Culture as Information: Not a Shaky Link but a Stable Connection

Robert Shanafelt
Georgia Southern University

Follow this and additional works at: https://egrove.olemiss.edu/southernanthro_proceedings

Recommended Citation

This Part 1 is brought to you for free and open access by the Southern Anthropological Society at eGrove. It has been accepted for inclusion in Proceedings of the annual meeting of the Southern Anthropological Society by an authorized editor of eGrove. For more information, please contact egrove@olemiss.edu.
Who has not heard debates in which esteemed scholars fight over whether we should modify the culture concept, reclaim it, or just throw it out? I suggest that a major sector in a bridge between fields of anthropology has already been partially constructed, but what has been built has been too much under the radar. This construction links a conception of culture with that of information.

It seems that a definition of culture in terms of information has not received the benefit of much historical and critical analysis. Here I will provide a little history as well as advocate for a particular perspective that I see as most fruitful for a synthesizing anthropology. I will also outline some key work from this perspective and discuss some of its strengths and weaknesses. My argument is that the pitfalls of the other conceptualizations of culture involving reductionism and dualism can be sidestepped by a better understanding of information and its forms and processes.¹

Although some have suggested that we should leave all our worry about culture behind (Fox and King 2002), I think the concept of culture is still worth talking about because definitions have consequences and the modifications we make to them reflect our changing interests and concerns. Of course, with so many variations on the theme of culture, oftentimes changes may be minor and go unnoticed. Sometimes, however, they do reflect major shifts
in perspective. In the 1990s, for example, Susan Wright (1998) argued that one could divide the culture concept into “old” and “new” versions. The old version, she thought, “equates ‘a culture’ with ‘a people’ who could be delineated with a boundary and a checklist of characteristics” (14); the newer version saw culture as a “contested process of meaning-making” (9).

Undoubtedly the more recent trends reflect the influence and prestige of prominent exemplars such as Clifford Geertz and Michael Foucault, although, of course, emphasis on meaning and the relativism of perspectives did not originate with them. Most probably, the recent attentions to issues of power and its contestation owe more to Foucault than Geertz, and certainly some is due to Eric Wolf and the “old” Neo-Marxians as well. In this paper, however, I am not inclined to critique these trends. Here I have the more modest goal of following a relatively unexamined definition to see where it has led and to make a few comments about where it might lead. While culture-as-information has been quietly advocated for some time now by a few scholars, it is not remarked upon as often as are others. It is not mentioned in Kroeber and Kluckhohn’s (1952) classic overview or in Keesing’s (1974) review, for example; nor is it delineated in a more recent comprehensive, interdisciplinary, survey of the term’s use (Baldwin et al. 2006). In the early 1970s, Bohannan (1973) did suggest that culture be seen as “a mode of encoding information,” but he provided very little historical background or epistemological foundation for his argument.

There are three things that strike me most about the potentials of a view of culture as information that are immediately worth noting. First, such a view can help foster a less anthropocentric approach to the discipline. This is true in that information and information processes pervade life. Second, for the same reason—the pervasiveness of information—this perspective can help foster a link between...
anthropology and natural sciences. Third, a view of culture as information can help mitigate concerns about reification and boundaries. This is the case because information moves between boundaries, and attempts to contain it require expressions of power that are often difficult to hide. Clearly, although information perspectives on culture are not new, in Wright’s sense, they also do not necessarily have the negative characteristics of the old ones she describes. And they are in keeping with newer models that see social institutions as “assemblages” constituted by relations between interior and exterior conditions and entropic and tropic forces (Delanda 2006).

With respect to boundaries, it may be of interest to note that I first became aware of information perspectives while studying the anthropology of South Africa. I learned from this that other more standard anthropological definitions of culture did not seem contrary to apartheid notions of group boundedness and that they even helped obscure the interconnections that existed between all of the racial and ethnic groups living together in the country. The information perspective described by Robert Thornton (1988) did not seem to have these problems.

