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COMPLEMENTARY PARADIGMS IN CULTURAL ANTHROPOLOGY

A b s t r a c t. Two of the competing ways of knowing in cultural anthropology are the paradigms of interpretation as presented in the work of Clifford Geertz and the scientific model as represented by Roy Rappaport. This article studies the similarities between the two paradigms in anthropology by comparing mythical and scientific ways of interpreting the cosmos with the interpretative and scientific ways of interpreting ways of knowing in anthropology. To this purpose I have selected one version of a creation myth, the Kaypulaquena myth of the Yucuna Indians from the Amazon and one scientific model of interpreting the universe, the Big Bang Theory. The problem I address is how myth and science approach the world. The study focuses on similarities between the Yucuna mythical way of interpreting the world and the Big Bang Theory way of approaching the cosmos. My assumption is that in both paradigms there are similarities in the use of epistemological assumptions and metaphors.

Keywords: anthropological paradigms; myth; science; interpretation; explanation.

1. INTRODUCTION

Contemporary theory in cultural anthropology is based upon a set of hypothetical assumptions and investigative approaches that form the anthropological perspective. Anthropologists establish theoretical paradigms within which to study cultural phenomena. This challenge has resulted in differences between interpretative, symbolic, subjective approaches in anthropological investigations and scientific, empirical perspectives in anthropology. Both models have a long tradition in cultural anthropology and their theoretical and methodological differences have been overemphasized. In this study I will explore the similarities between the two ways of knowing in cultural anthropology. I assume that in both models of knowing there are similarities in the use of assumptions and metaphors. The scientific methods in anthropolo-

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gy have had a long tradition. From its beginning as a discipline, anthropologists have contributed to the use of natural science methodology in anthropology. As an organized discipline anthropology began with the evolutionary theory as a major framework. Edward B. Tylor[1] and Lewis H. Morgan[2] were the first anthropologists who attempted to investigate cultural phenomena from an empirical scientific perspective. Some of the early anthropologists like Franz Boas in USA and Bronislaw Malinowski in England had a background in exact sciences like physics or mathematics. Later, Leslie White,[3] Julian Steward,[4] Marvin Harris,[5] Roy Rappaport and ecological anthropologist Benjamin Orlove[6] followed the natural scientific tradition in their anthropological investigations.[7]

The interpretative approaches in anthropology are usually contrasted with the scientific model. Interpretation is associated with the concepts of symbols, subjectivity, and ideal. There are anthropological schools of thought which—because of their theoretical assumptions and methodology—can be characterized within interpretative model of anthropology. Symbolic anthropologists are represented by the leading figure of Clifford Geertz,[8] who became the founder of interpretative anthropology. Geertz was influenced by Max Weber, who emphasized meaning over structure. For Geertz, the anthropological way of knowing assumes that the essence of culture are symbols and meanings and not experimental science in search for the universal law.[9] He argued that anthropology cannot be a science in the way natural sciences are, with laws, and generalizations based on empirical and verifiable data.

There have been many theoretical orientations in cultural anthropology. Some of them are based on the epistemology of positivism.[10] Thomas Kuhn

[1] Edward Tylor, *Primitive Culture* (New York: Putnam's Sons, 1871).

[2] Lewis H. Morgan, *Ancient Society* (Cambridge: Harvard University Press, 1964).

[3] Leslie White, *The Science of Culture* (New York: Grove Press, 1949).

[4] Julian Steward, "Culture Areas of the Tropical Forest," in *Handbook of South American Indians*, ed. Julian Steward (Washington, DC: Smithsonian Institution, 1946), 3:883–99.

[5] Marvin Harris, "Monistic Determinism: Anti-Service," *Journal of Anthropological Research* 42, no. 3 (Autumn 1986): 365–72.

[6] Benjamin Orlove, "Ecological Anthropology," *Annual Review of Anthropology* 9 (1980): 235–73.

[7] Some of the scientific anthropologists influenced by postmodern ideas have become more flexible in their anthropological research. One of them is Orlove, who has shown signs of this change in his "Ecological Anthropology" in *Annual Review of Anthropology* 9 (1980): 235–73.

[8] Clifford Geertz, *The Interpretation of Culture* (New York: Basic Books, 1973).

[9] Clifford Geertz, *Local Knowledge. Further Essays in Interpretative Anthropology* (New York: Basic Books, 1983).

