

## **Goethe's Science: An Approach to Research in American Indian Studies**

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*In The Wholeness of Nature (1996), Henri Bortoft shows how a Goethean science of qualitative wholeness complements the analytic and causal-explanatory framework that underlies most research in the natural and social sciences. Goethe's insights and methods suggest that a better understanding of Indian tribes may occur when a tribe is regarded as its own abstraction and its own explanation. In Goethe's approach to science, the human mind is an "organ of perception" and researchers are active participants in the way they see the world. Consider an Indian tribe and the goal of Goethean science is to intuitively "see" patterns of interpenetrating relationships in a dynamic process of self-organization that is the tribe. While analytic science and Goethe's science of wholeness are incommensurable, both are true, and neither is comprehensive.*

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**KEY WORDS:** Goethe's science; American Indian Studies; complex adaptive systems; Menominee; metaphor.

### **INTRODUCTION**

This article presents a preliminary stage in thinking about the Menominee Indian Tribe of Wisconsin as a complex living system. It begins with an introduction to Goethe's science of wholeness. A conventional description of the Menominee Tribe is followed by a brief summary of complexity

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theory and a first consideration of Indian tribes as complex adaptive systems. Goethe's approach to science requires an understanding of the human mind as an "organ of perception" and a recognition of researchers as active participants in the way they see the world. The paper concludes with some thoughts about new directions for research in American Indian studies that could follow from a reexamination of Indian Nations as complex adaptive systems.

### Seeing Flying

There is a difference between seeing a bird flying and seeing flying. (Bortoft, 1996, p. 64) The former implies a separation between an entity "bird" and an action that the bird performs, while "seeing flying" suggests one whole event. The elements of what we see when we see a bird flying are the same as when we see flying, but the way we "see" the elements related to one another as a whole act or process of flying is different. According to Goethe, this dimension of wholeness is seen intuitively by a change of consciousness. (Bortoft, 1996, p. 71)

As we learn more about a phenomenon, our intuition becomes more informed and we see things in greater depth. (Bortoft, 1996, p. 68) We come to see flying as an array of interactions between the bird and the air around it and simultaneous subsets of interaction between parts of the bird—eyes, brain, nervous system, muscles, circulatory and respiratory systems, that in turn, are composed of nested interactive processes of tissues, fluids, membranes and the like that are, themselves, interactive processes of various types of cells, nerve synapses, and so on.

By seeing flying intuitively and in depth, the facts of what we see can be raised to the level of a theory. (Bortoft, 1996, pp. 72–73) We come to understand the phenomenon in terms of the phenomenon itself. For Goethe, sensory facts are the visible "container" of the phenomenon. What is encountered in the accompanying theory is, for Goethe, the real content of the thing that we see. The phenomenon becomes its own explanation. And when the phenomenon is seen in context so that internal and external interactive connections are revealed, then the experience we have is that of understanding what we see. (Bortoft, 1996, pp. 290–291) We no longer see a bird flying. We see flying.

Explaining is analytical and understanding is holistic. Analysis takes the form of replacing a thing with something else; e.g., human behavior with social indicators of that behavior. Analytical science is the science of quantity and Goethe's science is a science of wholeness. They are incommensurable. Both are true and neither is comprehensive. (Bortoft, 1996, p. 326) They

reveal different appearances of nature, not different parts of nature. Taken together, analytical science and Goethe's science can provide a more inclusive basis for coming to know and then describing a bird, a person or an Indian tribe.

### **The Menominee Indian Tribe of Wisconsin**

Before first contact with European explorers in the seventeenth century, the Menominee people lived in a nearly ten million acre area of lakes, rivers and forests extending along Lake Michigan and as far West as central Wisconsin.<sup>3</sup> By the mid-nineteenth century a succession of treaties with the United States, reduced the tribe's aboriginal homeland to a 233,900 acre reservation located about 45 miles West of Green Bay.

