Population, Human Nature, Knowing Actors, and Explaining the Onset of Complexity

George L. Cowgill
Arizona State University

How did very small, sparse, mobile foraging societies, with little inequality except that based on age and gender, turn into relatively high density and relatively sedentary societies with substantial inequality between households? Inherent population growth cannot be assumed as an external cause. Overall growth was very slow for many millennia because, if fertility and mortality are both moderately high, small changes in fertility (in response to mild incentives) have large effects on the growth rate. What upset this balance? In low density foraging societies there is much sharing, mostly from those with more to those with less, individual households are not terribly important units of production or consumption, and high fertility is not urgent for either self-interest or the public interest. However, over time, various ingenious inventions that served individual self-interests (not necessarily public interests) raised ceilings on population density. Higher density, in turn, makes exploitation of other humans more feasible. Greater exploitation could occur through various mixes of coercion and persuasion, including alleged supernatural backing, conspicuous generosity, and ability to arouse "hero worship." When transfers become typically from those with less to those with more, households become more important economic units, it is more important to have a substantial number of children, and self-interest may dictate higher fertility.

Preamble

I should briefly situate my viewpoint in the context of processual/postprocessual issues. I give far more weight than most processualists to human mental phenomena. This is not to say that the material and biological is unimportant, but rather that trying to be astute about humans without taking into account the extraordinary properties of human brain organs is like trying to make sense of whales while ignoring their anatomical and physiological modifications for life in water. But I am more worried about validation and confirmation than many of the postprocessualists seem to be. I think the past was real. We can no longer capture all of it, partly because much of the evidence is irremediably lost, partly because we can never escape seeing things from our own viewpoint, and partly because the whole of it was such an unmanageable welter of detail that our minds could only comprehend some selected portion even if we did have it all. Nevertheless, it is important to ask whether some versions of the past misrepresent important aspects, and to revise or discard versions there is good reason to think are wrong or misleading. It is also possible and desirable to improve our understanding of why things happened the way they did; some explanations are better than other explanations and some arguments about why a particular explanation is a good one are better than other arguments. I recently elaborated on some of these ideas (Cowgill 1993). I will try not to repeat more of that than is needed to make this presentation self-sufficiently understandable.

In considering contemporary human affairs, it seems obvious that one of the most useful concepts in our mental tool kit is the knowledgeable (but not omniscient) actor, acting in ways he or she thinks will well serve his or her self-interest. It is also useful to contrast self-interest with the public interest, by which I mean, roughly, the joint or collective interest of the largest and most inclusive relevant group of individuals. Self-interest is not automatically opposed to the public interest, but we should never assume that the two kinds of interest are the same. One of the most prevalent defects in evolutionist and systems approaches has been to blur this distinction.

"Rationality" plays a large role in shaping individual actions, but it is not the only thing that matters; ingrained personality traits, strong emotions, instinctive (in the strictest sense) reactions, and perhaps other things also matter. Furthermore, since actors are not omniscient, rationality itself is never perfect; actors act on the basis of sometimes erroneous beliefs about the consequences of their actions, and we may also think they are mistaken about what consequences would best serve their personal interests. Furthermore, rationality is always situated within a context, and this context includes (at least) the local...
natural environment, locally available technology, and local social/cultural practices and institutions. Among these last are widespread (if not universally shared) teachings about one's highest self-interests, about preferred, acceptable, and unacceptable means for serving those interests, and about what constitutes the public interest.

Also important are local rules about who is entitled or obliged to receive what from whom, and who is entitled or obliged to provide what to whom. These last are the social relations of production and distribution, and they include the ways that differential power and authority are distributed in the community. Thus, one's rationality is always situated in the context of one's authority, obligations, and entitlements vis-a-vis others in the society. It should now be well understood, at least in general terms, that institutions and other macro-level phenomena are emergent phenomena that arise from actions of individuals and are shaped and reshaped as resultants of interacting individual interests, often in unwanted or unexpected ways, so that individuals act within a context but also by means of a context, and their actions may either reproduce the context or change it in various ways. "Laws" or "principles" may describe recurrent kinds of change, but they are never agents of change (this is one of a number of points on which Shennan [1993] is particularly clear).

I hope that the preceding paragraphs will seem nothing but truisms because, if so, we can move on to more interesting things. It is no more than a mild uniformitarianism (not dogmatic or extreme) to suppose that if contextually situated actors pursuing their interests in a largely rational but not just rational manner are a key concept for understanding contemporary social phenomena, they are also a key concept for understanding prehistoric social phenomena. To argue otherwise is to claim that human affairs happened in some radically different way before the advent of historical records, and I know of no reason to suppose this, at least for the last 30,000 years. The question of the extent to which this uniformitarianism applies to earlier biological varieties of humans is extremely important but also very difficult, and I explicitly exclude it from this discussion.

The strongest incentive for seeking some different basis for understanding prehistory is the notion that ancient actors and their perceptions concerning their rational interests, and anything that was less than pan-human in their non-rational propensities, are usually inaccessible to archaeologists. This is not as bothersome to me as it is to some. I do not have any problem with being rather hard-nosed about confirmation and yet postulating unobservable entities -- it would be excessively empiricist to object to this. However, it is critical that what we postulate about unobservable entities (e.g., contextually situated ancient actors) should have logical consequences that are observable. Here, there is indeed a problem forprehistorians. It points toward hard work to make ancient individuals, or at least the traces or "signatures" of some of their key attributes and most important types of actions more visible. It is not entirely satisfactory to argue that the only actions that matter for explanation are those that are recurrent, and therefore relatively likely to leave traces. At best, an emphasis on the recurrent creates a pressure to fall back on a "normative" view of shared culture that is now discredited, for good reason, and one has to qualify it as "recurrent" for some class, status, gender, and factional segment of society (cf. Brumfiel 1992).

