

Introduction: Into the Fields

What is Anthropology?

The Broad Base of Anthropology. Anthropology is a very broad discipline that concerns people and their biological and social heritage. In fact, it is so broad in scope that people can study just about anything there is to study in the world from an anthropological point of view. If this sounds arrogant or boastful, it is not that the field tries to lay claim to discoveries that they haven't made. It is just that anthropologists study things across vast amounts of time and across the geographical expanse of the globe, searching as far back in time as the evidence allows and anywhere in the world where there are societies, people, or the near-to-human **primates**. In their quest, anthropologists ask questions and seek evidence about human evolution, about the behavior of other animals, and about the processes that have led to the current state of the world and our place within it.

Because anthropology is so broad, it has generally been chopped up into different specialties, what in the United States are called the four "fields" or "subfields." For example, those we call **biological anthropologists** study bones, the lives of primates like monkeys and apes, and our natures as human beings. Those known as linguistic anthropologists focus on the study of language and communication. The **cultural anthropologists**, or "**ethnologists**," study contemporary societies and their recent pasts. Probably the most famous are the **archaeologists**, those who examine artifacts and other traces of the past in order to tell a story about those who made them or left them behind. Finally, you should know that if you do any of these things for the purpose of solving some practical real-world problem then you are doing "**applied anthropology**." Some people call this the fifth field, but it is really a potential aspect of any of the other four.

Usually, a textbook in anthropology will follow along with the divisions and types of anthropology. Thus, you'll get a book divided into sections of biological, linguistic, cultural, and archaeological anthropology. Usually, an introductory textbook will also just provide you with a lot of data and facts about established discoveries, and it will try not to take sides in things that are contentious. Much of the time, this leads the textbooks to leave out interesting new ideas or ways of looking at things.

Like anyone else, I want to be fair and objective, but I also want to say from the outset that I'm not quite happy with this usual way of doing things. First off, I'm not going to try to present you with a story of how most anthropologists see things. This is because I think that when you chop books up into sections and don't give it your own spin, you end up with a lot of disconnected fragments. It's kind of like telling a bunch of stories without connecting them together. So, we want to talk about the different types of anthropology with more coherence. To do this, it will help to have a good sense of what it is that can unify such a diverse field as anthropology.

Four-Field Anthropology: Ideal & Reality. Here's a good place to let you in on a little secret. The fact is, despite what you might gather from what I just told you, the four fields of anthropology are not all equal, and they are usually not studied together. The truth is, many schools teach the four fields of anthropology separately and never try to talk about them all together. This is partly because they are all now so complicated and full of information, but there's also some serious challenges being made to the whole four-field idea.¹ Unfortunately, some anthropologists loathe what's going on in the other parts of anthropology and wish they would go away. Woe unto the unwary undergrad who wants to study biological anthropology at the graduate level in a department where all the professors are strident cultural anthropologists. (And it's not just the cultural anthropologists—some biological anthropologists have no use for the cultural types either.) If you believe there's strength in numbers, then you should also know that most people who major in anthropology are those interested in cultural anthropology or archaeology. Linguistic anthropology is the smallest area.

To be "fair and balanced" here, there are good logical grounds for splitting up the four fields. Mainly, when you divide the work up between lots of specialists, you can learn more and get more done. That's called the division of labor, and it's the basis of industrial economies and capitalist innovation. Still, it might not be the best way to start off learning about a wide area. If you work on an automobile assembly line fastening on wheels, you don't learn much auto mechanics. Same thing with science. What happens is that if you do science as an individual you end up doing a lot of research about a little. Say you're studying prehistoric Mexico. After you get into it a while, prehistoric Mexico is too big to study because there is just too much to master. So, you whittle it down some more. You focus on one group, then one time period ... say the early formative period of such and such a civilization, like the Olmec. Then, you look for some way to make a new discovery or develop a new insight. Mostly, as an old cliché goes, it's about knowing more and more about less and less. At this point in your career, maybe, if you're really brilliant or insightful (or maybe just lucky), you might be able to expand out to say something of interest in all the other anthropological fields. You just might have learned something crucial about how civilizations develop by studying the details of this one form at this one place and time period. This is just like a biochemist might discover something important about all of biochemistry or even about the origin of life by studying something like the intricate details of the metabolism of a few samples of cyanobacteria that live near undersea volcanoes.