In 1950, the Menominee Indians were among the most self-sufficient tribes in the United States. They owned a 220,000 acre forest, a sawmill, and had accumulated \$10 million on deposit in the U.S. Treasury. Unfortunately, the Menominee's image as an "advanced" Indian tribe marked them as a target for a new congressional experiment in Indian policy. The impact of Indian termination policy on Native Americans was enormous. By the time the policy was abandoned in 1962, 13,263 tribal members lost their federally recognized status as American Indians and over 1,365,800 acres of tribal land were removed from federal trust status.

When the Menominee Termination Act was signed by President Eisenhower on June 17, 1954, the Menominees became the first tribe slated for termination. After several delays, the Menominee Reservation was finally terminated on May 1, 1961, and became a new Wisconsin county. It was immediately tagged by state officials as "an instant pocket of poverty,"

Faced with the near certainty of fiscal collapse, Menominee leaders began developing and selling to non-Indians lakeshore lots on the county's lakes and rivers. Tribal reaction to the sale of land to whites triggered the rise of a new tribal organization called DRUMS (Determination of Rights and Unity for Menominee Shareholders). Beginning in 1970, DRUMS utilized public demonstrations, favorable media coverage and court actions to delay the development and sale of Menominee land. DRUMS leaders lobbied in Wisconsin and Congress to gain state and federal backing for the organization's goals. Success came on December 22, 1973, when President Nixon signed the Menominee Restoration Act which restored federal recognition and protection to the Menominees and reestablished their former

<sup>3</sup>This brief profile of the Menominee Tribe is drawn from *Menominee Drums* (Peroff, 1982).

reservation; however, several hundred non-Menominees remain as resident owners of lakeshore and other property within the reservation.

Today, the Menominee people are trying to build a long-term foundation of economic and political strength to support the growth of greater tribal self-determination in the years ahead. Enrolled Menominees approach 8,000 (up from 3,270 in 1957) with over 4,000 tribal members living on the reservation. (U.S. Census Bureau, 2001) While the Menominee forest remains central to the uniqueness of the tribe as a people, the reservation is also a major center for new economic development supported in part by the establishment of extensive gaming operations in 1987. In addition to being the largest employer on the reservation, proceeds from gaming provide funding for a broad range of health and welfare services, economic development programs, and many other forms of community investment.

### **Indian Tribes as Complex Living Systems**

New theories evolving out of a variety of disciplines including physics, biology, and computer science provide a new way to think about ourselves and the world around us. (see: Capra, 1997; Cilliers, 1998; Gleick, 1987; Kauffman, 1995; Prigogine & Stengers, 1984; Waldrop, 1992) One of these theories, complexity theory, has already presented some new ways to think about large social and economic systems, business corporations and local communities. (Basken, 1998; Battram, 1998; Lewin & Regine, 2000; Peroff, 2001)

A significant attribute of complexity theory is that it could be a conceptual framework that bridges the artificial barriers between Western scientific and philosophical thought and Traditional Knowledge of the world. (for the latter, see: Johnson, 1992; Smith, 2000; Trospen, 1995) Complexity theory mirrors a way of thinking about the world that has been a part of "Native Intelligence" for thousands of years and it may also contribute to the development of a new scientifically-based theoretical perspective on Indian tribes as living human systems.

A living cell, a brain, a flock of birds, political and social systems, a person, the stock market, and the planet Earth are all complex systems. Adopt a point of view informed by complexity theory and everything from a single-celled organism and one human being to an Indian tribe and American society as a whole becomes a living system, a pattern of relationships, and a complex interactive process. Although firmly rooted in the philosophy and institutions of Western science, complexity theory offers a view of the world that is remarkably close to traditional American Indian views of the relationship between human beings and nature. (see: Deloria, 1992; Johannes, 1989; Pierotti & Wildcat, 2000; Suzuki & Knudtson, 1993)

Changing patterns of relationships between things are who we are. We are not abstract, autonomous individuals experiencing the world. We are produced by the world, we change it, and we are changed by it. In the terms of complexity theory an individual person, an American Indian tribe, or any other living system is a complex adaptive system (CAS). A CAS is a dynamic process of self-organizing parts that come from and go back to the environment. Life is the most remarkable distinguishing feature of CAS. (Gell-Mann, 1996; Maxfield, 2000) A second defining characteristic of CAS is self-organization or self-perpetuation. To maintain internal organization and avoid total dissipation into its environment, an Indian tribe, and any other living system, constantly rebuilds itself by drawing energy and other materials from its environment.

