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Comparative Psychology's Relevance to a Liberal Arts Education and Personal Development

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The purpose of a liberal arts education is to enhance critical thinking and to facilitate personal growth through knowledge and understanding of oneself and one's relationship with the rest of the environment. Akin to this educational process is comparative psychology's comprehensive perspective, characterized by concepts such as *continuity*, *emergence* and a *Levels of Analysis* approach to understanding. Comparative psychology is a model central to the purpose and value of a liberal arts education and, as such, has the potential to enhance that process and the consequent worth of our daily lives.

The intent of this article is to promote tenets central to comparative psychology among colleagues and students both in other areas of our discipline and across the liberal arts curriculum. Proposed herein is that attention to these tenets will enrich the educational process and consequent personal development.

The purpose of a liberal arts education is to enhance critical thinking and to facilitate personal growth through knowledge and understanding of oneself and one's relationship with the rest of the environment. The following tenets of comparative psychology are particularly relevant to that purpose. The first two tenets are shared with all other areas of psychological science. The others together are characteristic of comparative psychology's particular relevance to psychology and a liberal arts education.

Science

Comparative psychology derives its relevance to a liberal arts education, in part, by being a science. Science can be defined as knowledge resulting from a problem-solving strategy that, enhanced by training and practice, enables a person to formulate relevant questions and devise ways to answer them accurately and reliably. Scientists assume that every natural event is unique; but if the event's causal factors and their specific integrations are identified (i.e., accurately describing and explaining the event), that event can be replicated. Furthermore, knowledge acquired from observing and creating events can produce defensible inferences about other related events (i.e., generalization). The degree to which inferences are accurate is determined by the extent to which the events being compared are similar and repeatable. The scientific method, itself, is a model for critical thinking in a liberal arts education.

Limitations and Psychology

Comparative psychologists, as do all scientists, assume that proof of an observation is a statistically derived inference within confidence limits.

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Neurological (e.g., detection, integration, representation), attentional, and perceptual limitations render humans and other animals practically incapable of knowing reality. Given that science is the product of an imperfect being, science as an index of reality is bound to be imperfect, too. Scientific investigations are limited to those events that are observable and testable (i.e., *empirical*). As such, science is a set of incomplete probability models of reality, where critical thinking is a primary determinant of accuracy.

Given a broad-based knowledge and an awareness of complex relationships, a liberal arts education is intended to promote a greater understanding of and contribution to a person's life. This is achieved by enhancing awareness of prior, current, and potential future changes in the environment; accurately ascribing meaning to those changes; and generating efficient goal-oriented behaviors within that context. In addition, given our limitations, consideration of alternative perspectives is vital to the success of critical thinking, too.

An introductory course in psychology is often part of critical thinking development in the liberal arts experience. As such, one of the first fascinating problems that most undergraduates encounter is psychology's challenge and apparent contradiction: the scientific study of the mind/person. Science is limited to empirical data, whereas the mind/person appears to be neither observable nor directly testable.

Students learn that psychologists take two approaches to address this challenge. One is the classic reductionistic approach, in an attempt to identify and understand the underlying mechanisms and processes (i.e., specific interactions) that comprise the person. The other is to study intentional behavior as an index of who the person is. S. Howard Bartley (1980) suggested that the person emerges as the perceptual process. The person gives meaning to sensory information about changes in its energetic world that the body can detect and the person elects to notice. The result is purposefully modified, goal-oriented behaviors that are the manifestations of the person. They are an index of what the person perceives as (a) the primary needs that the immediate environment can help satisfy, and (b) the most efficient way to satisfy those needs within (c) socially appropriate/acceptable constraints. Like the mechanisms and processes generating the person, consequent personalistic behaviors are observable and testable, and, therefore, subject to scientific study.

With its particular analytic approach, comparative psychology reinforces and augments psychology's approach to developing critical thinking skills and knowledge. Dewsbury (1992a) has noted that "...modern comparative psychology provides a breadth of perspective on behavior unmatched elsewhere in psychology" (p.4). The following is a selection of tenets that together illustrate this observation.

Evolution and Continuity

Characteristic of a liberal arts education is the belief that humankind is a causal part of, not apart from, its environment. As John Donne (1624/1963) expressed in his *Devotions Upon Emergent Occasions*, "No man is an *Iland*, intire of it selfe; every man is a peece of the *Continent*, a part of the *maine*" (p. 243). Therefore, the student is instructed, ask not for whom the bell tolls but know both

why that particular bell tolls, and that "It tolls for *thee*" (Donne, 1624/1963, p. 243). This assumption has not only been supported by research in quantum physics but is also a fundamental belief in Buddhism (Dalai Lama, 2005).