I do not mean to imply that an information perspective on culture is without problems. Three commonly suggested complaints with informational views immediately come to mind. First is that the information models derived from computers and telecommunications have tended toward a philosophical dualism, implying a stark contrast between information stored in the head and information sent or received from exterior sources. Another problem is that this perspective of information as coded transmission does not get at the problem of meaning. This is particularly evident in the mathematical perspective of Shannon and Weaver (1949), wherein one sees information only as signals or average options among all possibilities, irrespective of what specific message they convey. While the
mathematical theory of information has been extremely fruitful in a developing technology, such a perspective is contrary to our ordinary sense of information as “about being informed.” A third and related problem is that informational views can be mechanistic and may therefore neglect the creative and synergistic features of shared communications. Cultural communications are not simply downloaded from society to the individual or uploaded from the individual to the society. As Durkheim realized long ago, there is a “public temper” to social communication that involves the creation of new meaning in the process of interaction (Durkheim 1933, 102).

With respect to scholarly exemplars, Gregory Bateson and Claude Lèvi-Strauss should be included in any history of information-as-culture in that they wrote in terms of cybernetics, communication theory, messages, and codes. Of course, Bateson developed his concept of information as “any difference that makes a difference” in the context of a broad interdisciplinary perspective while Lèvi-Strauss was interested in decoding hidden cultural structures. Less influential has been the research agenda developed by ethnographer John M. Roberts, starting in the 1940s, that focused on the description of culture as an information resource (Roberts 1964; Roberts 1987). Roberts concentrated his efforts on analysis of the relationship between the cultural knowledge of individuals and small groups and the combined pool of information available to all members of a society. Another prominent anthropologist, Ward Goodenough, wrote in a similar vein about culture and individuals accessing the “information pool” of a society (Goodenough 1954). Although both Goodenough and Roberts were students of George Peter Murdock at Yale, according to Goodenough’s (2003) recollection, their focus on information pools does not seem to be due to Murdock’s influence.

The 1940s saw a surge of interdisciplinary interest in cybernetics and Shannon and Weavers’ probabilistic perspective that also
influenced many anthropologists. In archaeology, an explicit link was made to this by David Clarke (1978) when he developed a cybernetic approach to archaeological theory. According to Clive Gamble (1986, 56), by the mid-1980s the idea of culture as an information system was already considered a commonplace archaeological view. However, more recently this seems to have gone out of fashion. Gamble (2007) himself, for example, has moved on to an emphasis on a kind of “embodied semantics of the artifact” that reflects the influence of linguist George Lakoff and his colleagues (although in this a relational view of information processes remains implicit).

In zoology and biological anthropology, an informational definition was given a prominent place by John Bonner (1980, 9) who wrote in *The Evolution of Culture in Animals* that culture is “the transfer of information by behavioral means, most particularly by the process of teaching and learning.” Bonner’s influence continues in anthropology and other areas that highlight evolutionary perspectives. For example, primatologists Duane Quiatt and Vernon Reynolds (1993, 46) define culture in a way similar to that of Bonner, describing it as “socially processed information, a definable subset of the environment (as opposed to genetically encoded) information which is accessible to a given species.” A related definition has been employed for some decades now by the theorists of cultural evolution, Robert Boyd and Peter J. Richerson (1985; see also Richerson and Boyd 2006) as well as by William Durham (2002, 194). Charles D. Laughlin, an anthropologist who had proclaimed the culture concept dead in 1972 (Freilich 1989, 1), has more recently worked to bring it back to life by placing emphasis on information in the context of research into what he calls “cultural neurophenomenology” (Laughlin and Throop 2006). In an edited volume featuring both the works of Goodenough and of Boyd and Richerson, Morris Freilich (1989) gives the most prominent emphasis to informational
definitions of culture (one third of the book) that I am aware of in any anthropological study on the subject.