A third feature is adaptivity or the ability to adapt to changes in the environment and continue to perform under changing conditions. Fourth, CAS vary in size and complexity from a single living cell to our entire planet. They are "partial complex systems" nested within systems within systems. (Richardson, et al., 2002) CAS are composed of smaller systems that come together to form larger systems (e.g., a number of nerve cells form a nervous system or the Six Tribes become the Iroquois Confederacy). Like biological ecosystems, a CAS does not have an easily definable boundary.

Finally, all CAS possess some form of "memory" to preserve information. The information maintaining order in a CAS (e.g., DNA in a living organism) is distributed to and retained within the parts of the system, and the system does not have to depend on the continued existence of all of its parts to survive. Parts of living systems, as in an Indian tribe or in other human systems, come and go, but as long as a pattern of roles or relationships between the people is maintained, the tribe is preserved. From the perspective of complexity theory, an Indian tribe is a living and constantly evolving *process* that is defined by what it is doing over time.

An Indian tribe exists at a higher level of organizational complexity than a living cell or an individual human being and at a lower level of complexity than the larger American society of which it is a part. While an individual cell is generally recognized as the lowest level of organizational complexity in a living system, in most cases, one person is the lowest level of organizational complexity in human social systems. Indian tribes exhibit all of the traits of other living systems including the ability to grow, reproduce and die.

Beyond atoms and molecules, a tribe is made up of something that is nonmaterial and irreducible. It is a self-organizing pattern of relationships (simultaneous causes and effects) between constituent "parts" that complement one another and, taken together, form the basis of a tribe's existence. The living and nonliving parts of the pattern include tribal members, reservation land and its ecology, and everything from "Indian tacos", real estate, and

computers to tribal web pages, legal records, and sacred sites. As the living and material parts interact and change, the tribe changes. Individual tribal members and partial systems nested within a tribe (e.g., families, social organizations, tribal government, a gaming casino) in dynamic interaction with one another and the system's environment, make up a living and constantly evolving American Indian tribe.

Like other human systems, a tribe contains mechanisms to distribute internal control of the tribal system to the parts of the system. In a biological CAS, DNA retains information that serves as the internal frame of reference or "glue" that holds the system together. (Gould, 2001; Mauro, 2001) At the same time, DNA is a contributing part of the process that distributes the control of interactive relationships between the parts of a biological system to the parts themselves. (Langton, 1989) The resulting linear and nonlinear relationships between parts of a CAS (e.g., in a human body, between muscle groups, the nervous system, internal organs, etc.) then express life, the emergent property unique to all living systems. The characteristic of "aliveness" can be traced to the organizing influence of DNA.

A common body of metaphor (CBM) distinguishes human systems from complex adaptive systems at lower levels of organizational complexity. A CBM is the "organizational DNA," glue, or equivalent mechanism that distributes the control of internal, interactive relationships to tribal members and other parts of an Indian tribe. Through metaphor, our individual understanding of new things is acquired, defined, and organized in terms of our knowledge of things already retained in our minds as remembered images, ideas, symbols, and stereotypes. (Lakoff & Johnson, 1999; Morgan, 1986; Vickers, 1998) We come to know things in terms of things already known to us and, at the same time, our constantly evolving understanding of ourselves and the world around us guides our ongoing actions and behavior.

Metaphor is used and shared by tribal members; it identifies and orders the parts of a tribal community. A tribal CBM simultaneously defines and is defined by a tribe. It forms a distinctive symbol system or collective and evolving vision of reality that is the basis of the way a tribe organizes itself. (Castile & Gilbert Kushner, eds., 1981; Spicer, 1980) A mountain may be regarded as sacred in tribal traditions that are a part of the tribe's CBM. The traditions, in turn, are reinforced and sustained by a continuing history of spiritual experiences of tribal members at the mountain. Tribal traditions, then, are based on, maintained by, and maintain the mountain as a part of the tribal system. A common body of metaphor does not exist in a linear, causal relationship to an Indian tribe. It is a dynamic internal frame of reference that *simultaneously* guides a tribe as it is being defined and redefined by the parts of a tribe in interaction with each other and in interaction with the tribe's environment.

