The Adaptive Qualities of Leisure: A Cross-Cultural Survey

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ABSTRACT
Recent research has considered the “benefits of leisure” from psychological, physiological, and social perspectives. Such studies, while valuable, have overlooked an even more fundamental benefit, that is, the possible contribution of leisure to human adaptation. The concept of adaptation holds that those who possess environmentally favored forms, whether biological, behavioral, or cultural, should out compete those less favored. This competition leads to a movement of the mean population value of the characteristic under consideration toward the more favored form. A review of past research and a cross-cultural survey of game-types suggests several possible adaptive qualities of leisure.

INTRODUCTION
In the introduction to their edited volume on the benefits of leisure, Driver, Brown, and Peterson (1991:9), after considering the contents of the chapters within, confidently stated: “Retrospectively, we know of no type or category of benefit of leisure that was omitted ... Thus, we believe that this volume comprehensively covers all the known and highly probable beneficial consequences of leisure activity”.

The 21 types or classes of benefits discussed in the volume are classified as physiological, psychological, social, or economic and environmental, a presumably “exhaustive catalogue of the benefits of leisure” (Mannell & Stynes, 1991:461). Yet, there is a type of benefit that is undoubtedly more important in the long term than any of those discussed in this book. That is, does leisure, in terms of its local (i.e., group specific) manifestations, contribute in any way to the biological or cultural adaptation of societies to their physical and/or social environments?

I am not going to consider the possibility of biological adaptation through leisure though it is a very interesting topic. On the other hand, the adaptive benefits of leisure from a cultural perspective can be examined given that we possess information on many examples of human societies, both past and present. Thus, cross-cultural comparisons are possible. Moreover, any comprehensive explanation of human behavior requires not only a cross-cultural perspective but also an evolutionary perspective. As Winterhalder and Smith (1992:4) put it, “Human societies are products of cultural evolution (which in turn is conditioned by biologically evolved propensities). Thus, evolutionary forces acting on both genetic and cultural variation are directly involved in making us, and our societies, what they are.” This paper, therefore, is based on a perspective to social science that is usually termed evolutionary ecology which is generally understood to be the “application of natural selection theory to the study of adaptation and biological design in an ecological setting (Winterhalder and Smith, 1992:5). More specifically, the analyses that follow involve a subset of evolutionary ecology known as behavioral ecology (Krebs and Davies, 1991), that is, the application of selection principles to behavior. Before continuing, however, it is necessary to examine two important terms, benefits and adaptation.

Benefits
In their volume on the benefits of leisure, Driver et al. (1991) discuss benefits, indicating that there are two common uses of the term. The first of these refers to economic gain as measured in monetary terms. The articles in the Driver et al. (1991) volume did not deal extensively with economic benefits of leisure. The second way in which the term is used is as a “change that is viewed to be advantageous—an improvement in condition or a gain to an individual, a group, to society, or to another entity” (Driver et al., 1991:4). The papers in the Benefits of Leisure volume primarily reflected this notion of benefit.
Driver et al. (1991:9) indicated that they regard measures of the benefits of leisure also to be of two varieties. First, beneficial changes in behavior due to leisure may be measured. Second, measures of the benefits of leisure may be introspective. Changes in behavior may be with respect to “physical health, increased productivity, family solidarity,” and so on, while introspective measures may deal with perceived benefits or with the experience of activities from which benefits can be inferred. Driver et al. (1991:9) indicate that “This volume covers all known measures—physiological, psychological, social, and economic.”

Adaptation

By definition, an adaptation is a benefit. A phenotypic trait, which may be morphological, physiological, or behavioral, is considered to be adaptive if its possession affords an organism a survival and, hence, reproductive advantage over its peers in its operating environment. By itself no trait is adaptive or maladaptive; it is only adaptive or maladaptive with respect to particular environmental conditions. Nature than “picks and chooses” among phenotypes, thus bestowing the potential for some to reproduce more than others. Inheritable phenotypic traits of the favored individuals then become more common than those of the less favored. According to Barash (1979:18-19), for example: “It [adaptation] refers to the ability of a living thing to function well in its environment. And the ultimate measure of such functioning is how successful an individual is in replicating itself, while others are trying independently to do the same thing.”

