

# FANDANGOS AND THERMOSTATS: A PARABLE FOR HIGHER EDUCATION IN THE 21<sup>ST</sup> CENTURY

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*Remarks delivered to the Members of the Sunset Club, January 29, 2003, Los Angeles, California*

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Homeostatic regulation is the fancy name evolutionary biologists use to describe the various mechanisms that allow adaptive systems to adjust to their natural and social environments. There are all kinds of adaptive systems. Biological organisms might be the most familiar example of an adaptive system. But there are other less precisely defined adaptive systems operating in the cultural sphere, like certain durable behavioral and organizational structures found in human society. Homeostatic regulating mechanisms move organisms and organizations toward a steady state or “equilibrium,” if you will, amidst the chaos and noise of competing internal and external stimuli.

There are all kinds of homeostatic regulating mechanisms—sunlight, proteins, and enzymes regulate biological organisms, while values, beliefs, strategies, and even moral codes regulate behavioral and organizational systems. Tonight, however, I’m going to talk about two different adaptive systems—both organizational—that are subject to the same general constraints of their environment. They are thus typologically similar when it comes to homeostatic regulation.

The first system I will talk about is a lifeway known as foraging or gathering and hunting. In the adaptive repertoire of the human species, foraging has been far more successful in dealing with the uncertainty of the natural and social environments than any other form. Often thought of as a quaint vestige of our distant past, many are surprised to learn that nearly the entire two million years of human history have been structured around the gatherer/hunter adaptation. Only in the last 10,000 years have humans left this basic adaptive pattern to become agriculturalists living in permanent or semi-permanent settlements, and only within the last 5,000 years have humans become city-dwellers.

The second system I will talk about is public higher education. In California, this means specifically the University of California System and the California State University System. These two systems, along with California’s community colleges,

form arguably the finest system of higher education in the world. Like gatherer/hunters, California's public universities operate in an environment that is both uncertain and changing. Success and persistence in the face of such conditions are tied to the acquisition of vital and sustaining resources. Like gatherer/hunters on a changing and uncertain landscape, decision-making that affects resource acquisition has profound and long-term consequences.

### **The Life History of Gatherer/Hunters**

Detailed archaeological and ethnographic studies paint a relatively clear picture of gatherer/hunter adaptations from the Paleolithic through modern periods. Studies show that gatherer/hunters existed until recently in stable bands of eight to 100 individuals; the average band size was about 25 people and this constituted what anthropologists call the *minimum band*. Such bands generally had six close neighbors that were bands of similar composition which occupied immediately adjacent foraging territories. Together, the constellation of local minimum bands formed a larger *maximum band*.

Because the minimum band was comprised of close kin, it was not a reproductively viable unit. Individuals of marriageable age were thus forced to look for mates outside the local group of 25 to the larger maximum band. This fact created the unique pattern of interaction and social relations in band society so often noted by anthropologists, that of the periodic aggregation of the maximum band. It also carried with it an important message for a band's long-term reproductive success: contact with neighboring bands must be maintained on a fairly regular basis so that mate exchange could be arranged at appropriate times.

The periodic aggregation of the maximum band is a common feature of all band-level societies. Such aggregations, which bring many minimum bands together from different parts of the landscape, generally occur in resource-rich areas and last for a few days. The maximum band, therefore, constitutes the most meaningful evolutionary unit of band society (like the deme of a Mendelian population), because it is the maximum band from which mates are ultimately drawn and offspring produced.<sup>1</sup>

Critical decision-making affecting band survival and group mobility occurs locally where issues of resource availability, conflict and its resolution, and a host of other matters well-up in the normal patterns of daily living. The size of the minimum band is crucial in this regard because it is so closely related to resource acquisition and resource consumption. If the band is too large for the local resource base, food shortages will occur. If resources are patchy in their distribution and travel time to

resource patches is great, band size (and hence available labor) will determine whether exploitation of certain resources is energetically efficient or impossible.