[10] Positivism was initiated by French social thinker Auguste Comte. According to Comte, all sciences pass through three steps. First is a fictitious stage in which humans search for the essence

offers a different view of the nature of science and its advancement.[11] For him, science is paradigm-based, and its development consists of a change in the paradigm. Kuhn presents the process of shifting from one paradigm to another as a decision based on faith. There is no way to verify the assumptions of the new paradigm. They are incommensurable, which does not mean that they are incomparable.[12] One of the interpretations of the position presented by Kuhn is one that science is another ideology. Following Kuhn's concept of science, we can say that the presence of different theoretical paradigms in cultural anthropology represents different ideological positions in the field.[13]

2. STATEMENT OF THE PROBLEM

The general aim of this study is to identify similarities in interpretative and scientific ways of knowing in cultural anthropology. I propose to focus specifically on the analysis of mythical and scientific ways of knowing. I assume that despite some differences, there are similarities between these ways of knowing. To examine these similarities, I have selected one myth I have

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and ultimate causes and they find these in supernatural beings. The second is a metaphysical stage in which nature and abstract forces are substituted by divinity as a cause of phenomena. The final stage is a positive science. In this stage humans deal only with the visible features of the world. They do not search for the causes of phenomena or a symbolic interpretation of phenomena. They concentrate on the observed physical world in search for the laws governing the world; Mike Gane, *Auguste Comte* (London: Routledge, 2006).

Thus, in the positivistic framework, interpretative anthropology with its emphasis on subjectivity, meaning and multiple interpretations would belong to the first stage of the development of science. Scientific paradigm in anthropology would belong to the last stage in Comte's paradigm.

In his early writings, the founder father of positivism promised to support his theoretical position with empirical evidence. However, Harris states that he never did so; see his *Culture, People, Nature: An Introduction to General Anthropology* (New York: Crowell, 1975), 61. Comte hoped that positivism would be extended to the analysis of social phenomena, creating a science of society; see Gertrud Lenzer, *Auguste Comte and Positivism. The Essential Writings* (Chicago: University of Chicago Press, 1975); Mary Pickering, *Auguste Comte. An Intellectual Biography*, vol. 1 (Cambridge: Cambridge University Press), 1993. But Pickering in her book argues that Comte did not propose that social science was to be empirical. She emphasizes that for Comte induction should be complemented with deduction. The researcher should begin with a set of assumptions. Comte emphasized the importance of ideas in scientific analysis. He was against reductionism; see Pickering, *Auguste Comte*, 1:4. Comte's methodological perspectives were further elaborated by his successors notably K. Marx, E. Durkheim, and M. Weber.

[11] Thomas Kuhn, *The Structure of Scientific Revolution* (Chicago: Chicago University Press, 1970).

[12] Ibid., 158.

[13] Paul Feyerbend, *Problem of Empiricism* (New York: Cambridge University Press, 1981).

collected,[14] the Kaypulaquena creation myth[15] of the Yucuna Indians from the Colombian Amazon and one scientific approach to the universe, the Big Bang Theory.[16] The term *cosmos* is used in this work to define the concept of

[14] I have conducted a long-term anthropological field work among the Yucuna Indians from the Colombian Amazon from 1983 until 1989. The research concentrated on Yucuna mythology and specifically on Yurupari Complex, myth and ritual. During the field work I was initiated into the Yucuna tribe.

[15] "The Kaypulaquena do not belong to anybody. They did not have father or anybody they just lived. We call them Kaypulaquena in our language. We come from them but with some changes. Well, they were like God. He did not have father or anyone. He was born first without a father. But in the same way as God—three persons belong together. In the same way the Kaypulaquena were also three persons. They also had no father, the same way. So, they began creating all things. They killed all the animals that ones that killed people. The boa from the jungle and all the animals from the water that were killing people. Well, they began to live like that. First, they built a shack. The shack was in the cave in the forest, and they stayed like that. They were three right! No, four really, they had one aunt. Their aunt was really their shaman, she was the earth. She lived with them preparing their food. That was the way it was. They lived like that until they began to get bored. They were bored leaving this manner. They had no place to live, they did not have even a little house. At that time there were no leaves for roofs to build the house. Then they said where could we get these leaves? Where? What can we do to get them? Say like now today if we wanted to get something, and we cannot get it; that was the way than. But one of them, the one with more powers, he was called Wajmachi, well he was the most powerful of the four. He did everything, he even made miracles, everything. Just like Lord Jesus (missionary influence), like that. But his brothers were not like him, they could not do those things. More than that, he was a big shaman. He had a knowledge of everything. He had good senses and mind. With his thoughts he could make everything. Well then, they survived in this manner. So, one day he said 'well brothers we could make a little house for us with the leaves from the palm, they are light, and they are not heavy.' Yes, they responded, and they began building a little hut. Well, they lived in that little hut and their aunt cooked for them. Every day she collected a little casaba and she lived with them. Well, they began to get bored leaving in that small hut. They could not live in this little shack anymore. Let us than do something else. Somewhere there lived another man who was the owner of the leaf. The kind of the leaf we use for the roof. He lived fare away. Well, the youngest said. I will tell you what we are going to do. We will make coca for this grandfather (in this context ancestor)" (Yucuna Informant, La Pedrera, Colombia, January 22, 1984).

