutionary theory. But these analogies will come to light because there is bona fide evolutionary change in both realms, not because evolutionary biology can be successfully applied to both of them" (16:193).

To proceed with efficacy, the matter of terminology must be clarified. Parallel to his misunderstanding of the process of biological evolution and in the manner of Spencer (7:111) (38), Carneiro defines evolution in general as "an orderly progression moving in a certain direction" (6:769), namely that of complexity, with devolution as the corollary term for decreases in complexity and no special name granted to change that does not involve complexity. He likewise refers to development as "an increase in structure" (8:361), i.e., complexity. He supports

this by saying, “To be fully and fairly defined, social evolution must be thought of as qualitative change *in the direction of increased complexity*,” further claiming that a fatal dilemma would arise from, for example, looking at the undeniable qualitative change undergone by the Roman Empire during its decline and fall: “Who would want to call the collapse of Rome ‘evolution’?” (6:757) Exemplifying his complexity bias, this claim is anything but fair, and looking at decline as evolution can only be fatal to Carneiro’s pride, not to a theory of evolution.

Admittedly, Carneiro and Spencer are not the only ones who share this view. Hallpike agrees that “The idea of evolution is much more specific than that of mere change. Evolution implies change in a certain direction,” although this is tempered: “... while the social scientist might be readier [than the neo-Darwinist biologist] to accept the directionality of social evolution, he would certainly distinguish this from historical inevitability” (24:15). Likewise, Gould is not the only one to include the entire spectrum of change as evolution, with Claessen and van de Velde suggesting that “Both development and decline are intrinsic parts of the evolution of human culture — unless we want to cut evolution into a large number of disconnected shreds and patches” (12:782).

Even Carneiro admits that “what one chooses to call evolution is, of course, a matter of choice” (3:783). But while any terminology is simply a convention and cannot be inherently wrong, we ought to strive for consistency in general. The term evolution may have been borrowed from the social sciences, but, as is clear from this debate, there is not much agreement on how cultural evolution works, much less how it should be modeled. On the other hand, there is a great consensus about biological evolution and its mechanisms. Given the strength behind biological evolutionary theory, it makes sense that we adopt a parallel definition for culture. This

is not to automatically assume that cultural change works in the same way as biological change, but simply to say that, where we use the term evolution, we should discuss increasing variation. For clarity, we should also refrain from the term development as increasing complexity, given its own ambiguity. Where changes in complexity occur, we should refer to them distinctly and appropriately as just that.

Cultural Evolution and the Evitability of Complexity

Hallpike suggests that, “if one regards societies as nothing but jumbles of bits and pieces brought together by the contingencies of history and cultural diffusions, theories of social evolution are indeed a complete waste of time... The simple answer to claims that societies are nothing but amorphous heaps of bits and pieces, or enormously variable, or governed by the unpredictable free wills of individuals, is that if these were true there would be none of those regularities in social change of the kind that we describe as evolutionary. But since such regularities do exist, it is therefore likely that some general principles of social evolution exist, whether or not we call them ‘laws’” (24:7).

Indeed, in the great dualities of nature versus nurture and genetics versus culture, each side may have different qualities but neither can be ignored. Durham discusses a coevolutionary theory, in which biology and culture provide feedback to each other in forming individuals and societies (17:87-90). With specific respect to culture, Durham poses an evolutionary culture theory (ECT) which would seek to explain the descent with modification of human cultures (16:189), without being exclusively concerned with complexity: “It is not... a body of theory about stages of societal progression, integration, or complexity... Surely, the emergence of

increased social stratification in a population, to take one example, can and does have profound influence on the evolution of its religious beliefs, legal precepts, kinship and inheritance conventions, and so on. And surely there is much to be learned about the dynamics of cultural authorship from these effects. But just as surely, culture and social structure are not the same thing...; temporal changes in social relations — as important as they are — should not be construed as cultural evolution... stagelike sequences are not intrinsic to evolution as the term is defined here. (They are, however, intrinsic to a Spencerian conception of evolution which, to my mind, is archaic and prejudiced)” (16:192). Trigger also feels that biology and culture must both be taken into account, looking toward a holistic archaeology brought about “not in replacing the ecological determinism of processual archaeology with the historical particularism that currently appears to be attracting many postprocessual archaeologists, but rather in effecting a synthesis of these seemingly opposed positions” (40:562-3).