Adaptation, however, has become something of a “buzz word” and it has often been assumed that the mere presence of a trait means that it is somehow adaptive for the organism that possesses it. Paleontologist Stephen Jay Gould advocates that the term ‘adaptation’ be used only when a trait both “promotes fitness” and “was built by [genetic] selection for the function that it now performs” (Gould and Vrba, 1982:5). For “useful structures ... that are fit for their current role [but] were not designed for it [by genetic selection],” Gould and Vrba (1982) suggest the term “exaptation.” Moreover, sociobiologists claim that phenotypical behavioral traits among humans may be determined by the genes while cultural determinists claim that such traits are the result of cultural, not biological, evolution and transmission. In practice, it is difficult to distinguish adaptive from exaptive traits.

Ultimately, the difficulty with the concept of adaptation (and, by implication, with the notion of benefit, as well) is that when an interesting trait, either physiological or behavioral, is observed, the explanation of its role in adaptation frequently sounds much like one of Kipling’s “Just So” stories. Such analyses may be fun to read but suffer from the functionalist fallacy of assuming that the mere existence of a trait is proof of its positive function. Empirical tests of the adaptive qualities of cultural traits in single societies are “very difficult, if not impossible” (Rambo, 1991:78). On the other hand, comparisons among two or more culturally similar groups who live in different habitats or among two or more culturally distinct groups who live in similar habitats offer useful opportunities for the successful study of cultural adaptations (Rambo, 1991).

ADAPTIVE QUALITIES OF LEISURE AS FREE TIME

Rubin, Flowers, and Gross (1986) used time allocation methods to evaluate the adaptive characteristics of leisure among four native South American societies, the Mekranoti-Kapayo, the Xavante at the Pimentel Barbosa reservation, the Bororo at Posto Gomes Carneiro, and the Ramkokamekra-Kanela. These societies consist of ethnic village units and are closely related in both culture and language. They live in similar habitats in central Brazil but are distinguished by length of contact with Brazilian society and their degree of acculturation. Most important for this study, the four societies are differentiated by the degree of degradation of their habitats. That is, the forest biomass and soil nutrient levels are considerably lower where the Kanela and Bororo live than in the Xavante and Mekranoti areas (Gross et al., 1979).

Each of these groups relies on slash-and-burn cultivation for most of their food though each also obtains meat from hunting and fishing. Each group produces native handicrafts for sale and the Bororo and Kanela also engage in wage labor. At the time of the study, the Mekranoti had abundant calories and protein, followed by the Xavante with adequate supplies of each. The Bororo had ample protein but were short on calories, while the Kanela received adequate caloric intake from starchy foods, such as manioc, but had low access to protein. Nevertheless, Rubin et al. (1986) found no direct evidence of nutritional inadequacy in any of the groups.

According to Rubin et al. (1986), each of the groups has adapted to its ecological circumstances by adjusting its subsistence methods. If productive effort had been adjusted such that each group would achieve some standard minimum subsistence level, measured by diet adequacy, then it could be expected that diets would be rather similar but that work would vary directly with resource abundance. Yet, Rubin et al. (1986) demonstrate that while the composition of work differs among the four groups, the total input of work, in terms of time, varies hardly at all. Thus, Rubin et al. (1986) looked for evidence of the adaptation of the groups to their habitats not in terms of productive effort but in leisure. Rubin et al. (1986: 526) define leisure as “activities that make no direct contribution to production or reproduction.” They included such things as “lying down, staring off into space, ceremonies, games, sports and athletic contests, singing, sleeping between the hours of 6
a.m. and 8 p.m., and so on” as leisure. Any time individuals were engaged in two or more activities, if one of the activities was productive, then the time was coded as productive. Rubin et al. (1986) indicate that individuals or groups may respond to scarcity in either of two ways. They may invest more in subsistence activities, that is, work harder, or they may adjust their activities such that they use less. The former strategy runs afoul of the problem of diminishing returns for greater productive efforts. Further, given that the four groups appear to spend approximately equal amounts of time working, Rubin et al. (1986) report that the groups took the second strategy. Further, their adjustments to conserve energy took place in the realm of leisure.