### An Organizing Idea

In Goethe's approach to science, the human mind is an "organ of perception" and people are active participants in the way they see the world. Look at Fig. 1. (Bortoft, 1996, p. 50) What do you see? If you had never seen a giraffe, in a zoo or a photo, you probably would not see a giraffe in Fig. 1. What is it that organizes the blotches in the act of seeing a giraffe in this illustration? The answer is an organizing idea. (Bortoft, 1996, p. 128)

An organizing idea is not a static mental picture, it is active, and it does things:

The "organizing" of the organizing idea is an act of distinguishing which is *simultaneously* an act of relating. The one act *is* both of these together, whereas we usually think of them as two different acts because we start at the end, with the finished product. The primary *act* of distinguishing does not point out something which is already "there." It "theres" it! Thus the concept, or organizing idea, does not apply to something which is already present. It "presences" it. The concept delineates or defines the "something" in the first place." (Bortoft, 1996, p.135, emphasis in the original)

The experience of seeing the giraffe is a coalescence of an organizing idea with a sensory factor. We experience neither on its own—they are inseparable ingredients in a cognitive experience. This is an experience of meaning that is always individualized. (Bortoft, 1996, p. 131) It is our meaning of things.

In my first book on the termination and restoration of the Menominee Tribe, several organizing ideas associated with the discipline of political science identified and shaped what I saw in my research and that cumulative

What Do You See?



Fig. 1. Image.

experience became, in my mind and for me, the Menominee Tribe I wrote about twenty-five years ago. Some of my organizing ideas at the time were elite theory, role theory and group theory. As I conducted my research, I “saw” a Menominee elite that appeared to be at least partly responsible for the termination of the tribe. I saw this elite, along with many other people in and outside the tribe acting out various roles in a several act play that dramatized the failure of termination and its eventual reversal with the passage of the Menominee Restoration Act in 1973. I also saw members of the DRUMS organization, working as an effective lobby or political interest group, advance and eventually achieve the restoration of the Menominee Nation.

Today, what I see in my research is being identified and individualized by complexity theory and several other organizing ideas including the concepts of a CAS, nested CAS, and a CBM. These new organizing ideas along with others formed in my mind over the years “presence” or “there” the Menominee Tribe for me as I conduct my research.

Goethe argued that an organizing idea tells us where something has a boundary, it “boundaries” or “is an act of boundarying.” (Bortoft, 1996, p. 135) In this research, the organizing ideas of a CAS and nested CAS “boundary” the Menominee Tribe and all manner of subsystems within the Tribe from extended families, “Zoar Traditionals”, and high school basketball teams to the tribal legislature, gaming casino, and College of the Menominee Nation.

The act of distinguishing one thing from the other is holistic, not analytical. We can comprehend a holistic quality in the act of distinction when we focus on it as a continuous, inseparable action:

To mark out “something,” to give a boundary to “it,” is *thereby* to relate it to that from which it is distinguished—i.e., to distinguish “something” is *at the same time* to distinguish what is “other” by virtue of that very distinction—and to which it is thereby related. . . . The relation is *intrinsic* to the act of distinguishing, and not an external connection between separate “somethings” which have already been distinguished. (Bortoft, 1996, p. 136)

We aren’t aware of this when we are doing it “. . . because our ordinary consciousness is ontologically at the level of the past (and) we miss this simultaneous polar movement of ‘distinguishing which is relating,’ which is before analysis and synthesis.” (Bortoft, 1996, p. 137) Our conscious awareness of the role of the organizing idea is always after the fact and our thinking is always too late to sense or experience an organizing idea in action.

Everyone uses organizing ideas to come to know things and distinguish one thing from another, so in a sense, I am not doing anything new or unusual. What is different is that I am trying to recognize and acknowledge

the active role of organizing ideas in the research. That recognition, coupled with complexity theory, may lead to a more powerful conceptual framework and foundation for a new understanding of the Menominee Indian Tribe.