Looking at culture in terms of information, of course, begs the question as to what information is. Since in this volume we are interested in implications for anthropological synthesis, what is most germane are the most discipline-bending notions of information. These are not difficult to find. Indeed, since Leo Szilard’s (1929) solution to the problem of Maxwell’s demon in thermodynamics, the processing of information has been known to have an energetic cost. Some natural scientists have even gone so far as to argue that information is a “fundamental universal phenomena alongside and related to matter and energy” (Young 1987, 2; see also Weiner 1948). Along the same lines, ecologist Ramon Margalef has argued that information is a property of “everything that is formed of distinct parts” (Adams 1988, 41, quoting and translating a line from Margalef’s 1980 work in Spanish, La biosfera). Obviously, if this is true, then information is not something ethereal. Put in the more existential terms of biologist and student of science and society, Tom Stonier declares, “Information exists. It does not need to be perceived to exist. It does not need to be understood to exist. It requires no intelligence to interpret it. It does not have to have meaning to exist. It exists” (Stonier 1990, 21, emphasis in the original). Still, it is not necessary to accept Stonier’s radical view for there to be important consequences for how anthropologists think about culture. As suggested above, such information models may help us avoid ingrained anthropocentrism and perhaps even biocentrism. Another key thing, I think, is to appreciate that information involves the processing of matter/energy, and this processing itself requires matter and energy.

In anthropology, the energy costs of culture (as information) and the evolution of civilization have been best elucidated in The Eighth Day: Social Evolution as the Self-Organization of Energy, a rather
neglected work by Richard Newbold Adams that is far less mechanistic than the out-of-date perspective on complexity given by Leslie White. Here is a quote from a key passage:

the things we call ideas are themselves equally materialistic in the sense of being information, variously, in a nervous system, on a sheet of paper, as dissipating sound waves, or in some other energy form. Just as information inevitably characterizes energy forms, so meanings and mental models are inevitable components of human nervous systems ... [plus] the association that a collectivity of nervous system activities has with other things. (Adams 1988, 88)

Obviously, this relates directly to the old issue in anthropology of “materialist” versus “idealist” perspectives. Adams shows that this dichotomy evaporates with a better understanding of the thermodynamics of semiotic processes. What I think this also calls to our attention is the need for a more encompassing kind of semiotics than is given in the usual Geertzian interpretive perspective—Gregory Bateson (1979) understood this well. Those, in particular, who embrace semiotics in the sense of the triadic process described most famously by C. S. Peirce have also been particularly open to these possibilities. Of course, how broad a sweep this involves is subject to much debate. Some maintain that semiosis requires the high intelligence of complex central nervous systems in interaction; others maintain that all life is engaged in sign processes, processes called biosemiosis (Sebeok 1991; Hoffmeyer 2008). The most radical view is that there is physiosemiosis (Deely 2000, 1999), wherein all being is involved in sign processes, and being itself is thought of in terms of sign relations (Bains 2006). All these distinctions beg a further
question about what exactly is information *processing*. In information processing, it is widely held that what is required is not just signal providing inputs but means to store, record, and respond to them. Purpose (or meaning) and intentionality come into play here as well (Feldman 2007).

For those trying to develop a holistic way of understanding the biological, the psychological, and the social, unraveling the difficult relationship between meaning and information remains a most daunting problem. Some, like Aunger (2002), approach the problem by reconceptualizing mind and culture in terms of information replicators and what he labels “instigators,” both of which have physical and organic correlates. First, he notes that certain kinds of biological structures are different from physical ones because of the way they channel and constrain possible signals through their structural configurations (Aunger 2002, 148). Second, with reference to how specific patterns of information (memes), located in brains, have social influence, he argues that our communications “are projected like arrows into the environment, with which they must interact (hence the confusion that they are themselves interactors). Signals then migrate through the macroenvironment to a novel host (gaining contact through some sensory organ) and are translated back into neural impulses. Once within the brain, they are passed through neural connections to a location where they give birth to a new meme by stimulating a node in the new network, leaving it in a memetic state” (Aunger 2002, 241). Deacon (2012, 372) develops a different biosemiotic perspective by emphasizing that “what matters in the case of information, and produces its distinctive physical consequences, is a relationship to something not there. Information is the archetypical absential concept.” What he means by this is that it is not just gathering dark clouds in the sky that impel us to take cover but our understanding of what the clouds imply for our future. The
information that is not there, that it is going to rain, is “abstential” but also full of referential significance. Further, Deacon argues that it is crucial to distinguish between three types of information that emerge one from the other: one, information relating to signal and channel; two, information concerning order and work capacity; and three, information with teleological usefulness (Deacon 2012: 414-420). His perspective is rich indeed, yet, unfortunately, does not even have the term culture in the index.