[16] I have selected the Barry Parker version of the Big Bang theory. The main reason for selecting Parker's variant of the Big Bang theory is his standard way of presenting it. Parker is a professor of physics at the Idaho State University. Parker presented his short version of the Big Bang theory in his work *Vindication of the Big Bang. Breakthroughs and Barriers* (New York: Plenum Press, 1993). According to Parker, the Big Bang theory is based on five types of evidence. First, is Edwin Hubble's discovery of the expansion of the galaxies which helped to determine the age of the universe. The second type of evidence is related to the production of the light elements such as deuterium, helium-3, helium-4, and lithium. These elements were produced in the Big Bang. Third, the Big Bang theory explains the presence in the universe of such elementary particles as fermions and bosons. Fourth evidence consists of the presence of the post explosion radiation in the universe. Some data suggest the presence of such a radiation. The fifth evidence is related to changes in the cosmic background radiation (pp. 49–67). Parker presents his general view of the Big Bang theory as follows: "Let's begin with the proper way of looking

all phenomena (the world). In anthropology cosmos is analyzed as a worldview from the insider and outsider perspectives. Anthropologist Paul Hiebert defines cosmology as a study of worldview.[17] In this sense cosmos is the object of cosmology that investigates the world. Among the Yucuna Indians from the Amazon the term "world" is more often associated with the Yucuna world that means beginning and nature of basic elements of the environment in which they live, rather with the universe in the Western sense. I selected the Kaypulaquena creation myth and scientific interpretation of the cosmos as a means of examining mythical and scientific ways of knowing. The selection assumes that comparison of the two ways of knowing in relation to the same phenomena, in this case the cosmos, permits the examination of the two ways of knowing.[18] My hypothesis is that in interpretative (mythical) way of approaching the world and in the scientific one there are certain common elements, namely, the use of assumptions and metaphors.

Aristotle is the one who coined the term a "metaphor"—meta-beyond and herein—to carry. The concept of metaphor will be understood in this study as a cognitive process by which new concepts are expressed.[19] Both myth and science are cultural phenomena. The question is how are the assumptions and metaphors used in scientific and mythological way of knowing the cosmos? The goal of the proposed research is to define similarities between

at the big bang explosion. You may think of it as an explosion that occurred in an infinite space, but that's not the way astronomers view it. The big bang explosion did not occur in space, it created space. Before big bang, neither space nor time nor matter existed; they were all created in the big bang. But if this is true, what was before the big bang, you ask? The answer: nothing. And I will admit that it's hard to visualize what this 'nothing' looked like, so it's best not to try. The matter that poured out of the big bang was in the form of a dense gas of particles. As this gas cloud expanded, it cooled; after a million of years, it began to break up into smaller gas clouds and in time these clouds gravitationally collapsed to form galaxies. Today we still see these galaxies moving apart as the space between them expands …" (pp. 69–88).

[17] Paul Hiebert, *Transforming Worldviews: An Anthropological Understanding How People Change* (Grand Rapids, MI: Baker Academic, 2008).

[18] According to Thomas Kuhn and others like Willard Van Orman Quine and N. Goodman (1972), facts are relative to theory (assumptions)—to paradigms-based science according to which facts are selected and within which they exist. The preference of one paradigm over other is based on preference of one set of assumptions over other one. See Thomas Kuhn, *The Structure of Scientific Revolution* (Chicago: Chicago University Press, 1970); Willard Van Orman Quine, *Pursuit of Truth* (Cambridge, MA: Harvard University Press, 1990); Nelson Goodman, *Problems and Projects* (New York: Bobs Merrill, 1972).

[19] Earl MacCormac, *Metaphor and Myth in Science and Religion* (Durham, NC: Duke University Press, 1976), 5–6. There is a special field of studies of metaphor which is called metaphorology.

the mythical way of knowing expressed in Kaypulaquena myth and the scientific way of knowing represented in the Big Bang Theory.