Ethical Considerations. Anthropologists of whatever stripe have come to realize that a person just can't go out into the world and start studying things without asking themselves questions about how what they are doing might impact others. Obviously, there is a lot of bad stuff happening in the world, and it certainly wouldn't be a good idea to increase it through our own thoughtlessness. Questions and issues that might confront us in doing work with people include: Do I have permission to be here? Whose permission do I need to get? Do the people I am talking to have a clear understanding that I am doing research? What should I do if I see something illegal? Should I always report it? What do I do if I am living in a situation where there is a great deal of repression that comes from the local government? What if my very presence could put

people under suspicion? What if people think I am a spy or otherwise mistrust me because they perceive me as one of their foreign enemies or religious adversaries? Even archaeologists dealing with the dead or biological anthropologists studying genes or apes may confront similar ethical issues. Archaeologists, for example, did not always in the past seek permission before excavating the gravesites of indigenous peoples. Now they are required to do so. The professional organizations of anthropologists, such as the American Anthropological Association (AAA), expect anthropologists to follow a code of ethics. The AAA code emphasizes four responsibilities: (a) Responsibility to the safety and well being of the people and animals with whom anthropologists work; (b) Responsibility to science and the values of academic scholarship; (c) Responsibility to the truthful and accurate presentation of findings to the public; and (d) Responsibility to fair treatment of students and trainees. Below are some selections from this code:

Anthropological researchers, teachers and practitioners are members of many different communities, each with its own moral rules or codes of ethics. Anthropologists have moral obligations as members of other groups, such as the family, religion, and community, as well as the profession. They also have obligations to the scholarly discipline, to the wider society and culture, and to the human species, other species, and the environment. Furthermore, fieldworkers may develop close relationships with persons or animals with which they work, generating an additional level of ethical considerations...

Anthropological researchers have primary ethical obligations to the people, species, and materials they study and to the people with whom they work. These obligations can supersede the goal of seeking new knowledge, and can lead to decisions not to undertake or to discontinue a research project when the primary obligation conflicts with other responsibilities, such as those owed to sponsors or clients. These ethical obligations include:

- To avoid harm or wrong, understanding that the development of knowledge can lead to change which may be positive or negative for the people or animals worked with or studied
- To respect the well-being of humans and nonhuman primates
- To work for the long-term conservation of the archaeological, fossil, and historical records
- To consult actively with the affected individuals or group(s), with the goal of establishing a working relationship that can be beneficial to all parties involved.²

Perspectives

Unifying Visions of Culture and Evolution. Despite what was just said above about anthropological bickering, I don't think we really have to work very hard to find the ways in which it is united. There are two central concepts that have helped make this so for a long time. These are the concepts of **evolution** and **culture**. Now, from what you have heard from people who hate the whole idea, you may be surprised to hear me say that the concept of evolution can unify anybody. Of course, some people are much

happier thinking about our relationship to angels than to amino acids. And, you also know that people fight about cultural differences, like about whose religion is “best” or whose language should be spoken. Since I want to spread a little across-the-field love here, let’s just forget about these types of debates for the moment. Let’s just say for now that there is some potential unity in seeing evolution as just another way of talking about long-term change, about how certain things appear to change form in a stable manner over time. Let’s also agree that although culture can be really complicated, in essence it is about the learned practices and ideas that exist in special ways in groups. When you put it that way, all the different types of anthropology are about both of these things. Biological anthropologists study the way fossil forms appear to change significantly over time. Archaeologists and ethnologists study how different societies change their form over time. And, linguists study the way a language changes its form over time. (This last one might not be as easy to get right away. If you’re having trouble with that idea, think about Shakespeare or even old movies here. People didn’t used to have to strain to figure out what Shakespeare or Humphrey Bogart was talking about. We have a hard time because English has evolved. In fact, to stop language from changing, you’d have to institute massive linguistic censorship. Think about how much change there has been in English slang in the several past decades, going through some peachy keen, swell, far out, cool, bomb, crunk, or whatever, times, and so on to the most recent thing. Try putting a stop to all that!)