A look at different types of similarity, as outlined by Durham for his ECT, provides a good example of how analysis of biology and culture can play into each other without forcing any dependencies or inappropriate comparisons. He suggests that there are four types of similarity among cultures: coincidence (similarity by accident or chance), analogy (similarity by convergence or independent invention), homology (similarity by descent) and synology (similarity by diffusion) (16:191). The first three all occur in biological evolution, while the last is unique to cultural evolution, indicative of its Lamarckian brand of inheritance. Thus, while Gould’s caution that culture must not be looked at in the same manner as biology must be heeded, it should also be rephrased: culture must not be looked at *exclusively* in the same manner as biology. That which makes it different is unique to it, but other aspects of cultural change share a great bond with

biological change. In this light, just as complexity is neither destiny nor absolutely more adaptive in biology, the same may hold true for culture in a certain way.

As Carneiro himself said, “It is in the nature of things that simplicity precedes complexity. Or, if that sounds too metaphysical, we can at least say that in the history of the universe, complexity has developed out of simplicity” (7:111). This indeed applies as equally to culture as biology. Indeed, “At the start of the Neolithic, the world contained roughly eight million people but several hundred thousand small, autonomous societies... Today, more than five billion people crowd the planet, but only about 160 sovereign societies (i.e., nation-states) survive, most of which are large, complex, and powerful,” according to Carneiro, cited by Langton (30:493). Durham provides an additional detail: more than 4,000 distinct cultures are known to anthropology (16:194).

It is clear that there are fewer cultures and more complexity than there used to be, but can generalizations be made based on this? Indeed, Mead, after Boas, notes that “the application of evolutionary concepts to the temporal sequences of a few centuries is misleading, since change can go in any direction — toward simplification or toward complexity” (32:7). Circular logic may lead one simply to look at events that occurred and to generalize inevitability from that (32:151). In the long-term, populations may fluctuate, but if one looks only at a portion of the data one may generalize increase, decrease or even a plateau as the normal state of affairs, losing sight of the fluctuating forest for the trees. More importantly, even if all that has ever occurred is steady increase, what proof is this that we are not simply witnessing the first, steady part of an overall trend of change which has simply not entered a different phase? Carneiro himself estimates that only the last fifth of a percent of human history displays any marked increase in complexity

compared to what preceded (39:24) — it should be clear that this is not enough of a basis upon which to generalize trends for increasing population or complexity as fundamental to humanity. Whether one looks before states arose when simpler societies thrived or after states dominated politically over simpler ones, the only generalization that can be made is that the mode for types societal complexity must be placed somewhere toward the lowest end of the complexity scale.

If this is the case then we can say with certainty that, long before the first states arose, whatever the process and despite the possible presence of increasing complexity in certain small ways or scattered locations, cultural evolution was marked not by complexity but variation. Indeed, many anthropologists point to the need for an increased focus on societal variation and change (19:43) (40:554). Circumscription theory is also specifically criticized for not taking this into account (30:485).

On the rise of states, Webb says, “It was rather the developmentally late appearance of certain critical shifts in the extent and significance of conflict and coercion among a small number — and only a small number — of high chiefdoms that in fact finally led to the rise of the state... For the majority of chiefdoms in their varied settings, the relatively low intensity of [resource concentration and social circumscription] was a kind of evolutionary dead end” (42:453). It appears to Cohen, cited by Langton, that “states capable of countering political fissioning only arise when people living in such areas manage through some ‘historical accident’ to discover integrative institutions” (30:486). This historical accident, however, does not have to be considered an accident at all, any more than a biological trait would be. In discussing collapse, Kaufman declares that “... when events are governed by chance, probability theory is often the means to understanding, which is quite different from the incorrect inference that chance is

beyond understanding” (28:235).