The interpretative approaches in anthropology which assume flexibility and variety of interpretations of cultural phenomena will be compared with the way the Kaypulaquena myth interprets the Yucuna world. The scientific model in anthropology will be compared with the cosmological interpretation of the universe. The Kaypulaquena myth has a specific way of interpreting reality. It is flexible, changeable, and it uses symbols and metaphors. The question is: Are there similarities between the mythical way of approaching the universe and the interpretative approaches in anthropology in their theoretical and methodological assumptions?

The same question can be asked in relation to the scientific interpretation of the cosmos. And scientific anthropology. Are there some similarities?

3. SCIENTIFIC AND MYTHICAL WAYS OF KNOWING THE COSMOS AND INTERPRETATIVE WAYS OF KNOWING IN ANTHROPOLOGY

According to Karl Popper,[20] "scientific theories are not just results of observations. They are in the main, the products of myth making and tests. Tests proceed partly by way of observation, and observation is thus very important, but its role is not that of producing new theories…. It challenges us to produce new myths, new theories that may stand to these observational tests." There are some non-empirical elements in paradigm and in the process of changing scientific paradigm. By paradigm Kuhn means a network of conceptual, theoretical, instrumental, methodological, and metaphysical elements. It is a global world view that guides research.[21] D'Andrade[22] argues that sciences contain three different world views. First, that of the physical sciences which establishes general law. Second, that of natural sciences; third, that of semiotic sciences. According to Kuhn:

[20] Karl Popper, *Conjectures and Refutation. The Growth of Scientific Knowledge* (New York: Basic Books, 1962), 128.

[21] This is a broad definition of the term "paradigm" introduced by Kuhn in *The Structure of Scientific Revolution* (Chicago: Chicago University Press, 1970), 10, 11, 24, 41, 42, 111.

[22] Roy D'Andrade, "The Scientific World Views and the Covering Law Model," in *Metatheory in Social Science*, ed. Donald W. Fiske and Richard A. Shweder (Chicago: Chicago University Press, 1986), 19–42.

> Observation and experience can and must be drastically restrict the range of admissible scientific belief, else there would not be science. But they cannot alone determine a particular body of such belief. An apparently arbitrary element, compounded of personal and historical accident is always ingredient of the beliefs espoused by a given scientific community at a given time.[23]

These arbitrary elements and beliefs are present in every scientific paradigm.[24] The basic assumptions are the first arbitrary elements of the paradigm. The arbitrary elements can be detected in the kind of problem that the researcher tries to analyze; the procedure he uses; the approach he adopts.

Scientific and mythological ways of knowing the cosmos are two paradigms that are not just based on observations and experiments.[25] The same applies to the scientific and interpretative ways of knowing in anthropology. These paradigms are based on a certain set of arbitrary assumptions, not just on observations and experiments. A paradigm is an ideal example, one that most adequately satisfies all cases of the class under consideration. A paradigm is also a model and serves a normative function as some standards against which instances are to be measured. The assumptions of the paradigm set limits and give directions for inquiry. The fundamental assumption in scientific paradigms is not questioned. Scientists will maintain a paradigm despite the falsification of a deduction from it. They may introduce an auxiliary hypothesis to remove the disagreement, they may specify a theory's limitations. The basic assumptions of the paradigm of the scientific way of knowing cosmos do not change. The paradigm adopts new elements. There are at least three interpretations of the Big Bang theory. Despite such problems as demarcation of the frontiers of cosmos or performing some of the experiments related to the Big Bang theory (it is impossible to repeat the Big Bang explosion), the main paradigm does not change. In similar way the assumptions of the mythical ways of knowing cosmos remain stable despite different interpretations of the Kaypulaquena myth. The Kaypulaquena mythical paradigm of knowing the cosmos allows a broad variety of inter-

[23] Kuhn, *The Structure of Scientific Revolution*, 4–5.

[24] According to Geertz, the sciences are communities of belief. Scientific paradigms share a common assumption, a belief in the reality of matter. Scientists accept as incontrovertible the belief that material reality is quantitative, that is, that physical reality is interpretable by means of mathematically based operations such as counting, measuring, comparing, and so on; see Geertz, *Local Knowledge.*

[25] Experimentation is not just ethical problem in the anthropological research. There are some practical challenges related to experiments in the study of cultural phenomena. There are some basic differences between experiments executed in the physics lab where the researcher can control all the variables and the experiments done by cultural anthropologists in the lab or field work.

pretations[26] in terms of time, events, and personalities. Both paradigms, scientific and mythical have very similar explanatory functions. The Big Bang theory and the Kaypulaquena myth explain how the universe began.

