



## Energy, Information, and Sociocultural "Advancement"

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unqualified statements. We do claim—and the analysis supports the claim—that occupational effects were not greater than generational effects, a result consistent with our theoretical position and contrary to the conclusion previously reached.

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#### ENERGY, INFORMATION, AND SOCIOCULTURAL "ADVANCEMENT"<sup>1</sup>

In "The Idea of 'Advancement' in Theories of Social Evolution and Development" (*AJS* 85 [November 1979]: 489–515), Granovetter claims to have demonstrated that a meaningful ranking of societies on a dimension of "advancement" is impossible. He bases this claim on the insurmountable difficulties he finds inherent in any attempt to rank and compare societies in terms of their relative "problem-solving capacity" ("efficiency" and "adaptability"), which he maintains underlies or is implicit in all evolutionary rankings of "advancement." However, if we examine some of the ranking systems actually employed by evolutionists and the supporting arguments advanced by Granovetter, we find that this claim and the assertions following from it are unfounded. Granovetter's characterization of evolutionists' criteria of ranking is inaccurate and misleading, and he has not convincingly demonstrated that the task of ranking and the task of explaining evolutionary change are *inherently* impossible. In fact, he has not shown

<sup>1</sup> I would like to thank Gerhard Lenski, Bruce Mayhew, and Robert Miller for their helpful comments on an earlier draft of this comment.

that the classification systems actually employed by some evolutionary theorists are seriously flawed either theoretically or methodologically.<sup>2</sup>

For instance, Leslie White clearly argued that the critical variable defining “advancement” was not some abstract notion of “problem-solving ability” but was instead the relative amount of energy harnessed by the technology of a society (1959, p. 145; [1949] 1969, pp. 375–76). “Efficiency” entered this determination only to the extent that it affected this amount ([1949] 1969, pp. 368–69), and the ideal measure of advancement from this perspective would be a direct measure of *energy*, not of problem solving or efficiency, and certainly not of the “values” or “utilities” of the members of the societies being ranked.<sup>3</sup>

In citing Sahlins and Service (1960), Granovetter focuses almost exclusively on “specific” sociocultural advance. Had he considered their notion of “general” sociocultural progress in more detail, he might have agreed with Segraves (1974, p. 532), who sees their definition of advancement in terms of the “absolute amount of energy harnessed by the sociocultural system.” This definition of general sociocultural progress, in fact, provided the basis for Lenski’s definition of general sociocultural advance: “*the raising of the upper limit of the capacity of human societies to mobilize energy and information in the adaptive process*” (1970, p. 70; emphasis in original). The reader will notice that this definition differs from the composite one which Granovetter (p. 492) attributes to Lenski (1970) and Lenski and Lenski (1974) and might conclude that the definition cited here was a preliminary one which Lenski later discarded in a more refined version of his theory. Actually the reverse is true. Granovetter takes the “efficiency” part of the definition he cites from an earlier work, *Power and Privilege* (Lenski 1966, p. 93), but attributes it to the second edition of *Human Societies* (Lenski and Lenski 1974, p. 46).<sup>4</sup>

Granovetter is certainly correct to point out that in many cases “advancement” in terms of Lenski’s criteria has entailed major inefficiencies in energy consumption and resource use, but it must be pointed out also that it was the amount of information accumulated or energy harnessed or

<sup>2</sup> Many of Granovetter’s criticisms apply with full force to Parsons’s self-labeled “evolutionary” theory, but since Granovetter claims to be demonstrating that *all* evolutionary rankings and *all* evolutionary theories are critically flawed, our attention will focus on their relevance for other theorists’ work.

<sup>3</sup> Severe space limitations prevent full citation of the relevant texts and discussion of the issues involved; however, a longer version of this comment including full citations and discussions is available from me.

<sup>4</sup> The splicing of passages from two separate works would be misleading even if the sources were correctly identified, and one can only wonder why Granovetter found it necessary to construct his own definition of “advancement” when he was citing an introductory textbook with explicit definitions of terms.

both that provided the basis for ranking on advancement—not the efficiency of its use or production.

Furthermore, in addition to misrepresenting Lenski's criteria of ranking, Granovetter misrepresents his arguments concerning the generation of a "surplus" in societies by claiming that Lenski's theory and ranking system require the assumption that all societies will produce a "maximum possible surplus." Without such an assumption, Granovetter argues (p. 492), "other factors . . . would have to be considered." This is an ironic misrepresentation, given that Lenski has always considered the production of *any* surplus to be highly problematic and has been very much concerned with identifying and explaining these "other factors." At several points in his works, Lenski explicitly argues that horticultural and other more "advanced" technologies do not necessitate or automatically produce a surplus, they only make one possible (e.g., Lenski 1970, p. 235). Without the development of surplus-exacting and surplus-extracting institutions, surpluses cannot be assumed or expected to develop, and the assumption of a surplus is not necessary in order to rank different societies in terms of the relative amounts of energy and information mobilized by their respective technologies.