Population size is often a determining variable for the minimum band, influencing the band's success in subsistence and establishing its potential for long-term survival. Comparative studies have shown that populations of gatherer/hunters are generally smaller than that which the resources of a given region can support.<sup>2</sup> That is, the population of minimum bands is generally below the carrying capacity of the environment.

How do gatherer/hunters know what the optimal size of the minimum band should be? How do they regulate their numbers to assure that the band is large enough to be efficient in resource acquisition, but not too large to deplete the resource base or cause food shortages among band members? The ethnographic literature is instructive in this regard, and if we focus on one well-studied group, like the Western Shoshoni, we can examine how such decisions were made within the minimum band.

### **Western Shoshoni**

Until recently, Western Shoshoni occupied their Great Basin homeland in much the same manner as they had for the last 10,000 years—as gatherer/hunters organized in minimum bands of about ten individuals.<sup>3</sup> Western Shoshoni bands moved across the landscape in an annual round to facilitate resource procurement, scheduling their activities to arrive at different resource patches in accordance with the changing seasons. Food supply was the limiting factor affecting population density in the Great Basin, and each Western Shoshoni minimum band carefully regulated its size through a variety of cultural practices.

Members of minimum bands did, for example, control their birth rate by using birth control techniques. Coitus interruptus as well as periods of ritual sexual abstinence were practiced, as was abortion. Above all, it was considered antisocial among Western Shoshoni for couples to have more than two or three offspring, and shunning, derogation, or the use of rough humor was often applied to those whose families exceeded this norm.

Western Shoshoni also regulated their death rate. The practice of female infanticide was used, and records also indicate that Western Shoshoni would kill illegitimate children and sometimes one or both twins to reduce their numbers. While Shoshoni culled from the very youngest, they also removed the eldest of their

numbers through a practice of senilicide in which the elderly were abandoned as the minimum band moved on in its search for food.

Early ethnographic accounts simply recorded these practices and did not attempt to explain when and why such behaviors occurred. Even though each act required a separate conscious decision by Shoshoni band members, the regulation of birth and death rates appeared to follow no inviolable rules. Ethnographers noted that abortion was not always selected as an option by women, that some families did have more than three offspring, that one or both twins were not always killed, nor were the elderly always systematically abandoned. These contradictory details existed in the literature until 1979, when David Hurst Thomas, an archaeologist from the American Museum of Natural History, provided an explanation of these behaviors which places the regulation of birth and death among Western Shoshoni in a larger social and ecological context.<sup>4</sup>

### **Of Fandangos and Thermostats**

Thomas looked not at the minimum band for answers to these questions, but to the maximum band. Among Shoshoni, the aggregation of the maximum band was referred to by anthropologists as a *fandango* (a Spanish term meaning variously "dance" or "brawl" depending on the context of usage). The terminology and its original meaning permeate the earliest ethnographic accounts of Western Shoshoni which describe the gathering as a rowdy social function of great magnitude. Since that time, anthropologists have placed considerable emphasis on the fandango as an opportunity for entertainment and a form of social integration that served to renew ties of kinship and strengthen group solidarity. Until Thomas' explanation, however, no one thought about the fandango as a regulating mechanism.

Fandangos only occurred during seasons of the year in which enough food could be stored to feed the large gathering of people. In regions of the Great Basin inhabited by Western Shoshoni, this normally meant that fandangos took place in the spring after the thaw, when hungry fish could be plucked from the rivers in large numbers, or in the autumn following an especially productive pinyon harvest. Thus, when resources permitted, fandangos were scheduled and minimum bands from many adjoining territories arrived at a predetermined locale for a significant social occasion.

But Thomas demonstrates that the fandango also provided each participant with something else: a precise check of regional population density over the area in which competition for resources among minimum bands was likely to occur. As the members of each minimum band arrived at the fandango, every other participant

could assess the size of the band and the physical condition of the incoming group. Moreover, participants could question each other about the availability of resources in different areas of the larger region, the abundance or absence of rainfall, the whereabouts of deer, or the location of herd animals. In other words, the fandango also served as a clearinghouse of information about the natural environment. Taken together, these two sources of information—a precise check on regional population density and a status report on regional resource availability—served as key variables in a kind of homeostatic system in which a relatively stable state of population equilibrium could be maintained if certain conditions could be controlled. Among others, these conditions included how many people were born or died during the intervals between fandangos.