Thus, even as Gould is right that complexity can be a driver in cultural change, it does not have to be and, indeed, was not always. Nevertheless, in the midst of variation, cultures must have displayed differences in complexity. At some point, we can safely conclude that increases in complexity, under certain circumstances, proved to be overtly adaptive for, rather than neutrally present in, a given culture or cultures. What was successful was maintained and passed on through Lamarckian inheritance. Where, up to this point, cultural evolution, including the appearance of increased complexity, was due to all four of the mechanisms pointed out by Durham, this new development was exclusively one of synology. At this point, change in complexity became directional, and complexity itself became a second driver of cultural change in addition to variation. According to Service, “The impersonal determinants of evolution are overcome by the freedom of human beings to change the system — if they have the right theory” (37:405).

Perhaps this occurred in certain societies at the chiefdom level, which Carneiro declared to be a “*qualitative* step. Everything that followed, including the rise of states and empires, was, in a sense, merely *quantitative*” (4:38). Indeed, the very fact that certain societies tend to oscillate between chiefdoms and simpler organizational forms (39:26) may be directly indicative of variation as the hallmark of evolution, with an occasional development of driven complexity at the chiefdom level. As Webb suggests, “It is not so much that the state makes civilization as that, under the rather rare conditions of very ‘sharp’ circumscription, civilization — or, more properly speaking, its roots (all that ritualism, art, legend, genealogy, prestige manufacturing and exchange, cultus, and so forth so characteristic of chiefdoms) — makes the state” (42:454). It would only

be at this point, the point when a driven form of complexity arises, that J.B.S. Haldane's statement, cited by Carneiro, becomes true, that "social evolution is largely the struggle to increase *structure* in proportion to *size*" (7:115), echoing Spencer's discussion of "limitation to primitive size" (38:10).

With complexity put into this new light, the study of cultural evolution can now be taken on from a few different perspectives. On the macro level, there is evolution as variation. On the micro level, one can look at other axes, such as changing complexity — increases, plateaus and decreases. Then there is a bridge between the two levels, where the development of driven complexity on the micro level can actually end up having a great impact on the macro level, putting yet a different spin on the ideas of potential plateaus and collapses. Circumscription becomes one segment of this puzzle, as does the study of collapse, the mirror image complement of the study of rise.

Rather than separate rise and collapse, as Carneiro would under the assumption that the distinction is important and therefore worthy of highlighting rather than blurring (3:783), Yoffee suggests that collapse studies may yield fresh perspectives with which to evaluate conditions of rise — they are inseparably related to each other, different parts in the same cycle (46:2). Underscoring the relevance and relationship of collapse to rise and to social change in general is Cowgill's statement that "it is surprising that states have come into existence at all, and the problem of how and why they fail is an aspect of the problem of how and why they ever exist." (14:254) While traditional views of collapse will remain important, such as that "societies in trouble may often reveal more about what is really vital for their operation than societies in reasonably good shape" (47:viii) or that "Nothing defines the role of an element in a system as

clearly as what happens when it stops functioning” (28:221), a new take may involve seeing collapse as an adaptation, one of economizing or optimizing. Inasmuch as increasing complexity may fulfill the same purpose in some circumstances, the study of collapse in this light will further bring together the various pieces of a society’s evolution over time.

Does all of this mean that circumscription is invalidated because it is a descendent of Spencer, the father of the now utterly discredited social Darwinism and the notion that complexity is the driver of all evolution? No. The evitability of complexity is clear in general but may exist in specific cases. Circumscription must simply be couched in different terms within a larger framework. Indeed, as Feinman and Neitzel suggest, “... if the development of hierarchical governments, marketing systems, and social stratification is to be explicated, then the evolution of pre-state forms of social differentiation and political leadership must be understood” (19:39). Circumscription and theories of state formation would therefore not be the only concepts to benefit from such a framework.

