# BEHAVIORAL AND ORGANIZATIONAL MODIFICATIONS OF ENFORCEMENT/AVOIDANCE THEORIES: THE FISHERIES CASE

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September 1991

Our central effort here is to begin to think, in a very preliminary and programmatic way, about an area which has received surprisingly little formal and empirical attentions specifically, the dynamics of local resource use under exogenously imposed and enforced formal regulation. In short, we want to reexamine Hardin's discredited "Leviathan," a theoretical baby which most anthropologists, in their unstoppable quest for locally emergent solutions to commons problems—local compliance rules—and their disciplinary suspicion of "state intervention," have thrown out with the bathwater. Given the tenacity of the "state" in the real world, of the persistence of externally imposed regulatory regimes, we ought to be developing empirically-informed non-compliance theories.

Economists, quite recently, have immersed themselves in that bathwater, developing one or another variant of an enforcement/avoidance theory—EAT, for ease of reference—and even occasionally attempting to measure the costs of implementing and breaking rules. The difficulties of measurement should not be underestimated: what we are dealing with of course is by definition illegal activity, clearly on the part of the avoiders, and, as we will suggest later, perhaps on the part of enforcers as well. But these measurement problems need not deter us from

some conceptual speculations on what ought to be studied and measured by, we would hope, anthropologists as well as economists.

We begin with a brief discussion of the relationship of EAT to CPT—common property theory. We then lay out a "template," if you will, for the anthropologically-informed analysis of enforcement and avoidance. Finally, we will look briefly at what appears to be going on in the shrimp fishery in Guaymas, Sonora, Mexico. We can guarantee that our response to any questions you might pose to that empirical case will be "we don't know yet," but we are interested precisely in the kind of informed questions you might raise.

## EAT and CPT

At the outset, we should make the obvious but critical observation that the subject matter of enforcement/avoidance theory is not restricted to regulating the two primary problems of the commons: excludability (the potentially high costs of controlling access, and thus aggregate levels of exploitation), and subtractability (the divergence between collective and individual rationality) [cf. Feeny et al 1990; Oakerson 1986]. In fisheries, other aspects may be regulated—and avoided—as well: marketing channels and prices, product quality control, allocation of the resource among user groups, gear restrictions to prevent environmental degradation, seasonal closures to

prevent the capture market sub-optimal sizes of fish. We will return to this below, with the observation that avoidance strategies arising in the context of non-commons regulations may have implications for avoidance of commons-directed regulations (and vice-versa).

What does EAT and its theoretical parent, transactions cost analysis, say, and what are the implications specifically for CPT? Sutinen and Hennessey have provided a useful and succinct outline of the thrust of enforcement/avoidance theory, drawing upon the seminal paper by Gary Becker in 1968, "Crime and Punishment: An Economic Approach":

> Regulations attempt through the regulatory process to influence the private benefit-cost calculations of the regulated individuals in order to obtain acceptable compliance levels. But questions remain concerning which factors individuals will take into account in making such choices. There are a variety of such factors but Becker (1968) identifies the following: 1) the probability of violating without being detected; 2) the benefits associated with such undetected activities; 3) the probability of being detected but avoiding sanctions; 4) the benefits associated with 3; and 5) the probability of being detected and sanctioned and the cost of such sanctions. In making these probability calculations, the individual is assumed to compare the expected value associated of returns from violations with the expected value associated with

compliance (Sutinen and Hennessey 1986:195).

The calculus for enforcers is similar: to weigh the costs and benefits of enforcement. There is a emerging general consensus among the modelers that, given the difficulties in monitoring many fishing activities, the costs of high levels of enforcement activity are likely to outweigh benefits (cf. Anderson and Lee. 1986? Johnson and Libecap 1982; Sutinen 1987; Sutinen and Andersen 1985), Indeed, regulation may be counterproductive, as Scott Milliman suggests in the following scenario:

> (a) successful regulation will generate resource rents, thus fostering illegal fishery markets [effort] which, if left unchecked, may destroy the rents; (b) resources managers must therefore combat the illegal harvesters via enforcement measures; and so (c) in response to police pressure, violators may undertake costly avoidance actions, thus hampering enforcement activities (Milliman 1986:363).

Milliman offers two policy alternatives to this escalating process. First, if regulation continues, managers ought to strive for "total gain maximization" rather than "legal gain maximization." This approach would acknowledge that real resources are being wasted in avoidance activity, and thus managers should undertake enforcement schemes which "reduce illegal harvesting without simultaneously generating substantial avoidance costs" (1986:364). Alternatively, if "a "total gain regime" incorporating illegal activity into the social calculus is unpalatable, and given that regulation may yield negative

returns, then "the open access equilibrium is optimal" (1986:379).

