Ethnography of a Disaster

Love Canal. Science, Politics, and People. ADELINE GORDON LEVINE. Lexington (Heath), Lexington, Mass., 1982. xviii, 266 pp. Cloth, $24.95; paper, $14.95.

Adeline Levine was in a terrible place at the right time, and out of that conjuncture has come a remarkable ethnography focusing on Love Canal—the upstate New York residential community adjacent to the notorious dump site of the Hooker Chemical Company. Hooker had donated the dump to the Niagara Falls Board of Education as land for an elementary school to serve the adjacent neighborhood of single-family homes and a nearby public housing project. Years later, the problem began to (literally) surface—a chemical soup rising to cover basement sump pumps, traveling through subterranean channels to nonadjacent streets, and appearing as toxic puddles in people's backyards.

Levine tells the story (tense and poignant at times) of how the fact of these substances was given competing meanings by neighborhood residents, by local, state, and national health authorities, and by political leaders at various levels of government. She also indicates why these different groups came to the meanings they espoused—indeed, how the social locations of the various actors virtually necessitated their different interpretations of the "scientific facts."

For the residents, the stuff of their basements was the stuff of their lives. If it was dangerous material, their health (including their genetic futures) was in jeopardy. Further, since their community had become stigmatized as plausibly unhealthy, their homes had become worthless, and with that fact they faced financial ruin. Residents were in the awkward psychological position of having to prove that their neighborhood was extremely unsafe (something they increasingly believed) in order to justify government purchase of their properties at market value—an unprecedented administrative event in any American community. Only clear demonstration of extreme danger could enable them to satisfy their increasingly desperate desire to get out.

The residents of Love Canal thus had a different sort of interest in scientific findings from that of the majority of readers of this journal. And, as time went on, the residents learned that they were not alone in having practical requirements for scientific outcomes: for the scientists, the health agency officials, and the political leaders there were also certain kinds of findings that would serve mundane organizational needs. It is Levine's central position that these practical contingencies of careers, election campaigns, and organizational constraints were critical in the forging of research strategies and in the interpretation of data. Her point is not that organized science is corrupt, but that it is social.

Levine observes a pattern: scientists and policy officials are reluctant to generate findings that have social or economic consequences with which they are not prepared to deal. Confirmation of health-threatening conditions in the entire Love Canal neighborhood would have meant, as it eventually did, the relocation of 700 families and the purchase of that number of private homes and nearby businesses. No government agency in the state of New York (or in the federal government) regarded itself as having the financial resources or statutory authority to manage such an eventuality. Within the health and welfare bureaucracies of state and nation, Levine argues, that reality came to permeate the health bureaucracies and thereby shaped the professional behavior of scientists.

There are a number of instances of counterexample that Levine uses to demonstrate her larger point. In one case, state health authorities actually did announce early in the evolving drama that there was "a great and imminent peril to the health of the general public residing at or near" the canal (p. 28). The result was a strong demand by residents for immediate action by those same authorities. The officials were caught completely off guard, having given no forethought to the implications of their statement for the people's lives. Officials began backtracking, implying that the findings were premature—but now with a major "public relations headache" on their hands. In a second instance, a research biologist, Beverly Paigen, volunteered her services as consultant to residents—in part to further her own professional research on environmental toxins. Her research work (unfunded) with residents led to results that were received negatively by the state health officials with responsibilities for Love Canal. According to Levine's account, Paigen's employers at Roswell Park Memorial Institute harassed her as a result.

The residents followed all of these developments quite closely and increasingly came to the view that science and "the doctors" do not simply give truth but are quite capable of using science as a means of furthering bureaucratic and political goals. This cynicism was stimulated through a series of other developments:

1) Residents became critical of the competence of trained experts. An expensive study revealing chromosomal damage among Love Canal residents was later disqualified because no control group had been used. Residents saw this as a waste of money and of subjects' time. In another instance, a control group was used but was drawn from a population not properly matched with the experimental group. A survey instrument, poorly administered by M.D. epidemiologists, was severely criticized for its technical failings—both by neighborhood subjects and the book's author, herself a professional sociologist.

2) Residents saw statistical procedures as subjectively determined. A choice of the .01 level of significance—as opposed to, say, a .05 level—could mean the difference between personal bankruptcy and solvency for residents, just as it had important implications for the budgets of bureaucracies and the careers of elected officials. A technical correction for small sample size would make acceptance of the null hypothesis much more likely, but residents were still convinced that—in the absence of a study with a larger *N*—the consistent direction of the findings meant that their health was, indeed, in jeopardy.

3) The timing of the release of data was seen to be as important as the substance of the data itself. Delay in reporting findings was dangerous to residents—especially to fetuses and children, whose critical period of exposure would be over by the time "definitive" reports could be published. The science bureaucrats and elected officials were seen to have self-serving reasons for delays aimed at preventing "hysteria" among the residents.

4) Politics is as much an influence on scientific interpretation as vice versa. Time and again, the stimulus for the announcement of "significant" adverse findings came only because of political predicaments the residents were able to

create (primarily through use of sympathetic mass media) for Governor Carey of New York and President Carter.