Similarly, although anthropologists often disagree over exactly what they mean by culture, there is a broad sense that it has to do with patterns of learned behavior. Since culture is nothing without learning, studying it has got to have something to do with figuring out how smart you have to be to learn and to pass on significant information in a group. Biological anthropologists want to know about that by studying how monkeys and apes know things in their societies. Linguists also want to know what monkeys and apes are doing and thinking when it comes to communicating, but they also want to know what is especially human about our languages. Archaeologists are also involved in finding the earliest evidences of human-like culture from the distant past, and, less dramatically, they gather together fragments of everyday life from the past to help them unravel mysteries of defunct cultural systems. And cultural anthropologists often think about little else but how to translate the culture of the people with whom they have been living into a recognizable framework that can be made understandable to others. To do such translation accurately, they must learn to understand things from an insider’s point of view and to overcome **ethnocentrism**, the tendency to interpret things and make judgments about them only from the perspective of one’s home language and society.

The different types of anthropologies also share a kind of attitude about how to go about getting their information. Now, there can be a kind of ordinary grubbiness to this, or, if you like to think in these terms, there is a certain romance in it, and sometimes some real danger. What I’m talking about is that anthropologists generally go out into the “real world” to do their research. There’s a good reason why you might see a grizzled old archaeologist with a T-shirt that says “Archaeologists do it in the dirt” or some other such expression of connection with the soil. Archaeologists really do go out and dig in the dirt to look for clues from the past. And they can do this in the United

States, or Canada, or Turkey, or China, or Peru, or Mexico. You understand. And, the other types of anthropologists like to go out in the real world too. Some biological anthropologists, the primatologists, go out into forests or savannahs and follow around apes and monkeys for days on end. This takes them where the primates are, which means places like Africa, South and Southeast Asia, and Central and South America. The cultural and linguistic types also go to forests and savannahs, as well as deserts and Arctic landscapes and urban ghettos and the lairs of corporate accountants, that is to say, to any of the known “real world” habitats of the species *Homo sapiens*, to study what people are doing and saying there. (It’s called **fieldwork** or the **participant observation** method.) If it sounds like lounging about, it is, partly, but it’s also a lot of work, and not always so comfortable. The thing is you’ve got to keep accurate records and be very precise in your observations. A lot of photographing, recording, note taking, and writing are involved.

Providing Some Missing Coherence. Yet, for all this, I’m still not happy that we’ve got enough here to tell you a coherent story, one that will be based on the kind of unity we are seeking. With all that observing going on, it still seems like a lot of different stories are being created. Why should a cultural anthropologist who studies the initiation ceremonies of Australian Aborigines care about what some primatologist is observing among the chimpanzees of Tanzania? Why should either care about the meaning of Paleolithic cave art in France, or the structure of noun classes in Zulu? Surprisingly, I am going to propose a solution that is even *more* broad-based than usual. Think about that old adage about the forest for the trees. You know, that sometimes you need to step back to see the forest for the trees. Well, when we step back from anthropology, we see that we would really like to understand all of humanity without losing sight of the lives of individuals and individual peoples. But, there is a problem in that we just can’t study individual people to understand people in general. If we try, we might not know how to ask the right general questions. And, if we try to get broader in a haphazard kind of way, it may end up that it is not even enough to study a few groups of people to understand all people in general. What I am trying to tell you here is that we may have to understand *what it is that makes people possible* in order to understand what it is that even the most ordinary of us do. We can’t just study individual languages and cultures to understand why there is any culture. We need to understand what makes communication and communication systems possible. So, when we step back from ourselves, we need to see that we are flesh hooked up on bones standing on a world in a solar system in a galaxy that made us possible. When we step back, we need to think about nature and the physical context of our being.