However, it is worse than that, because, even in small scale societies, unique actions may have been decisive at critical historical moments.

To the extent that we cannot recognize signatures of critical actions or kinds of actions, important aspects of the past may remain forever poorly understood and poorly explained. But I am not pessimistic; whatever the ultimate limits, we can do far better than we have done so far, and this will keep us busy for a long time.

The conceptual overlap between biological evolution and sociocultural change is another complex topic I will not try to untangle here. Self-interest is neither the same as nor wholly unrelated to the biological concept of individual evolutionary fitness, and public interest is neither the same as nor wholly unrelated to biological concepts such as altruism or group fitness (whatever the status of these concepts in biology). Because the biological evolution of humans has occurred mainly in the contexts of small and low-density foraging societies, there must have been a rough compatibility between culturally perceived interests and biological fitness, but even in such societies the relationship was not simple, and in larger societies with more recent technologies and different social relations of production there may actually be serious incompatibility. Thus, I take biological evolution seriously but I am not a sociobiologist and I am very skeptical of schemes that try to use biological concepts as the master concepts to explain sociocultural change.
Explaining Why Very Small Mobile Foraging Societies Change

On reviewing some recent literature, I find that I have a surprisingly satisfying vague idea of how some very small, sparse, and mobile foraging societies with little inequality (except that related to gender and age) turned into relatively high-density hunting and gathering societies and acquired such traits as a tendency to stay in one place much of the time, institutionalized inequality, and significant reliance on agriculture (not necessarily all at once or in that order). I will try to disarm criticism by acknowledging that I have done little work on this topic, and I realize that articles by non-experts risk being fatally flawed by uncritical acceptance of factoids (things widely unquestioned that are wrong or very doubtful). There is also danger that I will be thought, when not simply wrong, to be merely rehashing what is already well-known. But here I go anyway. I hope I have done well at summarizing some good current ideas and that I have managed to add some worthwhile insights. I offer some "just so" stories, but stories that are constrained by far better evidence than was available to 18th century philosophers, 19th century evolutionists, or even ourselves ten or fifteen years ago. I have borrowed freely and selectively from recent literature, adopting ideas I like and simply dismissing some I don't like. I am particularly indebted to Barbara Bender (1978), Brian Hayden (1990), Jeanne Arnold (1993), Kristen Hawkes (1988), Mark Aldenderfer (1993), William Engelbrecht (1987), Penn Handwerker (1983), Elizabeth Cashdan (1985), and Ronald Lee (1987).

I avoid the term complexity because it's so vague. For this conference that was an advantage, because it allowed for papers on practically everything. However, I rely on more specific concepts, such as density of population, size of social units, various kinds of inequality and hierarchy, and giving versus getting.

The Role of Population

A central feature of the view that I share with a number of others is that population growth was by no means unimportant for the changes I want to explain, but it was not as important as some social processes, especially processes flowing from the tendencies of self-interested actors. More specifically, I disagree with the view that population increases which themselves need no explanation in social terms were the driving forces that initiated sociocultural changes. I believe it is more complex than that, and that it is more likely that sociocultural changes which had causes other than population changes had consequences for fertility and mortality that in turn had further sociocultural consequences, in what became a complex network of interactions over time. I have not changed any of the main ideas I published many years ago (Cowgill 1975) though I might express some a little differently now, change some emphases, and discuss some things I had little or nothing to say about then.

I agree with "population pressure" theorists in taking as an omnipresent "given" the human biological capacity for rather high fecundity, where by fecundity I follow standard demographic usage in meaning the biological capability for child-bearing. To judge from the recent Hutterites, human fecundity averages around 10 or 11 children per female. However, I differ in that "population pressure" explanations tend to take as also "given" that societies have difficulty in keeping actual child-bearing (i.e., fertility) down to a level that just offsets mortality. Or, at any rate, they take this difficulty as given for relatively sedentary societies that obtain a considerable part of their food from cooked cereal grains. This difficulty is believed to explain population/resource imbalances that in turn motivate other changes, including more exploitative social relations of production and distribution. I, on the contrary, believe that although high human fecundity makes relatively rapid recovery from population crashes possible (and hence is biologically adaptive), fertility is normally far below fecundity (probably around 6 or fewer children per female in foraging societies), that a small decrease in fertility is easily produced by even slight shortages (among other things), and even a small decrease in fertility can avoid population/resource imbalances, if that is all that is involved. I also believe that social processes provide good alternative explanations for shifts to more exploitative social relations of production and distribution.

The equation for population change at a constant rate, \( P_t = P_0 (1+r)^t \), where \( r \) is the net difference between fertility and mortality and \( t \) is time, shows that if overall human population growth during the late Pleistocene had been at a sustained average rate as high as six hundredths of one percent (0.0006) per year, the progeny of a hundred initial couples would have led to a world population of over a billion in 26,000 years. Since the absence of any such population is perhaps the most solidly established fact about prehistory there is, the conclusion is inescapable that, world-wide and on the average, fertility almost exactly balanced mortality.
References Cited

Altschul, J. H.

Baxter, M. J.

Chernoff, M.

Cowgill, G. L.


Efron, B. & R. J. Tibshirani

Madsen, T. (editor)

Millon, R.

Mooney, C. Z. & R. D. Duval

Robertson, I. G.

Sload, R. S.

Wilkinson, L.
1990 *SYSTAT: The System for Statistics.* Evanston: SYSTAT.