Regarding taxonomies of social organization, Feinman and Neitzel have said, “An understanding of the diversity found in this sample of societies cannot be achieved by simply grouping them into one or two broad evolutionary types... given the continuous and complex nature of societal variability, further refinement of the typological approach would seem to have at best limited utility. The construction of additional typologies would neither allow us to explain the diversity of prestate sedentary societies nor enable us to explicate the different causal processes involved in their development” (19:78). With respect to defining the state in particular, Tainter, discussing findings of Claessen and Skalnik, has said, “We have been told that states are distinctive because, among other things, they are based on class rather than kinship, and enjoy a

monopoly of force. Now we learn that some states do indeed have these characteristics, but some states only partially have them. It begins to sound as if state formation is not such a Great Divide after all” (39:30). With variation as the hallmark and most fundamental driver of social evolution, researchers would have a starting place toward understanding societies that do not seem to fall neatly into various unilinear sequences or that otherwise do not fulfill expectation.

The Future of Cultural Complexity

We now understand that cultural complexity was bound to develop, not because it was preordained by the machinery that created culture in the first place, but only out of normal variation from a lower limit of cultural simplicity. What is certain, though, is that the form of social organization which currently dominates human culture is indeed driven toward complexity. While the value judgment remains inappropriate, and while the reference to culture must be understood as culture after the evolution of a mechanism of complexity-driven cultural development, there is something to Carneiro’s statement that “Through the cohesiveness of social structure that culture made possible, the genus *Homo* grew, spread, and prospered as no other” (7:112).

A key issue for further research thus becomes identifying the relationship between the rise of the state and the rise of driven complexity. There at least three basic possibilities:

- The state arose in the course of random cultural variation, and only later did driven complexity develop.
- Driven complexity arose in social organizations much simpler than the state and is responsible for the development not only of the state but levels preceding it as well.

- The rise of the state may be directly and exclusively correlated to the mechanism of driven complexity.

And while the study of cultural evolution in general must not only be concerned with increasing complexity, discovering the relationship between driven complexity and the state may prove to be one of its most important findings, bearing greatly on not only explaining the past but shaping the future.

In a closed system, driven complexity must have a limit. It would first reach a physical circumference past which it could not expand. At this point, complexity could continue to increase within the system but there is likely to be a limit here as well, caused possibly by limits of information processing capacity. While the earth is not a closed system inasmuch as the sun continuously adds energy, from the standpoint of increasing complexity, short of colonizing space, the earth must be considered a closed system. Increasing complexity in such a circumstance will lead to, as Langton suggests (30:495), a single world state, the ultimate level of earthbound social complexity.

Long ago, the initial effect of increased complexity would have been to increase the carrying capacity of an area and so reduce absolute population pressure, an advantageous development which is consistent with Carneiro's circumscription theory. However, Webb says it would only do so "at the cost of increasing the *fragility* of subsistence thus *increasing the necessity of staying in place and maintaining the social and economic status quo*" (42:455). Yoffee cites Rappaport as believing that complex systems are profoundly maladaptive since, instead of maintaining flexible responses to stress, their many interconnections mean that change in one component is likely to have a ripple effect, changing the whole system: diversity and

flexibility diminish, and a failure in one element must spread (46:5). Thus, while at first the state is strong, successful and seemingly adaptive, it becomes vulnerable in the long run. Driven complexity pushes itself toward two limits and fissioning, an option long ago left behind, becomes the only choice left.