As Brasdefer reminds us in the third paper in this volume, many matters of scale and mappings are necessarily involved in our studies. In addition to the fact that distinct forms of information processing are occurring at different magnitudes and speeds in embodied beings, there are also vast networks by means of which they are integrated; these may be expected to increase their complexity synergistically. If what makes consciousness possible is a form of “integrated information” that is generated “by a complex of elements, above and beyond the information generated by its parts” (Tononi 2008, 216) then how much more complex is that aspect of consciousness interlinked in social networks with others. The innovative and thought-provoking features of the works of Aunger and Deacon with respect to information suggest that there remain many potential avenues for new explorations in applying culture-as-information in anthropological contexts.

SOME IMPLICATIONS

Let me finish with discussion of a few implications. One is about the permeability of information environments, another about the nature of artifacts, a third about mappings and transformations of information in mind and culture.
From a biosemiotic perspective, information is exchanged wherever and whenever there is co-presence. This is because people have evolved to pay attention to other people, remember their interaction patterns for future reference, and make purposive typifications about them. More expansively, from a more physiosemiotic perspective, this exchange goes beyond a recording of social interactions in the familiar forms of social intelligence. A Spanish conquistador in the New World was necessarily a new type of Spaniard from the one at home not only because he was surrounded by new types of people. He was also different in that he related to a new realm of information that included a different geology, climate, ecology, and built environment. (One might also say the same thing about bonobos who have gone from the Congo to life in a zoo.)

Fieldworkers in cultural anthropology invariably impose barriers between themselves and their informants in that they seek time to rest or reflect, or that they try to limit the spatial and temporal domains in which information exchange occurs. Yet, you can’t stop the flow of information. Even our material possessions “speak” about us in our absence—as many cultural anthropologists know from having their property examined and “interrogated” while they were absent from their research communities. Basic cross-cultural information exchange, which is often inadvertent and frequently erroneously interpreted, is exemplified nicely in Marjorie Shostak’s description of the relationship between the !Kung and fieldworkers who preceded her in the Kalahari:

The !Kung had been observing anthropologists for almost six years and had learned quite a bit about them. Precedents had been set that the !Kung expected us to follow. That was difficult, because we were critical of
much that we saw: a separate elaborate anthropologists’
camp, tobacco handouts, payment for labor and crafts
in money, and occasional excursions by truck to the nut
groves. Determined to do things our own way, we packed
away our inherited tent and moved into a !Kung-style
grass hut in a !Kung village. (1980, 26)

The !Kung were learning about anthropologists as people and as
powerful others from the moment that the anthropologists set up
camp, but the anthropologists could not see this, perhaps because
they assumed cultures were bounded entities. To her credit, Shostak
took stock of the situation quickly and moved almost immediately to
establish co-presence with the !Kung on a more equal footing.

Shift frames now to archaeological considerations. What is an
artifact in information terms? A standard dictionary definition is
that an artifact is “any moveable object that has been used, modi-
fied or manufactured by humans” (Bahn 2004, 35). But we can
also consider an artifact in terms of its information content and
the traces of information it can provide to larger information com-
plexes. Here I would distinguish between two levels of information
that differ from Deacon’s model in that they reveal how “aboutness”
and “usefulness” are distinctly intermeshed in artifacts. (See Table
2.1.) While for modern humans, these levels are intertwined, it is
useful to keep them analytically distinct for purposes of unravel-
ing their significance in archaeological or primatological terms or
when the context of their use is unknown or has gotten muddled.
The distinction between Level One and Level Two is that Level One
can be analyzed extensively without necessarily understanding
Hypothetical Individual Artifact

Information
Level One

Level 1A — “Congealed labor” of production and acquisition
Level 1B — Information (knowledge) necessary for production, acquisition, and use
Level 1C — Context of use and association with related phenomena

Information
Level Two

Level 2A — Metaphorical associations and entailments
Level 2B — Meta-information on artifact fitness

Table 2.1. The artifact in information terms

der deeper levels of culture or meaning. While to unravel the information content inherent in an object at this level may take analysis of mechanics or sophisticated techniques from geology, chemistry, and physics, it does not require consideration of the specifics of any particular language, for example. Indeed, if chimpanzees produce artifacts, they will leave behind evidence of Level One-Three. Level Two, on the other hand, necessarily involves symbolic processes. As such, without additional information, what the particular artifacts meant to others may remain opaque to us as outsiders.