As noted earlier, despite the high variability of yields from productive labor, the total time devoted to work varied little among the four groups. Hence, the total time devoted to “nonproductive activities,” or leisure, did not vary much either. However, the amounts of time devoted to what Rubin et al. (1986) characterized as “active” (i.e., high energy cost, such as wrestling or dancing), and “inactive” (i.e., low energy cost, such as resting or sleeping) leisure varied substantially. The selection of low energy cost activities rather than high energy cost activities would have the same net effect on energy expenditure as increased production. The percentages of time spent in high versus low energy cost leisure should parallel the resource conditions of the four groups. Indeed, that is precisely what Rubin et al. (1986) found.

It could be argued that their results can be explained by the relative proportion of children to adults in the four groups, given the fact that children tend to be more active than adults. Thus, the low percentage of active leisure among the Kanela may be an artifact of a low ratio of children to adults in that group. Indeed, Rubin et al. (1986) report that the ratios of children under 15 to total population do parallel their findings with respect to activity levels (though the Bororo and Kanela reverse positions). The ratios are .375 for the Bororo, .476 for the Kanela, .490 for the Xavante, and .512 for the Mekranoti. However, Rubin et al. (1986) claim that the child-adult ratio does not account for the observed pattern of activity and inactivity when controlling for age. Indeed, most of the variation in active versus inactive leisure is accounted for by the children’s behavior inasmuch as adults spend much less of their total time in leisure in general than do children (roughly 22 - 30% versus 60 - 70%). Figures for the percentage of active and inactive leisure among the four groups, grouped by age, are presented in Table 1 below.

<table>
<thead>
<tr>
<th>Society</th>
<th>% Active Leisure</th>
<th>% Inactive Leisure</th>
<th>N of Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mekranoti</td>
<td>11.5</td>
<td>88.5</td>
<td>1370</td>
</tr>
<tr>
<td>Xavante</td>
<td>15.4</td>
<td>84.6</td>
<td>909</td>
</tr>
<tr>
<td>Bororo</td>
<td>11.3</td>
<td>88.7</td>
<td>1381</td>
</tr>
<tr>
<td>Kanela</td>
<td>8.3</td>
<td>91.7</td>
<td>1330</td>
</tr>
<tr>
<td>Children &lt; 15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mekranoti</td>
<td>60.9</td>
<td>39.1</td>
<td>1520</td>
</tr>
<tr>
<td>Xavante</td>
<td>61.0</td>
<td>39.0</td>
<td>965</td>
</tr>
<tr>
<td>Bororo</td>
<td>47.2</td>
<td>52.6</td>
<td>798</td>
</tr>
<tr>
<td>Kanela</td>
<td>32.4</td>
<td>67.6</td>
<td>1345</td>
</tr>
</tbody>
</table>

* Adapted from Rubin, Flowers, and Gross (1986:528)