One of the main goals of the scientific ways of knowing in cosmology and anthropology is to establish universal laws. However, the laws established by cosmologists have been changing through time. The laws related to the beginning and structure of cosmos of the early cosmology in Greece,[27] Italy,[28] England,[29] and contemporary cosmology,[30] reflect the time they were established and the stage of the development of cosmology. They have been changing through time. Generalizations established by the scientific way of knowing are also narrow in scope. As Nagel stated it: "The conclusions reached by controlled study of sample data drawn from another society are not likely to be valid for a sample obtained from another society. Unlike the laws of physics and chemistry, generalizations in the social sciences have at best only a severely restricted scope, limited to social phenomena occurring during relatively brief historical epoch within specific institutional settings."[31] He further argues that "the possibility must certainly be admitted that nontrivial but reliably established laws about social phenomena will always have only a narrowly restricted generality" (p. 460). It would be easier to establish a law for homogenous set of objects or events. But to establish a universal law for all human societies and for all times is more difficult. The question is if this is a goal of social science?

Roy Rappaport in his work *Pigs for the Ancestors* presented carefully quantified data on caloric and protein consumption, energy expanded in subsistence activities, carrying capacity and demography. He demonstrated that the ritual killing of domestic pigs in Papua New Guinea "helps to maintain

[26] Every time I interviewed Yucuna informant I would get a slightly new interpretation of the Kaypulaquena myth.

[27] Joseph Silk, *The Big Bang. The Creation and Evolution of the Universe*, rev. ed. (New York: Freeman and Company, 1995).

[28] James Cornell, *Bubbles, Voids, and Bumps in Time: The New Cosmology* (Cambridge: Cambridge University Press, 1989).

[29] Ibid., 16.

[30] Richard Morris, *Cosmic Question: Galactic Halo, Cold Dark Matter, and the End of Time* (New York: Wiley, 1993).

[31] Ernest Nagel, *The Structure of Science. Problems in the Logic of Scientific Explanation* (Abington: Routledge & Kegan Paul, 1971), 459. Some cognitive anthropologists would not agree with Nagel. Brent Berlin and Paul Kay argue that they have discovered several universals about the evolution of basic color terms; see Brent Berlin and Paul Kay, *Basic Color Terms. Their Universality and Evolution* (Berkeley: University of California Press, 1969).

an undegraded environment, limits fighting to frequencies that do not endanger the existence of regional populations adjust man—land ratios, facilitates trade, distributes local surpluses of pig in the form of pork throughout the regional population, and assures people of high-quality protein when most needed it."[32]

Are Rappaport's findings concerning energy relationships between the Tsembanga ritual and their ecological system valid for all tribal societies, all rituals, and for all times? According to J. N. Anderson,[33] the geographical scale of the ecological system used by Rappaport is too small to understand relevant ecological processes. Also, his data on nutrition are taken from the sample that is too small and represents a short period of time.

One of the alternatives is Geertz's "thick description",[34] interpreting cases, generalizing within cases, not across cases. In Geertz's view the interpretative way of knowing in anthropology is "not an experimental science in search for law but an interpretative one in search for meaning".[35]

According to Geertz, "anthropological writings are themselves interpretations, and second, and third order ones to boot. (By definition, only a 'native' makes first order ones: it's his culture.) They are, thus, fictions: fictions in the sense that they are 'something made', 'something fashioned'—the original meaning are of fictiō—not that they are false, unfactual, or merely 'as if' thought experiments."[36]

In scientific and mythical[37] ways of knowing the same phenomena, cosmos, the assumptions are arbitrary statements incarnated in metaphors. That

[32] Roy Rappaport, *Pigs for the Ancestors: Ritual in the Ecology of the New Guinea People* (Connecticut: Yale University Press, 1984), 224.

[33] J. N. Anderson, "Ecological Anthropology and Anthropological Ecology," in *Handbook of Social and Cultural Anthropology*, ed. John J. Honigmann (Chicago: Rand McNally, 1973).

[34] See his *Local Knowledge*. His "thick description" outlines four criteria for "thick description" and a study of culture. First, interpretative study, cultural analysis should be an interpretative practice which traces the way meaning is ascribed. The raw observational material collected by an ethnographer is not sufficient if we are to achieve a thick description of a culture. Second, the subject of interpretation is the flow of social discourse. Third, interpretation deals with extrovert expressions. Data collection and interpretation are limited to what local informants can tell us. Therefore, the thickest of descriptions can only be based on extrovert expressions of culture. Forth, ethnographic description is microscopic. According to Geertz ethnographic findings describe local behaviors and truths as serve as an ethnographical miniature. We always view specific and contextualized happenings, and these make up the thick description; Geertz, *The Interpretation of Cultures*.