### **Understanding the Menominee Tribe in Terms of Itself**

The whole of the Menominee CAS or any other living phenomenon is invisible to empirically based "objective" scientific research. The wholeness of the tribe is real, but not evident to direct sensory experience. The whole is "no-thing, but not nothing." (Bortoft, 1996, p. 17) So what is it?

In the world around us everything is a part of something else, nothing exists independent of the whole. (Bortoft, 1996, p. 6) The properties (e.g., mass) of any one thing ranging from subatomic particles to galaxies, are determined by all of the other things so that any one thing is a reflection of all the others. It isn't possible to totally isolate and then understand the whole of an atom, a galaxy, or an Indian Tribe because nothing exists independent of a context.

So what is a practical or feasible approach to doing research about the Menominee Tribe considered from Goethe's holistic perspective? One way to come to some understanding of the tribe is to approach it as you or I would read a written text of a story or even a single sentence. Start with two assumptions; that the meaning of a text must have something to do with the whole text and that we usually do not need the whole text to understand its meaning:

We do not have the totality of the text when we read it, but only one bit after another. But we do not have to store up what is read until it is all collected together, whereupon we suddenly see the meaning all at once in an instant. On the contrary, the meaning of the text is discerned and disclosed with progressive immanence throughout the reading of the text. (Bortoft, 1996, p. 7)

The same thing holds when we read a single sentence. "The meaning of the sentence has the unity of the whole. We reach the meaning of the sentence through the meaning of the words, yet the meaning of the words in that sentence is determined by the meaning of the sentence as a whole." (Bortoft, 1996, p. 8)

The reciprocal relationship of part and whole suggests that the act of understanding is not a logical act of reasoning. In logic, there is an assumption of linearity which means that we must go either from part to whole or from whole to part. Logic is analytical, while meaning seems to be holistic, therefore, it follows that understanding cannot be reduced to logic. We understand meaning in the moment of coalescence when the whole is reflected in the parts and that together they disclose the whole. (Bortoft, 1996, p. 13)

Goethe's scientific perspective recognizes the way in which the meaning of a sentence "comes to presence" in the text of a sentence. (Bortoft, 1996, p. 13) It also recognizes the way in which the whole comes to presence in the parts of the whole. The purpose of this research is to discover the way in which the meaning of the Menominee Tribe comes to presence in the interactive relationship of the parts of the tribe to each other and in interaction with elements of the Tribe's surrounding environment.

### **METHODOLOGY: SEEING FLYING**

The methodology employed in this research was selected to achieve the equivalent of "seeing flying," which means intuitively seeing all of the parts of the Menominee Tribe in interaction simultaneously and within the context of the Tribe's environment. In some ways this approach resembles research perspectives associated with a branch of sociology called ethnomethodology (Coulon, 1995; Heritage, 1984; Garfinkel, 1967). Biologist and complexity theorist Brian Goodwin argues for a pluralistic methodological approach that is based on an assumption that there are many different ways to get reliable knowledge about the world. (Brockman, 2002, p. 2) Following his advice, the methodology used in this research is pluralistic in that it can be divided into three interrelated dimensions: simple intuition, statistical analysis, and informed intuition.

Simple intuition is spontaneous, qualitative and involves an unconscious coalescence of the organizing ideas I bring to my research and the sensed information I acquire while reading secondary sources, conducting interviews, or simply when I spend time "hanging out" on and around the Menominee Reservation. As the research evolves, my initial organizing ideas evolve and change, and the result is a deepened and enriched perspective of the Menominee Nation.

Statistical analysis is necessary to an understanding of the spatial-temporal features of the Menominee CAS and includes a look at socioeconomic data, demographic statistics, and various other indicators of the physical features of the tribe and reservation. Research conforming to Goethe's approach to science requires a balance between the intuitive and analytical way of knowing. (Brockman, 2002, p. 6) If the research is too intuitive and impressionistic, the results may be too subjective and divorced from the physical features and realities of a CAS. However, if the methodology is limited to statistical analysis, the research will be narrowly confined to a consideration of only those things that we can quantify and measure. What we need is a scientific methodology that connects quantitative and qualitative information about something. (Goodwin, 2000, p. 5) The

need is there because relying on reductionism alone makes it impossible for us to understand many things including, for example, the concept of health.