You’ve certainly noticed that this book, like lots of books by academics, has a title and a subtitle. I’ve already talked about evolution and culture, but what is this thing “synergy?” What I want to emphasize with this word is that we will be looking at parts and wholes and how they combine to form new things. You may be familiar with the phrase, “the whole is greater than the sum of its parts.” Where this is true, then we have a type of **synergy**. (Actually, there are many types of synergies, many ways in which distinct parts acting in combination create something different than if they were operating individually.) Synergy is a crucial concept for us in the chapters that follow

because it helps us understand how physical, biological, and cultural things are interrelated yet still distinct and special in their own way. Yet, we can still think of them as unique not only at their own level but also in the way that they blend together. This idea, while not unique, has not been emphasized enough. Instead, many have tended to think that physical elements, biological phenomena, and social facts all need to be kept separate and distinct.³

Like most fields, anthropology can be **reductionist**, meaning it can break down areas of study into smaller and smaller units and parts. But, many anthropologists like to put things together and think holistically. With a **holistic** approach we look at the different parts of all the subfields. If we then see that they interconnect to create a different result than would result from that of any one part acting individually, then we are looking at synergy. I use this word in the title to stress that in this book we are going to look at the world in terms of its parts as well as how parts combine to create new forms. More complex forms that are beyond the sum of their parts may emerge from the more basic forms that underlie them. This **emergent complexity** happens all the time in many different domains, be they physical, social, cultural, or psychological.

What I mean by saying that forms have emergent complexity is that they develop new characteristics from their underlying combinations. Think of buildings and their building blocks or a house and its bricks. Blocks and bricks are made of the combination of sand and cementing material. The block or brick is a new form of order that emerges from the nature of the combination. There can be layers upon layers from which more complex ones develop. Here is how one real smart guy, a Harvard astrophysicist, described the emergent complexity of nature:

- The emergence of self-replicating molecules paved the way for the evolution of self-reproducing molecular communities.
- These evolved into the ancestors of modern bacterial cells. Bacterial cells evolved into higher, nucleated cells...
- Communities of higher cells became simple multicellular organisms like sponges.
- Increased cellular differentiation led to the emergence of higher plants and animals like flatworms, with specialized tissues and organs.
- The concerted evolution of sense organs, a centralized nervous system, and limbs enabled animals to acquire, process, and act on special kinds of information about their environment.
- As brains evolved further, they gave their possessors the ability to construct and manipulate images, memories, and ideas, to hypothesize possible courses of action, and to choose among them.⁴

As we will consider in more detail in later chapters, not only is each layer of form based on a lower layer, but from each new layer there also emerges a new level of complexity that is distinct and unavailable to the layers below it. So, a cell can do things that its parts cannot do independently, and multicellular organisms can act in ways not possible for single-cell life.

Of course, anthropology is not about all of these levels, but we must have some sense of the nature of order and complexity if we are to put anthropology on a firm foundation. One of the first to realize this was a British anthropologist named Gregory Bateson (1904-1980). He was the kind of anthropologist who really knew how to cross the fields; and he inspired a lot of the younger people of his day to... well...to think really, especially about how we are all in and part of nature. He didn't found a new approach to doing anthropology, but he thought outside the normal boundaries. What he was interested in learning about were patterns of human life, patterns of nature, and patterns of communication; and he saw them all around him. They were all different, but they were connected too.⁵ Taking a cue from Bateson, this book is not just about Anthropology 101; rather, it sets out on a quest to understand what he called "patterns that connect." This will mean that we might cross some boundaries that other books don't. But, this is the kind of thing that would not have bothered Bateson. After all, he spent much of his career studying dolphins, and creating his own fields; and, legend has it, he didn't even wear socks!

