

Evolutionary Psychology, Developmental Systems Theory and Advaita Philosophy as Metatheories: Are the Three Compatible?

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In this special issue different metatheories are proposed, including evolutionary psychology (Ploeger, 2010), developmental systems theory (Antley, 2010), and advaita philosophy (Poonamallee, 2010). Evolutionary psychology is psychology that is informed by theory and research of evolutionary biology, with the idea that knowledge about the evolutionary background of psychological phenomena will contribute to the understanding of these phenomena (Cosmides, Tooby, & Barkow, 1992). Systems theory can be defined as a holistic theory about complex systems in nature. When applied to development, this theory is often called dynamic systems theory,² which states that developmental outcomes are the result of the spontaneous emergence of higher-order forms, which are the result of interactions among lower-level components. This process is called self-organization (Lewis, 2000). Advaita philosophy is another holistic theory that presumes non-dualism, i.e., the reality of an individual is identical to that of the world and cosmos. The basic tenet is that all forms of matter are interconnected by an all pervasive energy. Human existence can be placed in an integrated, interconnected whole (Saravanamuthu, 2006).

Different questions can be addressed concerning these three metatheories. One question concerns the correctness of these metatheories: is one of these metatheories the correct one, or is it possible to have different co-existing metatheories, addressing different areas of inquiry? Is it desirable to have one ultimate metatheory, or would this metatheory be too general to be of practical value for the daily work for scientists? Another question that can be raised is whether the different metatheories have the same purpose: is it a metatheory that provides a framework for creating new theories and evaluating existing theories (e.g., advaita philosophy), or is it a metatheory that unifies different subdisciplines (e.g., developmental systems theory, evolutionary psychology)? Another question is whether it is possible to integrate these different metatheories into one overarching view. Are there similarities or are these metatheories in opposite of each other? In this essay, this last question will be addressed.

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² In this essay, I will use the terms *developmental systems theory* and *dynamic systems theory* interchangeably



On a first view, these three proposed metatheories appear to be very different from each other. Evolutionary psychology is based on theories and empirical findings in evolutionary theory, and focuses on phylogeny (changes over generations), rather than ontogeny (changes in an individual lifetime). Developmental systems theory, on the other hand, has its main focus on ontogeny. Advaita philosophy is based on Hindu spiritualism and has not been embraced by many Western researchers yet. So on the first sight these three different metatheories seem hard to be reconciled. However, some recent debates in the literature have shown that we need to embrace and reconcile different perspectives in order to reach progress in science. Particularly, there have been debates on the value of evolutionary psychology, and the relation between evolutionary thinking and developmental science (Lickliter & Honeycutt, 2003a; Spencer et al., 2009). In this essay I will briefly summarize this debate, and I will elaborate on the role that advaita philosophy may play in this debate.

Evolutionary Psychology and Developmental Systems Theory

Evolutionary psychologists have proposed that we possess many different evolved psychological mechanisms to deal with problems related to survival or reproduction (e.g., Buss, 1995; Tooby & Cosmides, 1992). An example is our ability to rapidly learn a fear of snakes, an evolutionary significant stimulus related to survival, opposed to our inability to learn a fear of flowers, or even a fear of guns or cars (stimuli irrelevant from an evolutionary point of view; these stimuli are either not dangerous or were non-existent in our evolutionary past).

This view on evolved psychological mechanisms has been questioned by developmental system theorists (Lickliter & Honeycutt, 2003a). These theorists argued that evolutionary psychologists focus too much on evolved mechanisms, and that evolutionary psychologists ignore the role of development in the unfolding of behavior and cognition. According to Lickliter and Honeycutt, evolutionary psychologists implicitly assume that these evolved mechanisms are preprogrammed in the genes, and that phenotypic traits are prespecified. They state that:

what offspring inherit from parents is not simply genes, but a structured developmental system. This developmental system provides sources of both stability and variability, and the structure and interactions among components of an organism's developmental system are as causally informative to the development and transmission of phenotypic traits as are the strands of DNA contained within this system. (p. 828)

Because Lickliter and Honeycutt (2003a) wrote their proposal as a frontal attack of evolutionary psychology, it was understandably not well-received by evolutionary psychologists (Buss & Reeve, 2003; Tooby, Cosmides, & Barrett, 2003). Buss and Reeve called developmental or dynamic systems theory obscure and vague, and in a recent paper they claimed that theories that invoke self-organization or dynamical systems have not led to a single new specific prediction or empirical finding (Duntley & Buss, 2008). In an earlier book, evolutionary psychologist Pinker (1997) wrote that:

any explanation of how the mind works that alludes hopefully to some single master force or mind-bestowing elixir like 'culture,' 'learning,' or 'self-organization' begins to sound

hollow, just not up to the demands of the pitiless universe we negotiate so successfully. (p. 19)

In short, there is great disagreement between evolutionary psychologists and developmental theorists on the issue of evolved psychological mechanisms, and how much impact individual development has on the unfolding of phenotypic traits. In my point of view, there are three ways that open up the debate in a more fruitful way.