For children under the age of 15, the differences among the four groups are in the direction predicted by the degree of habitat degradation in the areas where they live. Though all children spend their leisure time more actively than adults, Kanela children spend more than twice as much of their leisure in resting and sleeping than they do in active play. While Bororo children do not exhibit such an extreme, they still spend more time in rest than in play. The opposite is true of both the Xavante and the Mekranoti. Rubin et al. (1986) also found that, in general, boys are more active than girls. The differences observed are not accounted for by work inasmuch as children in none of the groups do any appreciable productive or reproductive work. Finally, Rubin et al. (1986) found that there was differential pressure by adults among the groups to reduce children’s activity levels. This occurred in the context of child care. Child care behaviors assumed to curtail children’s (under the age of 4) activity levels were “calming” and “holding and transporting.” Calming involved efforts to make a child calm down or go to sleep when he or she was crying, distraught, or fussy. Holding and transporting are self-explanatory. It was found that Kanela and Bororo adults were much more likely than Xavante and Mekranoti adults to be observed calming, holding, or transporting children.
To summarize, Rubin et al. (1986:533) state:

We have presented evidence in support of an association between the degree of habitat degradation and the amount of energy expended during leisure time. The children in these groups appear to adjust their activity levels downward corresponding to the relative difficulty of obtaining an adequate diet from their environments. There is a corresponding difference in the behavior of caretakers that might encourage the “inactive” use of leisure—calming and holding.

Finally, they (Rubin et al. 1986:535) conclude:

Reducing energy expenditure in the face of difficulty producing food does not require that the actors be aware of the benefits of this strategy. Children whose activity levels are limited by the productivity of their parents’ labor are unlikely to be aware of the benefit to the community. Nonetheless, decisions are being made. The Bororo could fish more and perhaps the Kanela could spend longer hours in their gardens. But they do not, possibly because the marginal increase in yield per additional hour labored is not worth its cost in energy. Rather than make such adjustments to production, these people have exercised another option: they have reduced their needs.

The study by Rubin et al. (1986) is not just the best, but is the only direct study of the adaptive qualities of leisure currently in the anthropological literature. Their findings also suggest an interpretation of some of the results of a cross-cultural study of time use that I conducted recently (Chick, 1993).

The relationship between productive time, free time, cultural complexity, and the evolution of culture has interested anthropologists for many years (see Chick, 1986, for a review). In the 1940’s, for example, Franz Boas endorsed the Surplus Theory of cultural evolution, a perspective that held sway for many years. Simply put, Boas (1940) asserted that cultural development, especially in terms of technological evolution, resulted from a surplus of food and population, both of which were permitted by food production (agriculture) which replaced food collection (hunting and gathering). Beginning in the 1950’s, however, field researchers who were working with native populations in Africa and Australia found that hunter-gatherers seemed to spend less time in work than members of technologically advanced societies.

Based on that background, I hypothesized that the relationship between cultural complexity, measured largely in terms of technological sophistication and social organizational variables, and free time availability is curvilinear (Chick, 1986). That is, members of very simple and very complex cultures have substantially more free time than members of societies with moderate levels of cultural complexity. This hypothesis was tested using cross-cultural data on 186 societies culled from the Human Relations Area Files (HRAF), a source of ethnographic data on more than 300 cultures, past and present. Results were mixed, however (Chick, 1993). While a modest curvilinear relationship between cultural complexity and free time was found, the data could be described nearly as well by a straight line, suggesting that there is little difference in the amounts of free time (operationalized as the time remaining after work, nocturnal sleep, and maintenance activities were removed) experienced by members of societies at different levels of cultural complexity.

Two ancillary hypotheses were supported, however. First, I hypothesized that women were likely to have more children under circumstances where there was a large amount of work to be done and where children were capable of doing some of it. This is typically the case in simple agricultural societies but not in either hunting and gathering societies or in advanced agricultural or industrial societies. Hence, when the number of children (operationalized as the number of children who survive past age five per female) and cultural complexity are graphed, the resulting line should form a parabola, with societies of either low or high cultural complexity having fewer children than those in between. Second, if children are capable of economically productive work, they should begin to work as soon as possible. Thus, the age of initial economic productivity should be relatively high in societies of both low and high cultural complexity but low for societies of moderate cultural complexity. The data supported both of these hypotheses.