In addition to this book being holistic, it should also be clear that it is taking a certain scientific point of view. Besides referring to the topic of biological evolution, we are also going to look at culture and society and as if they were any other natural process. This is what anthropologist Dan Sperber has called **naturalism**. In his research, for example, Sperber takes a naturalistic approach to how ideas and practices spread in groups: he says there is an "epidemiology of ideas" because ideas can hop from person to person, spreading something like germs.⁶ I also want to emphasize that we're going to look at human beings from the ground up; we will do our best to understand humanity and where we come from in terms of the natural world. By the natural world I mean the things that are around us that we can perceive with our senses or whose tangible influence we can measure with instruments, instruments that have perceptual capacities that extend our own (like telescopes, microscopes, x-rays, MRIs, and such). Such naturalism is, of course, what is behind all scientific approaches. As I outline in chapter one, the naturalism of science has dramatically reshaped the world in which we live and how we perceive things. That it also has involved a tremendous accumulation of knowledge that has changed the character of human life is too often taken for granted.

This being said, the pattern that I see connecting nature and mind and the sun and the moon and the four fields of anthropology is not one tangible thing. It is pattern itself. The search for pattern, or form, is one of the things that unify the social sciences with the natural sciences. Patterns and forms are everywhere; and without them there really would be nothing. So, I'm going to describe three different types of form, not only to describe for you what anthropology is about, but also to describe why I think it is even possible to be reading, talking, writing, and thinking about things at all.

A Three-Fold Framework. The three types of form I will be emphasizing are: (1) Physical Form, (2) Social Form, and (3) Forms of Information. Physical form will be discussed most in part I while the second two types of form will be discussed in a set of interwoven chapters in part II. After a chapter that provides background on how we have transformed our relationship with the physical world through an accumulation of scientific and technical knowledge, we will concentrate first on describing basic physical forms and what they mean to biological evolution. This is crucial to start off with because all complex things depend upon and are built up from the fundamental forms at the bottom. At the bottom we have the structures that physicists study (quarks, protons, electrons, etc.); from there you get atoms and then molecules. After this, of course, things just keep getting bigger and messier. Now don't worry about knowing the details of all this, this is not a physics textbook. I'm not going to ask you to know all about atomic weights and measures. We just need to remember that before we could have anything like a cell or a human body, there already had to be an underlying order of considerable complexity and variability.

To add just a little more detail, and to emphasize what I've said above, the reason for looking at things in terms of the physical, the social, and the informational is that in each we can find underlying structural patterns. The forms we see and live in are all complex, but at the same time they are built up from simpler ones. Now I admit that this really isn't a very complicated or sophisticated idea, but a lot follows from it for each type of form. For example, there could be no biological evolution without an underlying order at the subatomic, atomic, and molecular levels. Or, to consider the realm of the social, there could be no large countries or multinational corporations today without the prior existence of small-scale societies that had the potential to evolve into more complex structures. Finally, with reference to information, there could have been no evolution in abilities to communicate through language without the existence of underlying channels of signal transmission and reception. It is the prior existence of these channels that made possible our systems for hearing, seeing, feeling, tasting, and so on. And it is the special human ability to share information and to figure out how to write it down that has made technological progress possible. Few might associate stone tools with information processes, but without a heritage of communicating information about tools of all sorts, there would be no Big Screen TV and video games.

As noted above, we're going to start off in chapter one with a little more discussion about science and the accumulation of knowledge over time. This is important because we often take for granted the vast amount of accumulated cultural knowledge that makes our everyday lives the way they are today. The next three chapters will emphasize physical form and physical anthropology. In chapter two we're going to look in more detail at what I mean by form, evolution, and naturalistic perspective. How exactly we will apply this to anthropology will also be discussed. Chapter three is about the small-scale physical, organic, and cellular forms that make up all life. It describes DNA, the genetic code, and some recent discoveries about how they work in similar ways in regulating physical development. This chapter also describes some of the things that the analysis of the small-scale tells us about evolution and behavior. Chapter four is about bones, not just about bones as things, but bones as clues. Bones, modern