Comparative psychology's relevance as a scientific study of the person is similarly enhanced by its focus on the person's reciprocally causal relationship with the rest of the environment. Foundational to basic tenets of comparative psychology (e.g., continuity and emergence) is the assumption that everything interacts with everything else, in varying degrees and in a continuous, reciprocally causal way, transitioning from differences in *degree* to differences in *kind*. Development is understood as the result of an animal's or species' response to environmental threats to its well-being. These threats are constantly changing forms of energy manifest as variables, animate and inanimate, that the animal perceives in degrees of approach and withdrawal within the context of adaption. Comparative psychology assumes that the person is an integral part of, identifiable but not separate from, the rest of the environment, continuously changing in a cycle of affect and effect. Although many of the parts comprising a variable (e.g., person or event) retain their defining characteristics, at every moment the variable changes from what it was en route to being something different. Awareness of this process has given rise to the *Levels of Analysis* approach to description, prediction, and explanation of phenomena. The past, the present, and the future, in varying degrees of time and space, are characteristics of an emergent continuum referred to as the *universe*. *Evolution* is the process.

Evolution theory is a similar cognitive tool used by comparative psychologists in their quest for accurate knowledge of the person. It both embraces the aforementioned assumptions and is enhanced by the integrative levels concept. For example, Charles Darwin (1871/1952) emphasized thinking in terms of degree as well as kind. Within this context, the uniqueness of many behaviors that were previously understood as individual- or species-specific and unrelated are now being re-evaluated (e.g., animal cognition: Honig, 1998; Klopfer, 2006; Ludvigson, 1998). *Continuity* is recognized when perceiving a phenomenon recurring at different levels of an individual's development or as being present in different species manifest as degrees of a given trait. Continuity links one level of ontogeny or phylogeny with the next, and contributes to the unique contextual depth and breadth of comparative psychology's perspective.

In general, comparative psychologists apply this critical thinking strategy in the following ways. They believe that individual- and species-related traits do not happen like spontaneous generation but evolve from new integrations of previously existing physical events, in a present milieu of changing environmental pressures that then generate new goal-oriented behaviors. "Comparative psychology [is] the analysis of the genesis (both evolutionary and developmental), control (by both external and internal factors), and consequences (for both the individual and its reproductive success) of behavior in a wide range of species" (Dewsbury, 1992b, p.3). Demarest (1987) referred to this development of the individual within the historical context of its species' and environment's evolution as comparative psychology's evolutionary-ecological focus. This broad context is what Candland (1987) referred to as ultimate causality.

With this model, comparative psychologists compare similarities and differences in animal behaviors by specifying the species, the task, and the precise

circumstances under investigation. For each animal studied, comparative psychologists seek to know (a) the underlying genetic predispositions and their structural manifestations, (b) the phylogenetic and ontogenetic history, (c) the environmental pressures experienced at each level of development, and (d) the range of responses elicited to address those pressures (e.g., Dewsbury & Rethlingshafer, 1973; Greenberg & Haraway, 1998; Hayes, 1994). This integrative problem-solving strategy has revealed similarities and differences among individuals and species, enabling a more accurate description and understanding of the person (e.g., learning and social behavior). As such, comparative psychology also provides a model for understanding the potential use of knowledge. By considering both a comprehensive view of reality (e.g., of knowledge) and how that view has developed and evolved (i.e., the integration of knowledge), comparative psychology can help provide a context for promoting an integrated liberal arts curriculum that enables profound individual growth.

Emergence and Levels of Analysis

S. Howard Bartley (1980), a perceptual psychologist, was critical of reductionism. He warned that, at each successive level of reductionism, the psychologist retreats further from the person into related but different realms of biology, chemistry and then physics. Bartley understood the person as a unique phenomenon, defined by characteristic properties that are different from the events that generate it. For this reason, Bartley emphasized the concept of *emergence*.

Bartley's general model was basically similar to comparative psychology's view of development. For example, T.C. Schneirla (1949) envisioned each level of development as a qualitatively unique event and the consequence of integrating biotic and abiotic environmental contingencies. Regardless of its complexity, "each level has its own laws and properties requiring its own methods, and instrumentation for study" (Tobach, 1981, p. 45).

However, like Spencer (1880/1958), Schneirla proposed that each level of development should be studied in its historical context, rather than as a discrete step in a hierarchy. "On any one level, causal explanations are necessarily limited; fuller causality can only be understood by integrating the preceding lower levels and succeeding higher levels in their interrelationships" (Tobach, 1981, p. 45). Therefore, each level of development should be understood as a product (e.g., the present) of the processes that generate it (e.g., the past) transitioning to a new phenomenon (e.g., the future) of which it, in turn, will be a component. Stated in another way, if behavior "is produced by multiple [integrations] across all levels of the system, including the structure of the context to which the system is coupled, then our map must be open to account for [all] these aspects" (Heglar, 1995, p. 57). Although Heglar was addressing another issue, his words, like those of Donne (1624/1963), illustrate the application of a concept that is basic to comparative psychology and liberal arts alike: integrating information across history and other contexts.