One can imagine the system of population regulation used by Western Shoshoni to be crudely analogous to a thermostat that detects changes in the state of a regulated variable. Rather than temperature, however, the Shoshonian "thermostat" regulated the variables of birth and death. At a fandango, Western Shoshoni could determine rather precisely the exact number of people on the landscape and could make predictions concerning resource availability in the future based on current information received from other participants about environmental conditions in different parts of the territory. Good times and bad times could be forecast in this way.

Anthropologists believe that periodic aggregations of the maximum band, exemplified by gatherings like the fandango, were essential to the long-term maintenance of population size in band-level society. Populations of gatherer/hunters existed on the planet for so long precisely because their numbers were very closely tied to fluctuations in the natural resource base. Population "equilibrium" was always a relative concept for gatherer/hunters and was always defined in relation to resource availability. The keys to this remarkable record of survival and persistence were knowledge of the local environment and local control of decision-making.

### **Minimum and Maximum Bands in Public Higher Education**

Without forcing the analogy, I believe there are important messages in the preceding account of gatherer/hunters for California's public university systems. Each campus of California's public university systems—twenty-three of the CSUs and ten of the UCs—can be considered a kind of minimum band because it is the unit that toils daily for sustenance and survival on the landscape of academe. The campus-as-minimum-band is the unit that gathers and hunts resources in the form of tuitions, grant revenues, auxiliary income, and private gifts which sustain its

members. The charter of these universities arises from legislative mandates, more formal versions of the rules of kinship that form the charter of the minimum band. And like the minimum band, campuses are not reproductively viable units: students are recruited from the larger society and campuses promulgate policies that proscribe or prohibit the hiring of their own graduates to replenish the faculty ranks. Moreover, each campus forages on the landscape of the state where independent colleges, community colleges, and technical institutes all compete for a fixed amount of the states' public and private resources.

There is, however, one crucial difference between the campus-as-minimum-band and gatherer/hunter society. The UCs and CSUs are not governed locally, but are regulated by system offices that are far removed from the site of local competition. These offices determine policy, seek and allocate resources, and control the operation of each campus. Often the goal of the system office is to standardize responses to uncertainty and to dampen individuation that arises from local initiative and innovation. In this sense, the system offices function as proxy “thermostats” for California’s public universities. Unfortunately, such regulation goes on without concern for local variation in resources and opportunities. That is, there are no fandangos to assess purely local conditions.

California is in the midst of a severe fiscal crisis. As a result, the state’s public universities are again facing the budget axe as legislators scramble to backfill a huge operating deficit. Most importantly, even after addressing the current deficit, California faces a budget gap estimated at three percent of revenue per annum over the next ten years.

Budget reductions made next year and thereafter will seriously affect the viability of the state's public universities. Historically, universities react to budget shortfalls (that is, resource scarcity) by shrinking the size of their programs and/or populations. In this sense, public universities have practiced the functional equivalent of both birth and death control as regulating mechanisms. But in the face of "Tidal Wave II," the crush of students from the baby boom echo, this strategy is unlikely to be allowed by the UC and CSU system offices. This year alone, the UC and CSU systems grew by more than 25,000 students—the equivalent of adding one new campus to the state! Budget reductions in the face of such enrollment growth means that our public universities will be spending less and less to educate each student.

This problem is exacerbated by the fact that no one has been minding the thermostat. That is, nearly all of California's public university campuses have been

on a construction binge fueled by the state's budget surpluses of the late 1990s. While the construction boom has been financed largely with public bonds, operating the many new facilities will add enormous fixed costs to the UC and CSU annual budgets. The consequence is that these new recurring costs will now compete with instructional dollars on the campuses as administrators scurry to design balanced budgets.