Some additional mischief is introduced into the question of ranking when we are informed by Granovetter that any ranking system must consider such individual factors as "choices," "cravings," "consumer preferences," and "valuations" in determining the relative efficiency and hence advancement of a society. In fact, if people in different societies want different things and pursue different ends, Granovetter would maintain that their technologies cannot be meaningfully compared because there is no common base or metric of comparison. This problem vanishes, however, if energy or information provides the basis for ranking. Energy and information can be quantitatively compared even if the means for producing them, their specific form, and their application vary (e.g., kilograms coal equivalent). In fact, it was this cross-level, cross-system comparability that made energy and information so attractive to evolutionists and general systems theorists in the first place.<sup>5</sup>

In his section on adaptive capacity, Granovetter shifts attention away from efficiency, the ability to solve present problems, to the capacity of a system to respond to future largely unanticipated problems of survival. Some evolutionists have argued that, *ceteris paribus*, the greater the store of accumulated information and the greater the capacity of the system to harness energy (not only in greater quantities but also from a wider variety of sources), the greater the chances a system has to survive a disturbance in its biophysical or sociocultural environment and hence the greater its overall chances of surviving in a changing environment (e.g., Segraves

<sup>5</sup> This is not meant to imply that all problems of measurement are solved or solvable.

1974; Lenski 1970).<sup>6</sup> To discredit this probabilistic generalization, Granovetter argues that the “advance” from subsistence to commercial agriculture actually *lowered* the adaptive capacity of societies in many cases because it increased the incidence of starvation in regions of the systems that adopted it. Although he is supposedly discussing factors that affect system survival, the evidence he marshals to support his argument involves individuals and subgroups, not the systems they constitute. He has not addressed the issue of system survival, and it is only by shifting levels of analysis that this evidence is made to appear to contradict the evolutionary proposition.

It is difficult to say whether or not, protests to the contrary, Granovetter’s discussion of problems associated with nonlinearities is merely a sophisticated way of saying that macrosocial generalizations are not possible because macrosocial phenomena are too complex (see White [1949] 1969). What is clear, though, is that much of the “complexity” that Granovetter finds in making evolutionary generalizations results from his own particular characterization of the problem. His discussion of problems he has confronted in making predictions about “situations of collective behavior, where preferences are distributed in a nonlinear way” (p. 504), suggests that the problems of complexity may not be inherent in all attempts to make generalizations but only in attempts to make macrosystem predictions and generalizations by aggregating individual choices, wants, values, preferences, and the like. This problem is, therefore, not one of evolutionary theorizing per se but of a particular (reductionist, subjectivist, individualizing) approach to the task. Granovetter can certainly approach the task in this way and face these difficulties, but he cannot claim that all approaches are necessarily plagued by these problems of complexity. It is also ironic that he sees the introduction of intersystem contact and interaction as a problem or complication for evolutionary theorizing when it has been the starting point and cornerstone of many of the major theories of sociocultural evolution! It is hard to conceive of seriously raising this as a challenge to most evolutionary theories (e.g., Lenski 1970) when it is, itself, the linchpin of those theories. Intersystem contact and competition are major complications only if one assumes that change is immanent, or that any explanation of macrosystem change must proceed by aggregating the choices or behavior of the individuals that constitute the systems.

In his concluding section, Granovetter speculates that, while little will be lost, much will be gained by abandoning the idea of advancement and the pursuit of evolutionary explanations. It will shift attention away from

<sup>6</sup> Granovetter does not cite Segraves (1974), but a careful reading of her paper would have answered many of his questions and criticisms. Segraves also offers an interesting macrostructural theory of sociocultural evolution.

static taxonomies and eliminate what Granovetter sees as a "deterministic" tendency in evolutionary approaches and a (mistaken or inadvertent) tendency to find that the variable used to classify societies on advancement is the most important variable explaining advancement. This appears to be the result of specious reasoning, since the importance of any variable in any explanatory schema is not determined a priori but by its relative success in accounting for variation in other variables of interest. In fact, a taxonomy based on a particular variable (e.g., technology) can clearly demonstrate the limits of that variable in accounting for variation in other variables. If some variable of sociological concern (e.g., stratification) evidenced considerable intracategory variation, it would indicate that the variable defining the categories was not a very powerful predictor of that phenomenon. It is, therefore, unfair and unfounded to claim that a theory is necessarily deterministic and monocausal simply because it employs a particular variable for classifying and ordering observations.

In conclusion, many of Granovetter's arguments appear irrelevant to the actual criteria used by many persons to rank societies on advancement and to their efforts to explain evolutionary change. By reformulating the basis of ranking to "problem-solving ability," and thereby ignoring the actual classification systems employed by some evolutionists, Granovetter concludes falsely that a meaningful ranking is impossible. What he has done, in large measure, is reject his own characterization of evolutionary rankings and evolutionary explanations. He has not demonstrated that the task of ranking is inherently impossible. One can agree that if the reductionist, individualistic, intracranial approach that Granovetter discusses at points in criticizing evolutionary theories were accepted, evolutionary rankings and evolutionary theories would be impossible, but under these same assumptions social science itself might well be impossible.

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