The finer level divisions within the levels may be characterized as follows. In level 1A the information is inherent in the object. To borrow a phrase from Karl Marx, there is inherent in an artifact the “congealed labor power” of its production. What this means is that the process of producing an artifact leaves physical traces of the
labor. Level 1B is more encompassing in that it indicates the information required to acquire the artifact material, produce it in final form, and employ it in some manner. Often this entails life-course and/or socio-historical experience with the same or related forms. In the terms of assemblage theory, *artifacts* are objects that reflect their historical relations of exteriority as well as their inherent interior structures. Reflect here on two examples—an Olduwan pebble tool and a polished jadeite axe from the Neolithic. Even if we can determine nothing for certain about their higher levels of meaning, there is still information content given in the structure of the artifact material and the nature of its manufacture. It is because of this that we can say that an Olduwan pebble tool is less sophisticated than an Acheulian hand axe or that a jadeite axe must have had some symbolic value in that it was traded extensively from France across Britain and Scotland even though we know from studying its internal structure that it shatters easily and could therefore have had little use value.

Finally, let me reference my own work in the ninth paper of this volume concerning people watching bonobos at the zoo. First, take the situation I call Mirrored Behavioral Analogies, where it is hypothesized that a bonobo hug is processed in the brain as a human hug. If true, this suggests that the person's observation is processed as a map is to its territory, what Bateson (1979, 125) in information terms called *template coding*. A transformation is made from one to the other, but with considerable fidelity. This can occur so commonly because it is a fundamental cognitive process for processing information. (Level 1A above would also be an example of template coding.) Because a template coding process for mapping interactions in mammalian species seems so basic, I wonder to what extent it can be overridden or modified by human cultural frameworks that deny any animal-human connection, that define other animals as prey, or
that generally promotes callous disregard toward others rather than observation-based empathy.

In the information terms of Bateson and Adams, even the apparently trivial act of children saying “ooo—ooo aaah aaah” when they see a monkey or ape is worthy of some analysis. Where actually does such an “ooo-oo aaah aaah” template come from, especially as it is generally not being taught in the immediate setting? It must be stored in the brains of the children, then evoked in their individual minds by the primate as a stimulus that is mapped erroneously, if understandably, onto a cognitive frame for expectations of chimpanzee behavior. As Adams (1988, 89) notes, “Information in culture is constantly reproduced between human nervous systems on the one hand and the extrasomatic forms on the other, a process that involves a constant introduction of error.” The “ooo-oo aaah aaah” vocalization reflects a set of individually realized transforms of a cultural configuration.

CONCLUDING COMMENT

As I have argued elsewhere (Shanafelt 2009), anthropology’s conception of itself in terms of holism could benefit greatly by being augmented with an emphasis on combined (or synergistic) effects. I think the same can be said for definitions that link together information and culture. Our self-definitions do not go far enough in meeting the goal of fostering a less anthropocentric approach to the discipline; fostering interdisciplinarity, and mitigating concerns about reification unless they consider cultural information as emerging synergistically from the interactions of physical, biochemical, and psychological forms. These forms are not simply built up like static strata that Richerson and Hanebrink critique but are, to use the terms of Gilles DeLeuze and Félix Guatarri, assemblages connected like rhizomes in space and time.
NOTES

1. Some of the ideas in this paper were first expressed in Shanafelt (1995).

2. In particular, they emphasize the value of the study of “Fischer Information.” Fischer information is a measure of the relationship between what is known and the total actual amount of information contained in reality. As such, it is an estimate of the amount of information we have accessed from an information source. It also suggests that some information will always remain inaccessible.

REFERENCES


CULTURE AS INFORMATION