Budget stringency will force very tough choices to be made by university administrators over the next few years. State universities will be forced to lower the cost of instruction and raise additional revenue to balance their budgets. Tuition increases and the layering on of additional user fees will most certainly occur. Universities will also be forced to rely more heavily on lower cost, part-time faculty—"freeway fliers"—as this new breed of faculty is called. Class size will increase, and with it the practice of using of graduate students in place of professors.

Because personnel costs are the largest budget item, faculty and staff salaries will remain flat during the next few years, making public colleges and universities subject to raiding by the better-financed private institutions. For the University of California, this problem will be severe, constituting a brain drain second only in its impact to the golden handshakes of the early 1990s. Failure to keep wages competitive will also fuel the cause and importance of faculty and staff unions.

Depending on the severity and duration of the budget cuts, universities may begin to reorganize their curriculum to reduce the number of credits required for graduation and to "streamline" students' passage through high enrollment courses like English composition and college algebra. The granting of AP credit to high school students will increase, and on-line instruction will begin to allow more students to take advantage of self-paced learning opportunities without having to set foot on campus, make use of campus resources, or talk to a professor.

Many of the changes I describe will be hailed by legislators in the name of improved efficiency and increased productivity. The sad fact is, however, that each one of the changes will lower the quality of the educational experience for students, and begin to break down the intellectual capital of the finest system of public higher education in the world.

It doesn't need to be this way. Different choices can and should be made. It is here that the analogy with gatherer/hunters is most illuminating.

Both the UC and CSU system offices have huge operating bureaucracies that eat up billions of dollars each year. While the systems perform some essential tasks, like coordinating the budget process with the legislature, much of what is done by these bureaucracies is also done on the campuses. Such duplication is a needless waste of vital capital in the face of a long-term resource shortage.

It is time to dismantle the bureaucracy of these expensive behemoths to reintroduce local control to California's systems of public higher education. State systems should be limited in their operational reach. The primary mission of the CSU and UC system offices should be threefold: advocacy for the system's role in the state, support of the information needs of the legislature, and accountability for the performance of its campuses. The operating business of each campus— personnel, research, budget, outreach, and instruction—should be left to each campus.

In addition, individual campuses should be freed from the "one size fits all" philosophy inherent in the current system structure. Each CSU and UC campus contains a unique set of academic resources. Each should thus be free to manage its own academic and budgetary affairs in relation to the exigencies of its local environment. For example, every research dollar garnered by a campus should be returned directly to the campus for local use without taxation by the system. Revenue from technology transfer should also be distributed to each campus without taxation. Changing system-wide policies in just these two areas would free millions of dollars annually for immediate use by the state's public universities.

One might even consider a system reorganization in which each campus is allowed to determine its own tuition and fee structure that is balanced against the annual state budget appropriation. Such a strategy would dramatically enhance accountability and would force each campus to be competitive with respect to its own unique operating environment.

The changes I propose are radical, to be sure. Yet when the budget axe falls, everything should be on the table. Just as in gatherer/hunter society, population size and resource consumption must be regulated in relation to the carrying capacity of the local environment. The great lesson arising from the incredible durability and persistence of band-level society is that fandangos and thermostats matter. It is no different for our state's public universities. Each campus contains great academic strength and is a vital engine of prosperity and economic growth. These remarkable attributes need not be sacrificed in the impending budget austerity.

## Notes

1. Wobst, H. Martin "Boundary Conditions for Paleolithic Social Systems: A Simulation Approach." *American Antiquity* 39 (April 1974), pp. 147-178.
2. Birdsell, Joseph B. "Some Predictions for the Pleistocene Based on Equilibrium Systems among Recent Hunter-Gatherers." In Lee, R.B., and I. DeVore (eds.), *Man the Hunter*, (Chicago: Aldine, 1968), pp. 229-240.
3. Steward, Julian H. *Basin-Plateau Aboriginal Sociopolitical Groups*. (Washington: United States Government Printing Office, 1938)
4. My discussion of Shoshonian maximum bands and the fandango is informed directly by Thomas' interesting treatment of this issue in *Archaeology* (New York: Holt, Rinehart, and Winston, 1979), pp. 123-126.