Nevertheless, the lack of support for the primary hypothesis—that free time and cultural complexity would be related in a curvilinear fashion—was disappointing, though recent research has suggested that, in fact, time spent at work, and by implication in leisure, does not differ much with respect to cultural complexity (e.g., Hill and Hurtado, 1989; Shott, 1991). The results of the study by Rubin et al. (1986) may suggest an explanation for the failure of that hypothesis. They found, as noted above, that the four native Amazonian societies chose, consciously or nonconsciously, to standardize the amount of time spent they spent working and alter the way in which leisure was used in order to adapt their energy use levels to varying habitat conditions. Each of the groups seemed to value free time more than excess production, so long as production was adequate. These groups did not differ much in terms of cultural complexity, but it is possible that cultural complexity is relevant not in terms of how much free time societies at various levels have, but in terms of how they use it. Moreover, societies may adjust
other variables (i.e., the number of children and the age at which they become economically productive) in order to maintain relatively standard levels of work time and leisure time cross-culturally and across habitats.

ADAPTIVE QUALITIES OF LEISURE AS ACTIVITY TYPE

Games are a common leisure activity. In 1959, Roberts, Arth, and Bush published “Games in Culture,” a paper wherein they defined and distinguished types of games depending on whether the outcome (i.e., winning and losing) is determined primarily by physical skill, strategy, or chance. Moreover, they found that the number of games of particular types present in societies correlates with both habitat and social environmental variables. Using a relatively small (N = 50) cross-cultural sample, Roberts, Arth, and Bush (1959:604) found that: “Of 23 tribes living within 20 degrees latitude of the equator, 18 had fewer than five games of physical skill, while of 24 tribes living more than 20 degrees north or south, only nine had fewer than five games of physical skill. Tentative work with mean annual temperature and protein and fat in the diet suggest some correlation.” The presence of games of chance seemed to be related to environmental uncertainty (i.e., unpredictable weather, unstable food resources, hostile neighbors, etc.). Finally, games of strategy tended to occur among stratified, but not egalitarian, societies. The authors interpreted these findings to suggest that games are expressive models of salient real-world conditions or activities. Further, participation in the models—playing the games—Provides learning that is useful in the real-world context. The presence and number of different types of games in different combinations may be cultural adaptations, therefore, to conditions in both the physical and social environments.

In 1976, Roberts and Barry proposed an evolutionary scale for games. Based on cross-cultural data, they found that all or nearly all known cultures have or, at one time, had games of physical skill. Games of chance appear later. Finally, games of strategy develop in more complex societies. Modern industrialized societies have all three. Hence, their evolutionary sequence includes societies only with games of physical skill, those with games of physical skill and chance, and those with games all three types. Roberts and Barry (1976) correlated their game scale with ten measures of cultural complexity and found significant positive correlations in each case.

Following up on the work by Roberts and Barry (1976), I conducted a small cross-cultural survey using data from the World Cultures Database (White and Burton, 1986). This database uses the Standard Cross-Cultural Sample (SCCS) of 186 societies (Murdock and White, 1969) and greatly improves on that used by Roberts, Arth, and Bush (1959) in terms of sample size and sampling unit independence. More than one thousand variables are coded for the database, including environmental variables, social organization variables, and game-type variables. I used the game-type variables to create a three-valued scale as suggested by Roberts and Barry (1976). In this data set, 64 societies had only games of physical skill, 48 had games of physical skill and of chance, and 22 had games of physical skill, of chance, and of strategy. Data on games was missing for 26 societies and the remaining 26 had only games of physical skill and of strategy, an anomalous pattern that does not appear to be in the evolutionary sequence. The game-type variable was then cross-tabulated with data for the same societies on political integration (where 1 = none, 2 = autonomous local communities, 3 = one level above the community, 4 = two levels above the community, and 5 = three levels above the community), social stratification (where 1 = egalitarian, 2 = hereditary slavery, 3 = two social classes, no castes or slavery, 4 = two social classes with castes and/or slavery, and 5 = 3 social classes and/or slavery), and food supply (where 1 = year-round food supply available locally, 2 = daily variation in food supply, 3 = seasonal variation in food supply, 4 = annual variation in food supply, and 5 = food supply must be imported).