Other prescriptions have followed from the incorporation of enforcement costs—and transactions costs in general, "the social cost of rule making and enforcement" (Wilson 1982:417)—into the analysis. Wilson, for example, uses the logic to support the wisdom of "collective mechanisms for the solution of potentially degenerative social situations" (1982:417)—that is, locally negotiated responses to the problems of the commons. And Johnson (1985) invokes the potentially high costs of agreeing upon, defining, and enforcing private property rights to question Hardin's favored solution—while simultaneously doubting that voluntary local cooperation is feasible: thus back to the Leviathan.

That the range of commons solutions—except, perhaps, privatization—can be generated from one or another version of EAT is disquieting. Rather than dismiss the entire reasoning outright, we prefer to acknowledge, as Ottar Brox has recently done in regard to traditional common property theory, a rather "immense amount of valuable a priori reasoning" contained in EAT, and to suggest, again with Brox, that we get on to the "very necessary documentation of empirical variation" (Brox 1990:229). In short, to rewrite Brox' (1990:229) pronouncement: 'As soon as we agree that EAT is part of the language in which we describe and analyze the world, we start to ask new, and more interesting questions: What aspects of the empirical world does EAT help us

to see, and to ignore?'

**A Template for Studying EAT**

The one critical feature of the economic theory of enforcement and avoidance which we argue must be retained is its "essential" or "methodological" individualism. By privileging individual decision makers, we may lay claim to be trendy rational choice economists, agency sociologists, or praxis anthropologists. There is a more compelling—and very simple—reason, however. Individuals get caught and punished, so individuals must weigh the risks and benefits of non-compliance. But this, really, is about all that an economic theory of enforcement and avoidance directs our attention to: individuals, "firms," boats making their private calculations.

In the real world, or at least in the anthropological world, we know that individuals make decisions within the context of production/consumption units, of social units, and, if you will, of cultural units. What is it about these different contexts, each with its particular mixture of inducements and constraints, which might alter the calculus of individual decision makers?

We would be well on our way to an anthropological theory of enforcement and avoidance if we could simply transform what we know about legitimate decision making in these three contexts into the realm of illegitimate decision making. But there are problems. Take, for example, "Chayanov's Rule," defined

succinctly by Sahlins as the following: "the intensity of labor per worker will increase in direct relation to the domestic ratio of consumers to workers" (1972;102). There is some evidence that this hypothesis may account for observed variation in the production of legal fishing effort (e.g., Jorion 1984), but is it likely to hold for the production of illegal effort? There are two possibilities, neither of which can be ruled out by a priori reasoning. One, production units with high c/v ratios may be forced to produce illegal effort to satisfy household demands. Alternatively, given some probability of gear confiscation under enforcement, those households with high c/v ratios would have the most to loose through illegal participation. The point is obvious and by no means original: we cannot assume, as economic theories of enforcement and avoidance are inclined to do, an identical risk function for each "firm" in the fishery.

At the second level of analysis—of individual decision makers within social units, e,g, communities, cooperatives, or fleets—standard EAT is likewise forced to make simplifying assumptions. Overall levels of avoidance, for example, are typically specified as aggregates of individual firm or boat decisions. But we already know enough about "collective action" addressed to commons problems to be uncomfortable with simple aggregation arguments. The arena, of course, is where much of the assault on Hardin has taken place in the last decade, a concerted effort, in E. Ostrom's words, to develop

an adequately specified theory of collective action whereby

a group of principals can organize themselves voluntarily to retain the residuals of their own efforts (1990:24-25).

But we have made very little progress towards a complementary theory of collective action by which individuals organize to avoid the enforcement of others' rules. Are, for example, the internal dynamics of Acheson's (1988) harbor gang—collectivities organized to address the commons problems of access and exclusion—similar to the internal dynamics of a street gang—an organization of "defiant individuals" (criminals, if you will) which, one recent study suggests, "must continuously mediate its own interests with those of the individual and coordinate those internal tasks necessary for the success of its business projects" (Sanchez Jankowski 1991:136)?

In short, is a theory of collective rule-breaking going to look similar to a theory of collective rule-making? We suspect not, but again, in marked contrast to traditional common property theory, we have very little a priori reasoning to even specify the relations between individual self-interest and collective interests under conditions of exogenously-enforced regulations. Some have invoked a "safety-in-numbers" proposition: individual chances of detection decline as the number of illegal fishermen increases, implying an identity of interests between individuals and groups. But a very different internal dynamic would apply if the penalty structure involved the revocation of a cooperatives' license to punish illegal activity of individual members. Again, we suggest very simply that there is a great deal of empirical

work that needs to be done.