[35] Ibid., 5.

[36] Geertz, *The Interpretation of Cultures*, 15.

[37] Based on South American mythology, Levi-Strauss argues that myth itself is science. It's a different kind of science. In his view, myth concentrates on observable qualitative aspects of

arbitrary way of establishing new concepts, ideas and theories give metaphor its cognitive and hypothetical character. It suggests new possibilities for meaning.

In Mac Cormac's view,[38] the act of creating a new metaphor is a process of forming an imaginative hypothesis. Thus, when scientists created the Big Bang metaphor, the Yucuna Indians developed the Kaypulaquena creation myth, Rappaport established a hypothesis about relationship between the Kaiko ritual of the Tsembanga and the environment and Geertz developed a "thick description". They all created in an arbitrary way a new hypothesis about their subjects. All have used old elements of existing structures to form new ones, giving them new meaning. According to Keith Basso, the process of creating a new metaphor consists of using existing structures and elements to form a new one.[39]

Historians of science[40] have found that at the core of scientific insights have been creation of a new metaphor. The pattern of creating new paradigms has not changed. Barry Parker, a representative of the scientific way of knowing the cosmos, states in an arbitrary way that the Big Bang blast took place.[41] The Kaypulaquena myth also states in a similar arbitrary way that the Yucuna world was created "Kaypulaquena had no father. They began creating all things."[42]

Both ways of knowing the cosmos offer some evidence to support their basic assumptions related to the origins of the world. In both ways of knowing the cosmos the conceptual models are embodied in metaphors. In the two models of interpreting the universe empirical testing is not always possible. Big Bang happened once and the Kaypulaquena created the world once. In

reality such as colors and sounds rather than, like modern science, on unobservable, quantitative ones like mass and length; see Andre Akoun, "A Conversation with Claude Levi-Strauss," *Psychology Today*, no. 12 (May 1972): 39.

[38] MacCormac, *Metaphor and Myth*, 75, 84.

[39] Keith Basso and Henry Selby, *Meaning in Anthropology* (University of New Mexico Press, 1976).

[40] The history of scientific terminology shows that the creation of a new concept is accomplished through metaphor, see Waren Shibles, *An Analysis of Metaphor in the Light of M. Urban's Theories* (Paris: The Hague, 1971), 405.

[41] Barry Parker, *The Vindication of the Big Bang. Breakthroughs and Barriers* (New York: Plenum Press, 1993), 49–67.

[42] The Yucuna informants give different definitions of the Kaypulaquena. According to some Yucuna, Kaypulaquena is a "god". Others say that Kaypulaquena is one of the tribal ancestors. The older Yucuna informants give specific names of the four Yucuna creators, Kaypu, Mayakaypu, Kayapichi, and Wajmachi. However, most of the Yucuna state that Kaypulaquena is like "god" that created everything that exist.

the case of scientific and interpretative ways of knowing in anthropology Rappaport states in a similarly arbitrary way his basic assumptions about the relationship between the Kaiko ritual and the natural environment of the Tsembaga from Papua New Guinea. Geertz follows a similar pattern of establishing main assumptions of the interpretative way of knowing in anthropology.

Not every cultural element can be repeated in the same context or time framework. Scientific interpretative frameworks of investigation do not analyze all the cases or samples of the phenomena under study. The basic assumptions of the Big Bang theory and the Kaypulaquena myth are not just deduced from empirical experiments. The assumptions in both ways of knowing cosmos are independent, creative inventions, statements, and opinions. Scientific and mythological paradigms of knowing cosmos are composed of a set of assumptions related to each other. The main assumption of the Big Bang way of knowing cosmos is based on another assumption called cosmological principle.[43] The scientific way of knowing presumes uniformitarian principle, a metaphysical faith in the existence of an order of reality. Without such assumptions, scientists would be unable to formulate universal empirical laws. The essential assumption of mythological way of knowing cosmos, the world was created by the Kaypulaquena is interconnected with the faith in the existence of mythological heroes such as Yurupari or Kanuma.[44]

Metaphor has played an important role in scientific and mythical narratives. There are two main positions related to the role of metaphor in scientific and mythical discourse. First is a dualistic position, which declares that scientific language is literal and mythical language is metaphysical. They are completely different. The second view is unitarist. According to this perspective, science and myth have much in common. Both use models and metaphors when providing explanations on their subject matter.[45] The cognitive function of the Big Bang and the Kaypulaquena metaphors consists of reordering of the meaning of the concepts of big bang and the four persons, the Kaypulaquena. In both cases the metaphors play the role of embodying the assumptions, the role of the "vehicle" through which the assumptions are expressed. The metaphors verbalize the new ideas about the world through known already concepts of explosion or, as of the case of the Yucuna, four

[43] Parker, *The Vindication of the Big Bang*, 50.