Mayhew points out that the “seeds of their own destruction” attitude toward certain social systems is usually marked by a grave defect, the fact that it is usually discussed as a purely internal flaw, something inherently wrong with the structure itself or with an ideology involved. But he acknowledges that population systems nevertheless can generate the conditions of their own demise, arising from an environmental relation, not an internal one (31:137-8). Looking at a few of Mayhew’s population system propositions, we can see more specifically why driven complexity thrives at first and then brings about its own end.

System proposition 4 says that “The higher the rate of change in information and/or energy transactions (resulting in an increase toward the system’s upper processing limit) the greater the probability that the structural change in the system will be destruction of the system” (31:140). Thus, with driven complexity, the rate of change not only increases but accelerates, so there is a geometric approach to the always-possible moment when further change is likely to destroy the system. That possible moment, though, is made less possible by propositions 7 through 9, which state that the upper limit on information and energy capacity will increase along with a social system’s population size, functional differentiation and complexity of material technology (31:140). In other words, “The larger a system becomes, the greater the environmental change required to destroy it” (31:148). Hence driven complexity truly does succeed at first, but only at first because even success is bound to catch up with the system, due

to propositions 10 through 12. The lower limit will also increase, meaning that more and more information and energy are required to continue the system's operation (31:141): "Functional and technical complexity thus place powerful constraints on operation, requiring even more stringent schedules of activity and systematic coordination" (31:153). With inherent limits likely on human information processing, the eventual failure becomes just as likely as the initial success, for there must come a time when complexity accelerates faster than the ability of the system's managers to remain in control.

This sort of limit need not only occur well into the state level of organization. Discussing the Melanesian Big-Man phenomenon, Tainter says, "... as resources are allocated to expanding a faction, those available to retain previous loyalties must decline. As a Big-Man attempts to expand his sphere of influence, he is likely to lose the springboard that makes this possible. Big-Man systems contain thus a built-in, structural limitation on their scope, extent, and durability" (39:25). Roscoe concurs, elaborating on Big-Man politics as follows: "Since agricultural populations are committed to stored resources and to a relatively heavy investment in sowed fields, relocation will have its costs, and this fact will tend to promote the hegemony of big-men and chiefs. If subsistence is also dependent on irrigation systems, then... the population will be 'tied down' yet further... elite power can rise to greater levels under intensive than under extensive subsistence regimes... For, if labor- and capital-intensive agriculture makes relocation unappealing, then environmental circumscription, social circumscription, and resource concentration render it more so" (34:480). Indeed, the phenomenon is universal. Webb suggests that warfare occurred in Egypt "not because of overpopulation or... land shortage, but simply because their dependence on irrigation and exchange networks forced them to stay in place and

deal with the conflicts that, for a variety of reasons, inevitably rose among them” (42:455).

Roscoe goes so far as to suggest a new layer be added to circumscription theory: “A gradual continentwide growth in technology..., by stimulating population growth and necessitating continuous attachment to more complex — and demanding — economic networks, eventually would create a condition that one might characterize as *technoeconomic* circumscription” (42:457). Yet another level of circumscription is proposed by Dickson, who suggests that the thesis “be amended to include changing patterns of ‘artificial’ circumscription brought about by anthropogenic environmental destruction” (15:709), something which is certainly exacerbated, if not caused, by driven complexity. In this light, the circumscription process itself can be seen as “a complex dialectical one — in which social units, competing with each other... created ever more constricting and circumscribed agricultural environments for themselves” (15:715).

With these sorts of factors involved, a great deal of uncertainty is thrown into state formation and expansion. Indeed, the cusp between rise and collapse becomes a focus for intense study. In the end, we must heed Mead when she warned that “... any statement about the future course of human evolution must be qualified by the possibility that the human species may destroy itself and in so doing destroy large portions or perhaps all of the living world” (32:162). While written in the height of the Cold War as a reaction to the nuclear threat, these words ring true even still as we continue to deal with nuclear issues, ecological degradation and any number of factors which contribute to vulnerability. In the words of Rappaport, cited by Tainter, “Civilisation [sic] has emerged only recently — in the past six thousand or so years — and it may yet prove to be an unsuccessful experiment” (39:55).