This is true as well for the analysis of individual decision making within "cultural units," although here we have some very valuable work by McCay as a guide. Writing of New Jersey fishing, she suggests that "[p]iscatorial piracy is a custom of Shoal Harbor, a recurrent practice embellished with meaning" (McCay 1984:22). The meaning, in brief, is one of denying, by and large, legitimacy to exogenous regulatory schemes. As such, the "culture of piracy" alters the calculus of individuals: regulations are ignored or violated not simply when economic survival is at stake, but by some as well "all of the time and when there are other alternatives" (Ibid.:22). And it affects the behavior of individuals in groups, of collective action:

> When piracy is a major community activity, they cooperate to pay the costs of a watchman and, at times, to share the costs of fines (Ibid.:22).

And, finally, the pirates of Shoal Harbor warn us against the assumption that exogenous regulations promulgated to serve the local common good—such as minimal size limits of lobster—are and any more acceptable than regulations producing a local "bad"--the closing of oyster beds, the allocation of resources to sports fishermen. The "culture of piracy," and the behavioral strategies developed to reproduce that culture, are, she implies, indiscriminate.

From this rather casual assessment of what we know and don't know about enforcement and avoidance, we can lay out a very

simple template for what we ought to look at (Figure 1). We ought to be examining, by way of summary, the avoidance decisions of individual in immediate production/consumption units, in larger social groups, and within perhaps an enduring cultural system. And we should pay attention to the mutual interaction of these levels of analysis. Moreover, we should distinguish exogenous regulations addressed to solving local problems from those which are likely to attenuate local problems. But finally, as McCay's pirates demonstrate, we should analyze the relationships between these classes of external regulations.

A preliminary look at a Mexican shrimp fishery can further illustrate this last point, as well as suggest some of the empirical variation likely to be uncovered when serious attention is given to theories of enforcement and avoidance.

**Total Gain Maximization: The Mexican Case**

Shrimp resources in Mexico have a somewhat peculiar status. They are reserved by law for the "reform sector," of fishermen organized in state-licensed cooperatives, both for small-boat inshore and near-shore fisheries and offshore, industrialized trawlers (cf. McGoodwin 1987; McGuire 1983, 1991). At the same time, shrimp are a cornerstone of Mexico's export economy, and as such, must be marketed through state-run packing and distribution facilities. Fishermen, in turn, receive a controlled price for their catch, well below an open market price. The stage is set—