In this *Levels of Analysis* approach, Schneirla proposed that a comparison of successive levels' similarities and differences (e.g., when studying person-environment integration) "should stimulate investigations . . . in ways perhaps otherwise unrealized" (Schneirla, 1952, p. 590). In fact, in a comment that

accurately describes the current state of both science and education (Rasmussen, 2006), other comparative psychologists (Tobach & Greenberg, 1984) posited:

It is now possible to adopt so many research strategies that there is a need for team-research efforts on any single level, as well as for research which brings together investigators who work on different levels (the so-called multidisciplinary approach). The need for an integrative concept providing hypotheses about the interdependence of all levels is now more desirable than ever.
(p. 5)

Just as a liberal arts education seeks to promote a greater understanding of, and appreciation for our lives, comparative psychology's integrative *Levels of Analysis* can illuminate how we comprehend personal life events and grow from them. As previously stated, the person (i.e., perception/cognition) is the integration process by which (a) sensory information the animal acquires about the changes in its energetic world is made meaningful by incorporating other sources of context (e.g., knowledge of past experiences) resulting in (b) behaviors deemed appropriate, based upon that meaning. A person's response to the touch of another's hand depends on what that person perceives to be (a) the other's intentions and (b) how the other will react to the person's response. For example, consider a visit to a family medical practitioner. At almost any moment during the examination, the concerned patient may be re-evaluating the relationship that patient has with the medical practitioner, questioning the practitioner's social and personal as well as professional intentions and their potential consequences. As the practitioner probes, the patient's resultant perception/cognition may be a mixture of pain, apprehension and relief; not one or another, although they all exist and are uniquely meaningful. The resultant experience is strangely unique and must be analyzed differently from the way the patient analyzes each of its underlying components. The patient must also anticipate and re-evaluate the extent to which resultant approach/withdrawal behavior will accurately represent the meaning the patient gives to those experiences, as well as the ways the patient's responses may be interpreted by the practitioner. The patient's actual response will result from the integration of past and present stimulus conditions, and will probably be components of future behaviors in various contexts.

The conceptualization of a behavioral event is a gestalt, and the degree to which it accurately represents reality is always probabilistic. However, by applying the relationship between quantum mechanics and Newtonian physics to the relationship between the biological and personalistic as well as the inanimate physical world, Schnierla's concept of integrative levels facilitates a more profound conceptualization of reality. It is a key to understanding the interrelatedness of all things: the uniqueness of each variable and its potential contribution to the uniqueness of every successive event. Not only does this characterize how comparative psychologists think, it also mirrors the integrative approach of effective liberal arts curricula.

Applying Comparative Psychology to a Liberal Arts Education

Even in institutions with core curricula, the conventional liberal arts curriculum typically reflects the classic organization of a university comprised of colleges concerned with different disciplines (Dunn, 1993). Despite colleges' best

intentions, students often view courses in disciplines other than their major as peripheral, simply requirements for graduation. Alert students sense the value of these requirements, often coming to realize that the scientific method of systematic critical thinking is the common thread that runs through their various courses. But for most students, the disciplines themselves remain discrete courses of study, like beads on a necklace. Students often do not appreciate a diversified curriculum as a rich source of context for problem solving (Halpern & Nummedal, 1995).

Comparative psychology's comprehensive, integrative approach to problem-solving invites interdisciplinary cooperation, alternative perspectives, and more critical thinking. Consequently, it should render us less likely to modify our observations to fit our perceptions, in turn facilitating the generation of more appropriate contributions. As educators in varied disciplines think more profoundly about shared beliefs and the perspective their unique contributions generate, students are presented with more relevant insights about themselves, their reciprocally causal relationship with the rest of their environment, and the universe. The result should be the intent of a liberal arts education: a greater sense of connectedness, worth, contribution, and fulfillment.

Summary

This article aims to share comparative psychology with colleagues and students both in other areas of our discipline and across the liberal arts curriculum. Toward this end, the relevance of comparative psychology as a problem-solving strategy is addressed by offering its perspective of shared and unique tenets, echoing past sentiments (e.g., Candland, 1987; Greenberg, 1987) that "...the comparative method . . . [is] an enduring and productive means for answering questions, regardless of a student's final specialization within or outside of psychology" (Thompson, 1987, p. 144).

As an anecdote, informal conversations with many liberal arts colleagues at different institutions over the years have led to both an interest in comparative psychology's perspective and an awareness of similarly shared concepts (e.g., those addressed in the scientific method) that characterize our respective disciplines. These conversations have resulted in invitations for me to "guest lecture" in their natural science, social science and humanities classrooms, sharing comparative psychology's broad approach with students across the liberal arts curriculum.

Meaning is derived from context. Broad, integrated sources of context increase the accuracy of knowledge and the appropriateness of consequent behavior. As elaborated above, comparative psychology's comprehensive, singularly integrative, perspective can provide relevant access to such development.

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