Of course, there is an alternative with respect to the world state which seems preordained by driven complexity. As Langton suggests, after having described how the United States allows for organization at a federal level while maintaining a certain degree of freedom at lower levels, “the transformation of the American state also suggests that some form of federalism, combined with a system of governmental checks and balances, might serve as the political structure of a world state capable of solving humanity’s common problems without despotism or the destruction of cultural diversity” (30:495). While this might happen in theory, the fact that the United States has not succeeded in solving its own problems after more than two centuries of federalism could be held as just cause for pessimism in applying the system to a world state. This begs the question: how will societies be organized if, as seems likely, a world state is bound to fail?

To answer this we must return to the original question about the relationship between state formation and driven complexity. For if state formation preceded driven complexity, it should be possible to maintain some semblance of current organizational systems in a sustainable manner. A state need not be inherently expansionist, consuming other societies and growing toward inevitable instability. In this scenario, the existence of a state or states no more preordains a single world state than the existence of culture preordained the state itself and, indeed, states might co-exist with simpler social organizations. Culturally, as in biology, diversity would be a hallmark of the system as a sustainable whole, and there could be a social “full house” to parallel the full house of varied biology described by Gould. If, on the other hand, the state arose only as a result, eventual or immediate, of the mechanism of driven complexity, it, and possibly certain other somewhat less complex forms of organization, may be inherently driven toward increased complexity. If so, it may be destined for global imperialism, reduced cultural diversity and,

therefore, ultimate vulnerability. Indeed, the very development of driven complexity would then have to be seen as maladaptive.

Herein lies yet another difference between biology and culture. Cultural traits arise as adaptive for a given environment, just as biological ones do, but environments change. A maladaptive biological trait may eliminate itself even before the individual carrying it is born, while in culture maladaptive traits may, in fact, thrive for some time (1:67). In discussing collapse, Kaufman claims that "... the very symbols and doctrines that at one stage integrated the polities became, in many instances, instruments helping to shatter their unity" (28:226).

This phenomenon, though, also occurs at smaller levels within cultures. Richerson and Boyd point out, as does Durham, that the cultural transmission process can be culturally biased. In biology, bias can only be toward "fitness." Cultural fitness, on the other hand, can mean either biological fitness or unfitness, as in the choice to use physically harmful drugs (33:123) (17:79,91), which may not be fit on the scale of a nation that passes laws against drugs, but may certainly allow for a degree of acceptance in a smaller group. Thus, it is possible that a population may see the rise of a runaway trait, one that increases both its own frequency and the frequency of preference for the trait, despite a selective penalty of fewer offspring, until the degree of the trait becomes a substantial selective disadvantage (33:129). While the trait will seem to become indefinitely more frequent, "this cannot be literally true; nothing can really grow or shrink without bound. Some process not accounted for in the model will eventually restrain the evolution of the population" (31:128).

Whether drug use, unusual clothing or a form of social organization, the runaway trait may enjoy a great deal of initial success only to be selected against later on. Hallpike, citing

Harris, says “that the ultimate test of any innovation is the crunch of competing systems and differential survival and reproduction. But that crunch may sometimes be delayed for hundreds of years” (24:39). The delay will vary from trait to trait, and there is no reason to think that it could not take several thousand years before it becomes maladaptive. Perhaps a new perspective on numbers may benefit here as it did in looking at evolutionary trends. If the civilization and the state are deemed successful because they allow human populations to thrive, i.e., grow, then total number of people born within such a system would be a good measure of success. Tudge calculates that the current dominant form of social organization is likely, in the long run, to have generated fewer people in total than simpler forms, given that simpler forms, despite possibly sustaining fewer people each year, are likely to thrive for many more years than the most complex forms (41:319). In this respect, even when looking at population figures, driven complexity can be deemed maladaptive in the long run. In the case of measuring populations, it will only be deemed maladaptive at the point at which extenuating circumstances actually check large scale population growth — a point we do not yet appear to have reached.