and ancient, frail and fossilized, provide key evidence about species relationships and our ancestry. Fossilized bones tell us that there were once lots of creatures walking around that sort of looked like us. And, it really is fair to call some of these fellows “ape-men” (Or, should I say, ape people?) who preceded us. After this chapter we will start part II. Part II consists of six chapters that shift back and forth between discussions of the evolution of social forms and the evolution of communication, language, and culture. Chapter five focuses on monkey and ape social structures and behavior patterns. Social patterns discussed include group structure, types of sexual expression, and forms of behavior that seem to have the most implications for understanding our own natures. The nature of sociality is also discussed. Chapter six shifts emphasis to the discussion of information and communication. It is about how large-scale means of communication are built upon smaller processes. It considers the physical background of communication, and then describes the nature of primate social communication systems as well as theories about the origins and nature of language. Chapter seven follows on this to describe evidence about early human symbolic expression, the building blocks of all languages, and how language is learned. The first part of chapter eight changes the subject a bit to examine the archaeological record of technological evolution, but keeps the emphasis on form because it considers technology to be a kind of accumulated information. While other animals may use tools to some extent, only humans accumulate stores of technological knowledge over time. The second part of chapter eight moves back to focus on the social by describing the broad trends of social evolution, from the small groups of hunter-gatherers to the first large states and empires. Evidence is drawn in this description from both archaeology and ethnography. Chapter nine expands out from the previous discussion of symbolic expression and language basics given in chapter seven to a discussion of language and culture. This involves a variety of topics that are about the relationship between the language we speak and how we perceive the world. Finally, chapter ten concerns the work of cultural anthropologists. It looks at what makes it necessary to consider culture systems as a distinct level of complexity even beyond that of language. Examples from a variety of cultures are explored. The political implications of our cultural and ideological systems are also discussed.

Summary Points (Introduction)

- The subfields of anthropology are biological anthropology, archaeology, cultural anthropology, and linguistic anthropology. There are applied aspects to each.
- The unity of anthropology as a discipline is often more an ideal than a reality. However, for many anthropologists two unifying concepts are the concepts of evolution and culture.
- This book describes the different realms of physical form, social form, and forms of information in terms of their synergistic interactions and interrelationships.

DEFINITION OF CONCEPTS (in order of appearance in text)

Primates – The biological order of mammals that includes monkeys, apes, humans, and the lesser-known monkey-like animals called prosimians.

Biological anthropologists – As the name implies, those anthropologists who study our biological nature and heritage. They study bones, the lives of primates, and the fossil record of primate evolution.

Cultural anthropologists – Also called **ethnologists**, these folks study contemporary societies and their recent pasts through active participation in ordinary life.

Archaeologists – Those who examine artifacts and other traces of the past in order to reconstruct past ways of life and social forms.

Applied anthropology – Anthropology that is used to help solve a problem or improve some situation in life. Two examples are forensic anthropology, which applies biological anthropology to the unraveling of a crime, and medical anthropology, which applies knowledge from cultural anthropology to facilitate the treatment and prevention of disease.

Evolution – Ordered change in form over time. More on this as a topic in later chapters.

Culture – A partial definition is that culture is the learned practices and ideas that exist in special ways in groups. More will be said in later chapters.

Ethnocentrism – Interpreting cultural differences only from the perspective of one's own culture. While ethnocentrism, like egocentrism, is often associated with feelings of superiority over others, it is subtler than that. Even those with a great deal of experience with other cultures may make ethnocentric assumptions about the concepts and practices of others.

Fieldwork (participant observation) – A method of investigation typical of cultural anthropology in which the researcher gathers information through living and interacting as naturally as possible with others as a temporary member of a group.

Synergy – The combined results of distinct parts operating as a whole. In the classic case the nature of the whole is greater than the sum of the parts.