All of the correlations between these variables and the evolutionary scale for games were positive and statistically significant. For political integration and the game scale, gamma = .463 (chi-square = 36.48, df = 8, p = .000). For social stratification and the game scale, gamma = .453 (chi-square = 31.63, df = 8, p = .000). For the food supply scale and the game scale, gamma = .521 (chi-square = 27.47, df = 8, p = .001). The first two of these correlations are between variables previously examined by Roberts and Barry (1976), although the number of cases differs (they used 96 cases, I am using 134). Our results are very similar. The correlation between the food supply scale and the game scale is new, however. By themselves these correlations do not demonstrate the adaptive qualities of game-types. The strong and consistent relationships do indicate that, as cultures become more politically integrated, more stratified, and less able to depend on local food sources, their game repertoires change in a consistent direction.

The theory of games as expressive models of real-world activities (Roberts et al. 1959) provides an explanation of this directional change. Roberts et al. (1959) described games as models that have varying degrees of verisimilitude with important cultural activities. Games of physical skill often model hunting, for example. Children’s games in hunting and gathering societies frequently involve the use of toy bows and arrows, spears, or other projectiles for use in play hunting, especially among boys. Other games model warfare, another important real-world activity. Games of chance seem to model divination and relationships with supernaturals. Even in modern societies, gamblers often attempt to influence
outcomes in dice games, for example, by placing some of their personal essence on the dice (by blowing on them) or by saying little “prayers” (“Come on, seven!”). Finally, games of strategy probably model social interaction, especially as it occurs in hierarchically organized social systems. Access to resources in hunting or war, through divination or other relations with supernaturals, or by way of social interaction is enhanced by physical skill, good luck, or clever strategy, respectively. Games offer the opportunity to practice physical skills, luck, and strategy in relatively non-threatening contexts. Learning that takes place in game play may, therefore, be adaptive in real world situations when relevant conditions exist in the physical or social environment.

CONCLUSION

Exercise, pleasure, stress reduction, and all of the other benefits of leisure suggested by the contributors to the Benefits of Leisure volume (Driver et al., 1991) are surely worthwhile. But they are also clearly secondary to physical survival and, by extension, cultural survival. This paper addresses the question of whether leisure, in its various guises, “benefits” or assists in the adaptation of cultures to their physical and social habitats. I have not tried to explain why a particular behavioral trait may be adaptive in a particular culture as such explanations are empirically difficult or impossible to either support or reject. Instead, I have described several studies that have analyzed what seem to be adaptive qualities of leisure, in terms of either differential time use or activity type, across several cultural groups. While only the Rubin et al. (1986) study appears to offer conclusive evidence of leisure serving as an adaptation to habitat conditions, the other studies seem to support the conjecture.

Unfortunately, leisure has never been a priority for cross-cultural research and so the data that can be applied to the question of whether or not leisure has adaptive qualities is meager. For example, an ongoing anthropological time allocation survey (Johnson, 1992) lacks leisure as one of its time budget categories, although it may be possible to use the data if leisure is defined as time left over after all of the explicit categories are exhausted. The World Cultures database described above contains approximately 1,000 coded variables yet only one of them explicitly refers to leisure. It is very likely that leisure has been essentially ignored in cross-cultural and anthropological research because it has not been seen to be adaptive or to serve any useful productive or reproductive function. The studies described and results reported here suggest that leisure does have important consequences for production and reproduction through adaptation to habitat conditions. So, on one hand, anthropologists must be persuaded that leisure has a legitimate role in culture. Leisure researchers, for their part, must recognize that adaptation is a potentially important benefit of leisure.

REFERENCES