A final way in which driven complexity can be seen as maladaptive is in its implications for biological evolution in general. Aside from the non-human biological disruptions caused by driven complexity, it is possible that it is also responsible for effectively putting an end to humanity’s participation in biological evolution. Barkow and Durham note that the capacity for culture was itself biologically adaptive (1:64) (17:78), but Barkow suggests that “Culture and the capacity for culture developed neck-and-neck. Yet, culture won the race... More efficient technology led to greater population size and mobility, thereby increasing gene flow and ending the ‘Sewall Wright effect’ of genetic drift” (1:64). If this is true then, unlike simpler societies that

may reap the adaptive benefits of biological and cultural systems of evolutionary variation, people living in driven complexity may only expect cultural variation, adding yet another layer of vulnerability to the system.

Carneiro may be right that “natural selection would not have permitted useless complexity to survive. The complexity that exists today does so because it conferred survival on those organisms which developed it” (7:113). But simple organisms remain extant because their simplicity conferred survival. He even poses the Amahuaca of eastern Peru as an example of how simplification may have enabled a society to survive, but immediately discounts this is an exception to the rule. Were there truly a rule, there would be no exception (7:114). Likewise, Spencer, cited by Carneiro, may be right that “small aggregates only can hold together while cohesion is feeble; and successively larger aggregates become possible only as the greater strains implied are met by that greater cohesion which results from ... a ... development of social organization” (7:121). But this is a mere statement of fact. If increasing organization will lead to its own undoing, perhaps it is not a desirable choice. Certainly it is at least premature, and at most inaccurate, to make generalizations about complexity conferring survival.

For if we look at the history of humanity as a whole, the number of instances of pristine state formation pales in comparison to the number of other kinds of societies that have arisen. And given that *Homo sapiens* did not arise in a vacuum, creating its first societal structure from scratch, it would not be at all unreasonable to include the social organizations of other species in our analysis, making states even more of an exception. Finally, as states incorporate each other and grow, they ironically become yet a greater exception in the modal analysis of typical societies, because there are fewer instances to represent the form. The eventual world state would have to

be seen as the rarest exception of all, a solitary example of complexity in a history — and probably, should it end itself, future — marked by variation. Inasmuch as the collapse of states is as relatively recent a phenomenon as their very rise, “Collapse then is not a fall to some primordial chaos, but a return to the normal human condition of lower complexity” (39:198). Whether or not the state is exclusively the result of driven complexity, any theory of state formation will need to address these issues, and to do so in a way that is not only unbiased toward complexity but fearless about collapse.

Conclusion

Easy as it was for some and difficult for others, the idea of biological evolution through descent with modification became generally accepted. Later, Darwin’s true intention, that of nondirected variation as the epitome of the system, also came to the fore. Perhaps it was possible to accept these biological demotions of humanity precisely because we could still point to our culture and feel ourselves superior. This bias, as Chagnon suggests, allows us to continue to feel, despite biology, that we are immune to natural laws and therefore set apart from nature: “So prevalent is this attitude that Alexander (1979) concludes that two of the major obstacles to accepting general notions of evolution as applicable to humans are organized religion on the one hand, and cultural anthropology on the other!” (11:120) Chagnon then wonders, “Does the optimistic conviction that Nature is subordinate to Culture confer any advantage in dealing with — struggling with — the external world, in the past or in the present?” (11:122) This is an insightful question. If culture and the capacity for it were biologically advantageous, perhaps even our repugnance of nature, as Chagnon puts it, could be adaptive. But repugnance is related

to emotion and opinion, and the fact that it may be adaptive does not mean it is founded in truth.