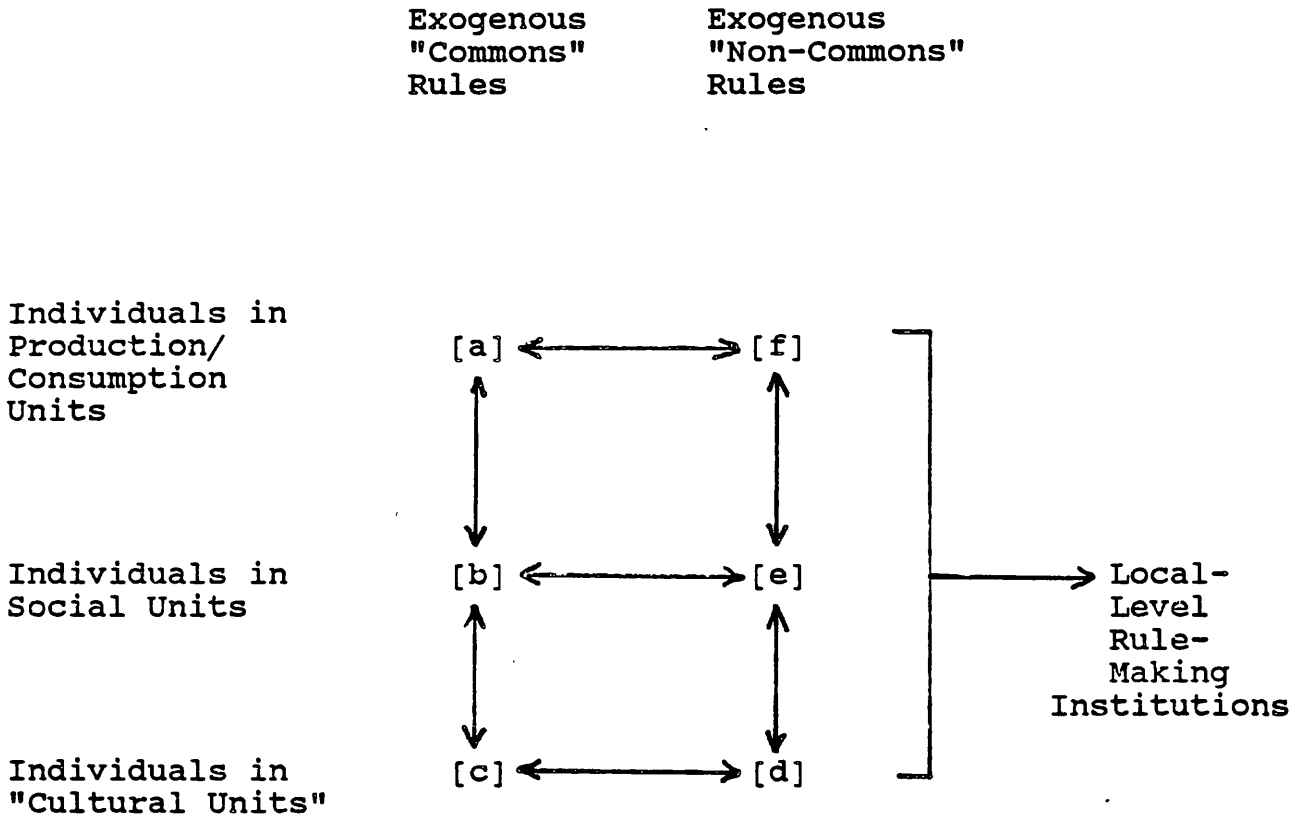


Figure 1

Enforcement/Avoidance Template

the incentives are there—for rampant violation of these marketing restrictions. Not surprisingly, this is exactly what we find—but with some peculiar twists which, we suggest, have implications for the way we think about enforcement and avoidance.

First, from our very preliminary understanding of the system, it appears that it is the fish inspectors, not the fishermen, who must calculate the probabilities of being detected—caught by their supervisors for tipping off black marketeers regarding patrol boat activity.

The following—relatively common knowledge and quite readily reported to us by fishermen in Guaymas, mid-way up the Gulf of California—appears to be what is going on. A handful of guateros, loosely, "smugglers," enlist small-boat fishermen to participate in two illegal activities: (1) shrimping during the legal fishing season but turning their catch over to the guateros rather than the cooperatives; and (2) fishing in the near-shore waters after the season has been officially closed to the small-boat sector, and again, marketing their catch to the smugglers, purchasing illicit shrimp for roughly 30% more than the government-controlled landing price, guateros then—for a fee—have their supply packed at one of several plants owned by confederations of cooperatives, thus receiving an officially-recognized trademark (including, some report, the government's own "Ocean Garden" label) and the proper documentation for exportation.

There are some additional permutations. There are licensed "cooperatives" with no fishermen and no gear, except for the proper export documents. There are diversions of export-destined shrimp to internal markets. There is, reportedly, a widespread practice of off-loading shrimp from trawlers to "Japanese" processing boats at sea, again subverting the official packing and marketing channels—and the officially-controlled price.

Enforcement/avoidance theories—even though there appears to be little of either going on here—alerts us to a number of interesting questions about the system. Significantly, what are the actual transactions costs—"bribes." if you will—of rule-breaking? Is the magnitude of loss to the government-controlled distribution system by the black market compensated for by gains from reduced levels of enforcement? Are fishermen saving significant resources by—apparently—not having to expend time and effort in avoidance activities? Are there economic—and ecological—gains achieved by, in essence, reallocating some of the potential catch of offshore trawlers to the—perhaps—more efficient and less destructive small-boat sector? And, as posited in the literature on organized crime, does the guatero-fishermen "organization" approach monopoly conditions, driving competitive illegal fishermen out of the system, reducing, in fact, the overall level of illicit fishing (cf. Buchanan 1980; Schelling 1980)? Is product quality control maintained in the black market precisely because there appears to be little effort to control that market?

Does this system, in short, approach a "total gains maximization regime," rather than, at first glance, simply a system of corruption?

But there are some critical questions which economic theories of enforcement and avoidance, and Buchanan's economic approach to the mob, would not immediately pose. Primarily, these concern to implications of the system on the structure of local communities and on the legal activities of small-boat cooperativese There is likely to be substantial economic differentiation occurring between those who play the game legally—marketing their catch at controlled prices to government-approved cooperatives—and those who channel their catch through, the black market. This differentiation, moreover, is likely to occur within cooperatives, with some members choosing to play the game legally, some choosing "piracy." And, to the extent that shrimp caught by cooperative members during the legal season are diverted to black market channels, cooperative earnings and operating capital will be affected.

Ultimately, then, the question is this: does what may be a "total gain" regime debilitate the local organization of fishing? Do the institutions for rule-breaking destroy the institutions for rule-making, the local efforts of cooperatives to manage their own affairs?

## Conclusions

We suggested at the outset, without, to be sure, documenting the point, that anthropologists have given insufficient attention the "Leviathan," to systems of external regulation. Whether or not such systems "work," they are nonetheless commonplace and persistent. Thus we have suggested that serious attention ought to be paid to theories of enforcement and avoidance, fledgling efforts by economists to model the costs and benefits of regulation. There are anthropological contributions to be made in embellishing such theories, but, as we just suggested, and as McCay has earlier discovered, there are critical implications for the anthropologists' own preferred domain: the analysis of local-level management regimes.

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