[44] Tadeusz Mich, "Yurupari Complex. Yurupari Myth," *Anthropos* 90 (1995): 487–96.

[45] J.P.M. Geurts, A.W.M. Meijers, and J. van Brakel, "Operational Identity of Meaning. Metaphors and Religious Discourse," *Communication and Cognition* 22, no. 1 (1989): 39–110.

mythological heroes. This metaphoric way of viewing the world and expressing it, is flexible, and open to different interpretations. The Big Bang theory has at least three versions and Kaypulaquena myth has interpretations according to an informant's performance.

Scientific and interpretative ways of knowing in anthropology are related to the same phenomena, human culture. There are different approaches to the same cultural reality. Anthropologists have established a variety of different theoretical paradigms to study the same cultural phenomenon. Thus, anthropologists present dissimilar views of cultural phenomena. These differences are expressed not just in different theoretical frameworks. Sometimes particular cultural areas are interpreted in a different way. According to L.J. Goldstein, both methodological approaches in anthropology, interpretative and scientific, are necessary if we want to have a full account of cultural complex reality.[46] However, for some anthropologists their theoretical paradigms are not complementary, they function as ideologies.[47] Most of the anthropologists who participate in the debate between two different paradigms do not recognize the incommensurability of the paradigms involved.

From April 1995 through September 1996 discussions held on e-mail about anthropology as a science were published in the American Anthropological Association Newsletter. The way anthropologists participated in the discussion indicates that their paradigms became their ideologies. In the articles at least three different positions can be identified. The first position opposes the model in which anthropology imitates natural science methodology. According to Roy D'Andrade, "making exact predictions and performing experiments—description that clearly does not apply to anthropology."[48] For him anthropology is both science and humanity. The second position consists of many voices calling for unity between scientific and interpretative ways of knowing in anthropology.[49]

For James Peacock[50] the extreme position scientific vs. interpretative anthropology is not justified. In Eugen A. Hammel's view,[51] "the dispute be-

[46] L.J. Goldstein, "The Phenomenological and Naturalistic Approaches to the Social," in *Theory in Anthropology*, ed. David Kaplan (Chicago: University of Chicago Press, 1968), 97–104.

[47] Abraham Kaplan, *The Conduct of Inquiry* (San Francisco: Chandler Publishing, 1964), 10.

[48] Roy D'Andrade, *Development of Cognitive Anthropology* (Cambridge: Cambridge University Press, 1995), 1.

[49] Roy D'Andrade, "The Scientific World Views and the Covering Law Model," in *Metatheory in Social Science*, ed. Donald W. Fiske and Richard A. Shweder (Chicago: Chicago University Press, 1986), 19–41.

[50] James Peacock, "Claiming Common Ground," *Anthropology Newsletter* 36, no. 4 (1995): 3.

tween science and humanism in anthropology is a metaphor for competition over resources and control: faculty positions, enrollments, research funds and especially professional status." He suggests that there are some similarities between two ways of knowing in anthropology. Hammel argues that both ways of knowing are symbolic representations of the experience of human culture.[52] The third position consists of the idea that anthropology should follow the natural science model, establishing laws and using empirical methods.

There are many statements of the participants in the discussion that indicate that anthropological paradigms became ideologies. As Lee Drummond puts it, Marvin Harris is a "totemic emblem" for those who represent scientific anthropology[53] and C. Geertz is a totemic emblem for the interpretative anthropologists.[54] The scientific anthropologists accept a set of philosophical and epistemological assumptions related to the nature of the universe, the place of humans in it, and scientific means by which knowledge can be obtained. Harris assumes that humans can construct objective representation of cultural reality. Thus, for scientific anthropologists' cultural reality has a material nature that should be studied according to the criteria of the natural sciences.[55] The same assumptions are accepted by ecological anthropologists including Roy Rappaport. The pattern of formation of basic assumptions of scientific ways of knowing in anthropology is similar to the scientific way of knowing cosmos. It consists of using already familiar words, concepts or expressions and giving them new meaning by creating new metaphors. The basic assumptions used in the scientific ways of knowing in anthropology in the version presented by Rappaport are embodied in such metaphors as "materialism", "adaptation", "environment", "unitary system", and "carrying capacity".