First, some evolutionary psychologists have embraced dynamic systems theory and try to incorporate the principles derived from this theory in their work (Kenrick, 2001; Kenrick, Li, & Butner, 2003; van Vugt, 2009). Kenrick (2001) argued that the two frameworks of evolutionary psychology and dynamic systems theory may in tandem provide the foundation for psychology's long-awaited metatheory. He illustrated his proposal with research that is relevant for evolutionary psychology: how does a community of people decide to adopt an aggressive or a peaceful strategy to deal with a particular problem? Initially random interactions between individual members of the community, with compounding reciprocal effects on one another, finally result in stabilizing patterns. These self-organized patterns emerge in all kinds of networks, including those involved in genes, neurons, and groups of people.

Second, some developmental psychologists have tried to develop a new framework that incorporates both ideas from evolutionary psychology and developmental systems theory (Bjorklund, Ellis, & Rosenberg, 2007). These researchers argued that evolved psychological mechanisms could be perceived as evolved *probabilistic* mechanisms: mechanisms that have been naturally selected, but that are still plastic and their outcomes can be adjusted to environmental input. For example, children with a genetic predisposition to become aggressive and antisocial, will only develop this way when raised in harsh environments. When raised in a normal environment, they will not become aggressive and antisocial (Belsky et al., 2009; Caspi et al., 2002).

Third, I have argued that evolutionary psychology needs to embrace the framework of evolutionary developmental biology in order to broaden its scope (Ploeger, van der Maas, & Raijmakers, 2008). I included dynamic systems theory in this framework. Dynamic systems theory, with its major concept of self-organization, can be applied to individual development, but also to evolutionary processes. Self-organization is not a vague or hollow concept, as evolutionary psychologists Duntley and Buss (2008) and Pinker (1997) have argued. There is a large body of literature in evolutionary biology on the role of self-organization in evolution (e.g., Camazine et al., 2001; Pulselli, Simoncini, & Tiezzi, 2009; Solé & Goodwin, 2000). For example, according to Kauffman (1993), self-organization is a necessary concept in any theory that tries to explain order in nature. On the other hand, I do not believe that dynamic systems theory should replace evolutionary psychology, as some authors seem to suggest (Lickliter & Honeycutt, 2003a). As Buss and Reeve (2003) have stressed, evolutionary psychologists have made quite a long list of discoveries that would not have been revealed without an evolutionary framework. These discoveries are important scientific contributions. True progress will be made only if the two approaches start working together.

Evolutionary Psychology, Developmental Systems Theory and Advaita Philosophy

The connections and disagreements between evolutionary psychologists and developmental systems theorists have become apparent in the literature. The connections between these two approaches and advaita philosophy are less clear. By searching *Web of Science* on "advaita and evolution," or "advaita and development," not much literature can be found. So we need to develop a completely new scientific framework to integrate these different views. Let me elaborate on two parallels between evolutionary theory and advaita philosophy, and another parallel between developmental systems theory and advaita philosophy. By considering these parallels, we may be able to integrate these different metatheories, or at least formulate some similarities that serve a common ground.

To start with the parallel between evolutionary theory and advaita philosophy; advaita philosophy tries to understand human existence as an integral part of a larger and interconnected whole. This idea can be compared to the Darwinian idea that the human species is connected with all other species in a tree of life - all species on earth share a common ancestor, a prokaryote that arose around 3.5 billion years ago. This prokaryote arose in some way from the interaction of molecules that were available at that time, so in this way all species including human beings are connected to the world and the cosmos. Whether this connectedness is the same as the all pervasive energy as proposed by advaita philosophy, is an open question.

Another parallel between evolutionary psychology and advaita philosophy is that they call for unification. Advaita philosophy calls for the unification of the self and the rest of the world and the cosmos; evolutionary psychology calls for a unification of different fields in psychology or science in general. These seem to be quite different calls, but it can be seen as a parallel between the way individuals behave in relation to the world, and the way individual scientists behave in relation to the scientific world. Both metatheories call for an opening of the mind, to stop focusing on one's own small world and see the connectedness with other parts of the world.

A parallel between developmental systems theory and advaita philosophy is their focus on holism. The advaita philosophy stresses a non-dualistic view: the division between the self and the world is an illusion; both are part of a larger "system," to borrow a metaphor from developmental systems theory. The objective and the subjective come together when we realize that there is no boundary between the self and the rest of the world. Developmental systems theorists have proposed that:

development is a self-organizing, probabilistic process in which pattern and order emerge and change as a result of transactions among developmentally relevant resources both internal and external to the organism (and not from some set of prespecified instructions). Development is not the result of the interaction of genetic and environmental factors, as neither operate as independent causes; rather, development results from bi-directional and dynamic transaction of genes, cells, tissues, organs, and organisms during the course of individual ontogeny. (Lickliter & Honeycutt, 2003b, p. 869)

Thus, developmental systems theorists view development as a holistic process that involves different components at different levels. This view can be seen as non-dualistic: there is no clear division between genes on the one hand, and the rest of the developmental system on the other hand. In this way we can draw a parallel between developmental systems theory and advaitic philosophy.

Obviously it will be very hard to integrate the three different metatheories of evolutionary psychology, developmental systems theory, and advaita philosophy. Advaita philosophy is a metatheory that provides a framework for creating new theories and evaluating existing theories, whereas evolutionary psychology and developmental systems theory are metatheories that unify different subdisciplines. However, in this essay it was argued that there are some common grounds, that may lead to an overarching view that unites the different proposals.

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