This book provides a powerful lesson on these matters and more. I found it flawed by a periodic absence of important relevant information and by a lack of empathy for the health bureaucrats trapped in their own maze of dilemmas. I was also put off by the tone, sometimes bordering on the ingenuous, in which the virtues of "citizen participation, a central concept in our democracy" (p. 56) are extolled. But these amount to minor matters of complaint for the official evaluator; there is much rich material here—resulting from the dogged pursuit of issues and evidence that are effectively investigated all too rarely.

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Inferences from Artifacts

Symbols in Action. Ethnoarchaeological Studies of Material Culture. IAN HODDER. Cambridge University Press, New York, 1982. x, 244 pp., illus. $39.50. New Studies in Archaeology.

Most archeologists would accept that societal and ideational aspects of culture are underdetermined by the economic infrastructure. The most salient aspect of much material culture is, however, stylistic, relating directly to social patterning and pervasive ideological themes. Archeologists thus, technical and methodological problems aside, have to be continually working back and forth from one analytical level to another, while attempting to control inference by reference to expectations generated through analogy. Hodder often fails to differentiate between style and culture-in-general, but it is with the interpretation of stylistic aspects of material culture that *Symbols in Action* is concerned. The currently dominant approaches to style in archeology fall into two broad categories. In the normative view, the degree of stylistic similarity between bodies of material culture reflects the extent of interaction between social groups, of whatever scale; in the systemic approach, style is seen primarily as a vehicle for the exchange of information about social identity, especially employed between groups at intermediate social distances. Hodder demonstrates that the reality is far more complex.

In a series of ethnoarcheological studies in Kenya and Zambia that involved the, undoubtedly exhausting, inventorying of hundreds of compounds, Hodder argues that, far from passively reflecting social differences, style is strategically manipulated to symbolize and justify inter- and intrasocietal relations. Among the mainly pastoralist Njemps, Tugen, and Pokot of the Lake Baringo region in northern Kenya, for example, stylistic differences in many types of object, whether produced by specialists or domestically, are correlated with the degree of competition between the societies for pastures and cattle and, within these societies, with the tensions between gerontocratic elders and men of the warrior age grade. Hodder even claims to detect in the decoration of womens' gourds their silent revolt against male domination. In the Zambian Lozi state, the elite manipulate material culture as symbols of power to legitimate their rule and to create a mystique of unity among unequal citizens of diverse origin. These studies are crammed with fascinating detail, and although we may wish to quarrel with certain inferences or to complain about a lack of ethnographic depth and, in some cases, of documentation, there is no doubt that, besides providing a rich source of analogy, they significantly extend and develop this aspect of theory.

The second half of the book, even if ultimately less successful, is more ambitious and even more stimulating. The relations between style and society are extremely subtle, and it is not possible to predict in any simple or direct way which items of material culture will be chosen for elaboration as vehicles of expression, or in what way. Why, we may ask, are Tugen and Njemps spears identical even in zones where the two groups are in competition? The answers to such questions require a more profound understanding of ideology and cognitive processes, and, in Hodder's view, a structuralist approach. In chapter 8, provocatively entitled "Dirt, women and men . . .," he attempts to show through a study of three "tribes" of the Nuba Mountains, Sudan, how the stylist component of "each material trait is produced in relation to a set of symbolic schemes, and in relation to general principles of symbolic meaning which are built up into particular arrangements as parts of social strategies." The primary principles in this case are taken to be concepts of purity (pure/impure = male/female = cattle/pig, and so on) and of the insider/outsider dichotomy that "structurally transform" social relations into material culture.

One of several difficulties here is that, although we may agree that, within any one "simple" culture, expressions of style are likely to be unified by reference to an underlying conceptual scheme, this is very hard to demonstrate—even ethnographically. Once a hypothesis has been set up, it is by no means easy to decide what sorts of evidence militate for and against it. For example, "Purity and fertility can be assured either by safeguarding the entrance to the granary with the clean, or by confronting impurity with the unclean." Negative evidence, by a sleight of inversion, becomes positive. Hodder does not seriously address this epistemological question, nor in a sketched application of his approach to the Late Neolithic of the Orkneys does he convince. A year or more's fieldwork among the Nuba and monographic treatment of the question would be needed to investigate the flow of causality from infrastructure to "social system" (that is, structure) and "social structure" (that is, superstructure) and its implications for stylistic expression.

This is an exciting book with wide-ranging implications, and it is well produced save for the critical but often illegible distribution maps. The author deserves only praise for raising far more questions than he is able to answer, and for providing a wealth of ideas and data that materially advance the discipline and will fuel productive controversy.

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The Leguminosae

Advances in Legume Systematics. Papers from a conference, Kew, England, July 1978. R. M. POLHILL and P. H. RAVEN, Eds. Royal Botanic Gardens, Kew, 1981. In two volumes. xxii, 1050 pp., illus. Paper, £30.

Biological systematics has lately come into its own again, as the need and the materials for synthesis have built up. Intellectual discipline is entering a subject in which the predominant conservatism has meant unwillingness to think and the radical countercurrent has owed more to idiosyncrasy than to insight.

Insight distinguishes the first two introductory chapters of this symposium on the legumes, "one of the great lines of dicotyledonous evolution," as E. J. H. Corner puts it. Those chapters (by Polhill and Raven, with the collaboration of C. H. Stirton) show what modern syn-