The interpretative anthropologists like Clifford Geertz, assume that humans create nonmaterial symbolic cultural reality.[56] Thus, interpretative anthropologists are more concerned with interpreting the meaning rather

[51] Eugen Hammel, "Science a Humanism in Anthropology: A View from Balkan Pit," *Anthropological Newsletter* 36, no. 7 (1995): 52

[52] Ibid., 49.

[53] Lee Drummond, "The Logic of Things That Just Happen," *Anthropology Newsletter* 36, no. 11 (1995): 1.

[54] Ibid., 4.

[55] Marvin Harris, *Cultural Materialism. The Struggle for Science of Culture* (New York: Random House, 1979), 52–56.

[56] Geertz, *The Interpretation of Cultures*.

than explaining the cultural reality.[57] These basic assumptions about essence of culture are embodied in such metaphors as "system of meaning", "culture as a text", "native point of view", "thick description". Again, the pattern of establishing assumptions is similar. Old concepts are used and given a new meaning.

4. CONCLUSIONS

In conclusion, scientific and interpretative ways of knowing in anthropology use assumptions and metaphors in a similar way. Both ways of approaching cultural phenomena use the same arbitrary way of establishing their assumptions related to the same cultural reality. Both employ metaphors to reveal the assumptions. As Kuhn stated,[58] paradigms are incommensurable. Scientific and interpretative ways of knowing represent two different ideological positions in cultural anthropology that use assumptions and metaphors in a similar way. The difference between these paradigms have been overemphasized by anthropologists. Anthropology should address both material and symbolic aspects of human enterprise. Cultural materialism and symbolic anthropology are the paradigms qualified to do this. The present study suggests that both ways of knowing, scientific and interpretative, are equivalent to the mythical and scientific ways of knowing cosmos. They use in an arbitrary way assumption represented by metaphors. Therefore, instead of stressing differences, anthropologists should approach both ways of knowing in anthropology as complementary.

Harris suggests that "common sense advises that must be some true to both the materialistic and idealist positions."[59] Also H. P. Rickman[60] argues that separation of interpretative and scientific ways of knowing in anthropology are not clear-cut alternatives in the study of culture. What is needed is to define how they are related and how can they be complementary in the study of cultural phenomenon.[61] The scientific way of knowing is associated

[57] Ibid., 5.

[58] Kuhn, *The Structure of Scientific Revolution*, 158.

[59] Harris, *Monistic Determinism*, 203.

[60] H.P. Rickman, "Science and Hermeneutics," *Philosophy of Social Sciences* 20, no. 3 (1990): 296.

[61] Bruce Roberts, "Competing Paradigms and Hungry Hippos: The Search for the Elusive Marble of Truth in Anthropological Theory," presented at the American Anthropological Association 94th Annual Meeting, Washington, DC, November 16, 1995.

with such methods as observation, controlled experiments, quantification, the framing and testing of hypothesis and the construction of mathematical models. Some anthropologists attempt to follow natural science model. However, cultural anthropology has a particular epistemological challenge because much—but not all of the information it creates is encoded in common symbolic forms that make it appealing to variety of information consumers. Unlike other sciences, cultural anthropology has not developed extensive vocabularies and symbols to describe its objective propositions. It has generally not used the symbolic systems of mathematics, nor has it objectively quantified its data. By using common symbolic forms, cultural anthropology can thus reach broad audience.

Cultural anthropology offers multi paradigmatic analysis of cultural reality. There is a need to build bridges among different anthropological paradigms. One area of the future research is the use of symbols in different anthropological ways of knowing. Another related topic for study is the influence of a particular cultural context on the ways of knowing in cultural anthropology.

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KOMPLEMENTARNE PARADYGMATY W ANTROPOLOGII KULTUROWEJ

S t r e s z c z e n i e

Współczesna antropologia kulturowa opiera się na zestawie hipotetycznych założeń i podejść badawczych, które tworzą perspektywę antropologiczną. Antropolodzy ustalają paradygmaty teoretyczne, w ramach których można rozumieć zjawiska kulturowe. Wyzwanie to zaowocowało różnicami między interpretacyjnymi, symbolicznymi, subiektywnymi podejściami w badaniach antropologicznych a naukowymi, obiektywnymi perspektywami w antropologii. Oba modele mają długą tradycję w antropologii, a różnice między nimi były podkreślane. W tym artykule przeanalizowano podobieństwa między dwoma sposobami poznania w antropologii w stosowaniu założeń epistemologicznych i metafor.

Słowa kluczowe: paradygmaty antropologiczne; mit; nauki ścisłe; interpretacja; wyjaśnienie.