Reductionism – A primary method of science in which structures are studied by breaking them down into smaller and smaller units and parts.

Holism – An approach to understanding in which several different areas of investigation are combined. A holistic approach to anthropology combines the different subfields.

Emergent complexity –A synergistic process in which new types of complexity develop when different layers are combined. In the case of a truly emergent phenomenon the individual identities of component parts are lost. Water is an example. Combine hydrogen and oxygen in the proper way and water emerges as something new. The characteristics of hydrogen and water are lost in the new combination. The beliefs and practices of a group also show emergent complexity, although the individual history of their development may or may not be preserved.

Naturalism – A philosophical approach or method in which explanation is confined to nature or elements of the material world. The opposite of naturalism is mysticism or “supernaturalism.” Here explanation is sought from non-material or spirit-based forces.

FOR FURTHER CONSIDERATION

(1) People who value different things in life often have difficulty getting along or even understanding each other. What potentials for misunderstanding and disagreement do you think there might be between the different types of anthropology?

(2) If we say that evolution is “change in form over time,” then is that the same or different from saying that evolution is a theory? In science, what is the difference between a theory and a fact?

(3) Think of a club or an organization that you belong to or have belonged to in the past. Was there any synergy in the way that decisions in the group came to be made in the way that the group developed beliefs and practices? Explain.

(4) If you developed a new academic discipline to study human societies that *abolished* all naturalistic explanations, what sort of explanations do you think you would have for things like warfare, poverty, and disease? Describe an example.

NOTES AND REFERENCES (Introduction)

1 Among other things, critics have called four-field anthropology a “myth,” “a noble lie,” and “sentimental.” For more such criticism, see Daniel Segle and Sylvia Junko Yanagisako, eds., *Unwrapping the Sacred Bundle: Reflections on the Disciplining of Anthropology* (Durham: Duke University Press, 2005).

2 Code of Ethics of the American Anthropological Association (Approved June 1998). Cited from <http://www.aaanet.org/committees/ethics/ethcode.htm>.

3 One prominent anthropologist who thought seriously about synergy was Ruth Benedict. For details on how she used the concept, see Abraham H. Maslow and John H. Honigmann’s article from 1970 called “Synergy: Some Notes of Ruth Benedict.”

American Anthropologist. 72:320-333. Benedict and others seemed to suggest that the concept refers purely to positive results. However, more recently scholars have suggested that there are numerous varieties of synergy, and not all of them lead to positive consequences. Peter A. Corning describes twelve types in his book *Nature's Magic: Synergy in Evolution and the Fate of Humankind* (Cambridge: Cambridge University Press, 2003). More connections to evolution are described in his *Holistic Darwinism: Synergy, Cybernetics, and the Bioeconomics of Evolution* (Chicago: University of Chicago Press, 2005). <http://www.complexsystems.org/> is his website.

4 This quote is from David Layzer's *Cosmogogenesis: The Growth of Order in the Universe* (New York: Oxford University Press, 1990), pp. 36-38. This is a highly recommended resource for anyone wishing to explore further very large questions about the relationships between physical and biological order. Another perspective is given by Stuart Kauffman, a leader in the field of complexity studies. See his *At Home in the Universe: The Search for the Laws of Self-Organization and Complexity* (New York: Oxford University Press, 1995) and *Investigations* (New York: Oxford University Press, 2000). Kauffman looks in new ways at how complexity can emerge from the self-assembly of parts. Many people are now working on the general study of order and complex systems. New books are being published regularly on the topic. One recent example similar to that of Layzer's effort is Eric Schneider and Dorion Sagan's *Into the Cool: Energy Flow, Thermodynamics, and Life* (Chicago: University of Chicago Press, 2005).

5 Gregory Bateson's *Mind and Nature: A Necessary Unity* (New York: Bantam, 1979) is a good introduction to his thought.

6 Dan Sperber, *Explaining Culture: A Naturalistic Approach* (Oxford: Blackwell, 1996).