Health refers to wholes or the dynamics of whole organisms and is expressed in terms of qualities as well as quantities. "It is expressed in a variety of properties such as posture, quality of complexion, tone of skin and muscle, feeling good, alertness, and so on in addition to sets of quantities such as blood pressure, temperature, counts of different types of blood cells, etc." (Goodwin, 2000, p. 4) Health, community and environment are all related. (King, 1996, pp. 6–8) Connecting qualitative and quantitative methodologies may permit me to see the "health" of the Menominee CAS defined in terms of its physical condition, the functional status of the tribe's common body of metaphor, and the condition of the web of interpenetrating relationships that connects parts of the Menominee Tribe to other parts of the Tribe, and to the environment.

Informed intuition requires an effort to realize Goethe's idea of "seeing flying" by seeing the tribe in depth and seeing *into* the Menominee CAS. Being fully informed means becoming aware of all of the parts of the tribe and the nature of all of their interactive relationships with each other and the tribe's environment. This is not possible, but it remains the goal of research inspired by Goethe's scientific perspective

A basic requirement of complexity-based research is an exploration of multiple perspectives. (Richardson, et al., 2002, p. 17) By exploring as many methodological perspectives as possible, a richer understanding of the Menominee Tribe can be developed which, in turn, should result in more informed and penetrating research. As different perspectives are played against each other, new organizing ideas should emerge that are an eclectic mixture of established ideas and newly sensed information. Eventually, a particular comprehensive mental picture of the Menominee CAS should become dominant and bring with it, an end to the research.

Reporting the results of the research requires finding the words to present a written text or script that is metaphorically rich enough to generate, in interaction with a reader's personal organizing ideas, an understanding of the Menominee Tribe in the mind of the reader. While there is no such thing as *the* correct understanding of the Menominee CAS, certain perspectives of the tribe can be considered more "valid" than others. There is no Absolute Truth, but at some point I can fake positivism. (Richardson, et al., 2002, pp. 18–20) If it is preceded by enough research, a picture of the Menominee Tribe can be painted with sufficient confidence to momentarily claim that the Truth is at hand. It is a truth that can then be used to test hypotheses, stir criticism, and guide subsequent research.

## CONCLUSION: RETHINKING THE MENOMINEE NATION

The purpose of the research discussed in this paper is to rethink the Menominee Nation as a living complex adaptive system and examine the ways the tribe has changed as it has adapted to a changing environment since the passage of the Menominee Restoration Act in 1973. This will require a recognition of the active role of organizing ideas in the research. Usually we are not aware of our organizing ideas and are not conscious of them when they are at work (we don't think "giraffe" and then willfully apply the idea to the black and white blotches in Fig. 1 to see a giraffe). And yet, with new sensed information, new organizing ideas and already existing ideas constantly evolve and change.

When I wrote *Menominee Drums* twenty-five years ago, I was strongly influenced by theories associated with political science and, as a result, when I did my research I saw a Menominee elite, a tribal organization called DRUMS working as an interest group, and a whole array of people playing out various roles in a drama called Menominee Termination and Restoration. This time around, my research is influenced by complexity theory and Goethe's ideas about the way we come to know the world around us. The hoped-for result is a more powerful set of organizing ideas and a new and deeper understanding of the Menominee Indian Tribe.

Another objective in this research is the development of a way to gauge the health of the Menominee Nation. Perhaps the health of the tribe can be measured in a way that combines quantitative and qualitative information about the community's state of health. If this can be done, it may be possible to examine and evaluate the health of the Menominee Tribe before termination, after its restoration in 1974, and also look at the way Indian gaming is affecting the health of the Menominee Nation today. And some day, it may even be possible to research and write about the health of the other Native Nations and other non-Indian communities that, together, make up the Human Tribe.

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