Indeed, culture sprang from nature, and while culture may evolve in a different manner, it is no less natural and no less subject to nature than biology. Culture assumed the biological superiority of man, and this turned out to be false. The roots of that assumption, however, are one and the same as the assumption that the civilized state is superior to other forms of social organization. In a moral sense, the matter is subjective and cannot be decided with certainty. In a functional sense, the civilized state may prove maladaptive through the vulnerability of maximum complexity and minimum variety: there are more parts that can go wrong and fewer uniquenesses to respond to problems.

Circumscription theory purports to explain increases societal complexity. It is not intended to account for all facets of cultural evolution. This much has been self-confessed by its creator. While the theory itself may not be incorrect, Carneiro's presentation of it and general attitude toward complexity parallels outmoded thought in biological evolution, where the process was deemed directional and complexity held as a predestined good. Just as Carneiro says that Spencer's political statements must be ignored, so must his own. When we look beyond the assumption that cultural complexity is as preordained as biological complexity was once thought to be, we see that even cultural complexity, while it can be driven, need not always be.

To promote understanding in general and compatibility as much as possible between disparate fields, the concept of evolution must be clarified. It has been demonstrated that variation is the hallmark of evolution in biology, with complexity arising only from the underlying variation. Culture, at its foundation, should be approached in the same manner, with cultural evolution defined as descent with modification that is locally adaptive and nondirectional. That a

directional drive toward complexity may develop and that cultural traits once adaptive may become maladaptive must be accounted for by other segments of an evolutionary theory of culture, but these cannot be the initial premises.

The superiorities of human over nonhuman, complex over simple, wealthy over poor, have been thrown into doubt by a proper analysis of evolutionary trends. Like *Homo sapiens* in biology, civilization was born yesterday and, though powerful, can even be said to be a twig on the tree of variation in societal organization. With this in mind, is the third kind of social Darwinism, that of complex societies having a differential advantage in war over simpler ones, valid? Inasmuch as more members of simpler societies, at least relatively if not absolutely, would be killed in war and therefore could not procreate, the more complex society is reproductively superior. That the victorious complex culture would have political power over the simpler one and that the qualitative aspects of its culture are bound to dominate those of the simpler one also point to superiority. However, if that same society is driven to complexity and eventually brings about its own end as a result, a simpler society may indeed be said to have superior survival in the long run. Lest suggestions like this result in accusation of a bias *against* complexity, parallel to and just as inappropriate as a pro-complexity bias, it should be noted that an objective conclusion that something may not be sustainable is entirely different from a subjective statement about morality/superiority or lack thereof.

As outlined by Carneiro, circumscription does not explain the whole story of increasing complexity, especially given the distinction between passive and driven complexity. Perhaps ideological factors, such as the political competition for power (34:474) or varying attitudes toward humanity's relationship with nature and other societies, will play a key role in fully

understanding state formation. Indeed, as Trigger notes, Gordon Childe “long ago reminded archaeologists that human beings never adjust to the physical world as it is, but rather to the world as they perceive it to be, largely as a result of cultural conditioning” (40:555). Just as Wildavsky suggests that culture is the enactment of a theory (44:60), it may prove instrumental to look at culturally subjective factors as they relate to circumscription.

There is no reason, though, why a modified circumscription theory could not exist as part of a larger approach toward the overall study of cultural evolution. Posing such a theory is beyond the scope of this paper, but a successful theory will likely include the strongest arguments in favor of circumscription as part of its analysis of increasing complexity. However, these will have to be put forth with a clear understanding of how complexity can be either an aspect or a conqueror of variation. The theory will account for:

- Random variation as the foundation of all cultural evolution.
- Variations in complexity — increases, collapses and plateaus — in a non-driven manner, consistent with Gould’s analysis of limit phenomena.
- The rise of complexity in a driven manner — perhaps again per limit phenomena but, once developed, disobeying it — and its own variations and cycles.

Circumscription theory may have a key part to play in this larger framework, and complexity will surely, one way or another, continue to have a role in the cultural evolution of humanity, but a bias in favor of complexity as an inherent good can have no place.

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