Chapter 4
Instinct Versus Environment

> *Armed with a recalibrated notion of inheritance and an expanded appreciation of development, the true nature of instinctive behavior reveals itself.*
> (Blumberg, 2005, p. 224)

Blumberg's words provide a valuable insight into the latest thinking on the role of instinct and environment in determining human behavior. A key issue for human behaviorists is examining how instinct versus environment shape human behavior (Blumberg, 2005). The concept of behavior and the role of instinct and what it means has been a major debate in the behavioral sciences.

Currently in the behavioral sciences instinct is generally understood as the innate part of behavior that emerges without any training or education in humans. Much of human behavior is seen as having a major instinctive basis including language that Pinker (1994) asserts is instinctive in humans. In addition to language, another example of an instinctively-based behavior is sucking behavior by babies. Babies engage in sucking behavior that generally emerges unprompted, although some babies have problems with sucking. So sucking is an innate or instinctive behavior.

Within the framework of the behavioral sciences, this chapter explores the instinct/environment attribute in Fig. 2.2 and the role of instinct versus environment in shaping information behavior.

We can ask – *what are the instinctive and environmental dimensions of information behavior*?

We also explore how humans developed an "information behavior instinct". Information behavior is a cognitive process that is not taught, but is innate to humans to the point that people are able to consciously understand that they need to undertake behavior processes of information finding, organizing and using to make sense of their environment. So how can we understand more about this important information behavior instinct?

A. Spink, *Information Behavior*, Information Science and Knowledge Management 16,
DOI 10.1007/978-3-642-11497-7_4, © Springer-Verlag Berlin Heidelberg 2010

Instinct Versus Environment Debate

To help frame our understanding of information behavior we first explore the history and latest thinking on the role of instinct and environment in determining human behavior in general. The "nature versus nurture" debate is ongoing in the behavioral sciences and continues to be an exciting and fundamental point of ongoing scientific dispute. From Charles Darwin to William James to Sigmund Freud to Konrad Lorenz to Mark Blumberg, scholars from different scientific disciplines have argued about the nature and the role of instinct in determining behavior. And this important debate continues today.

The history of the behavior debate generally fall into two different views.

- The *nativist view* believes that all aspects of human behavior are instinctive and humans have inbuilt instinctive behaviors that are genetically determined. Blumberg (2005) describes the nativists as those who "fervently believe that we are born with certain core capabilities and knowledge that provide the basic structure for much of what we continue to learn throughout our lives" (p. xii).
- The *human development view* believes that not all aspects of behavior are instinctive and behavior is also affected by culture and environment. Blumberg (2005) says that "on the other side of this debate are those who believe with equal passion that the instinct concept has outlived its usefulness and that its application to human infants by nativists only retards our understanding of human development" (p. xii).

Debate over the Centuries

Understanding more about the diverse instinct versus environment views allows us to explore information behavior in the context of this important debate. The debate about behavior has evolved over the centuries with insights from different scientific thinkers. This debate led to changing approaches to understanding human behavior within the social and behavioral sciences.

The following brief background on the debate and the current thinking provides a foundation for understanding information behavior. We need to understand the issues surrounding the instinct versus environment debate to bring our thinking on information behavior more strongly into the realm of the behavioral sciences. This provides the basis for our understanding that humans have an instinctive capacity for information behavior that evolved to support the human motivation to controlmotivation to control (Geary, 2004).

Pre-nineteenth Century Debate

The role of instinct versus environment in determining behavior has been the crux of a broad and sweeping ongoing debate for many centuries. The debate evolved as

scientific fields such as psychology emerged in the nineteenth and twentieth century. However, many centuries ago in Ancient Greece, behavior and instinct were already topics of philosophical thought. Aristotle believed that each species had a place in the hierarchy with God at the highest point and Plato wrote about the hierarchy of men in nature.

Other pre-eighteenth century debaters included Condorcet, Lyell, the philosopher Immanuel Kant and Charles Darwin's grandfather Erasmus Darwin. In addition, Lamarck wrote about human inherited characteristics via evolution and Malthus discussed how species are formed and change, and individuals compete for resources.

Blumberg (2005) provides a good discussion of the debate from the eighteenth century writings of David Hume to the thinkers of today. To briefly summarize the key developments in our understanding of behavior in the pre-1920s era we begin with David Hume who stirred the debate in a profound way by questioning the role of God and design in human behavior in his 1776 paper *Dialogues Concerning Natural Religion*. This work was a major criticism of the role of God, and engendered severe response from the church.

Many of the issues concerning the role of instinct and environment in determining behavior also emerged more strongly in the work of Herman Samuel Reimanus who saw instinct as beyond skills implanted by God to patterns of animal behavior due to innate psychological organization (Richards, 1977).

Nineteenth Century Debate

Following the lead from Hume, Huxley, Spencer, Spalding, Weismannism Weismanism (Burnham, 1972) and others, Charles Darwin in *Origin of Species by Means of Natural Selection* (1859) and Adam Smith in *Wealth of Nations*, also criticized the "design by God" view of behavior and laid the foundation for the emergence of evolution as a key driver of future theories.

Darwin's theory of sexual selection proposed adaptation which emerged as a result of competition and sexual survival. He followed the *Origin of Species* with a second book *The Descent of Man and Selection in Relation to Sex* in 1883 that expanded on his previous propositions about human behavior and evolution. However, despite his generative theory of natural selection that lead to social change, in his writings Darwin did not define what he meant by instinct.

In the post-Darwin debate many scholars focused more sharply on the role of instinct in determining behavior and what is meant by human instinct. Romanes discussed how instincts evolved via two routes: primary instincts that emerge from natural selection to benefit the organism and instincts that emerge as habits or permanent instincts (Dewsbury, 1993). Lloyd Morgan (1885) tried to move the debate along by discussing the differences between the many approaches to the role of instinct versus experience in determining behavior.

By the late nineteenth century the three schools of thought on instinct were: (1) instinct as a reflex view, (2) instinct as intuition view and (3) instinct as a predisposition view (Herrnstein, 1998). The *reflexive view*, broadly advocated by

Morgan, Spencer, Watson and Loeb, saw instinct as a reflex called forth in humans by determinate sensory stimulus (Herrnstein, 1998).

Alternatively, James, Fabre and others saw instinct as a *vague special capacity for behavioral adaptation*, which as William James (1980/1983) in the 1890 work *Principles of Psychology* asserted, are modified by experience. William James suggested that instinct was an essential and dynamic part of the human mind (Dewsbury, 1993). He also saw a psychology of consciousness as a foundation for instinct and the variability of instincts. Dewsbury (1993) provides an overview of William James's instinct theory and his antecedents including Spalding and Darwin, and James' influence on later instinct thinkers.

The *predisposition view* of William McDougall and others saw instinct as innate tendencies to certain kinds of human actions and the sole source of human motivation (Ginsberg, 1931). In addition, Richards (1977) paper also traces the development of the instinct versus environment debate from Darwin to C. Lloyd Morgan, Romanes, McDougall to Lorenz.

Twentieth Century Debate

By the 1920s the previous views of instinct were replaced by Sigmund Freud's psychological drive theory. Specifically, instinct was now seen as an invariant core and building block of behavior, and as a stimulus to a response following distinct psychological pathways.

Konrad Lorenz

By the 1930s Konrad Lorenz's (1965) proposed a theory that claimed a strong dichotomy between instincts and experience as the basis of human behavior (Brigandt, 2003, 2005). His behavioral theory had three components; an appetitive behavior motivated by internal accumulation of readiness for specific action precedes the release of an innate behavior pattern; an innate releasing mechanism that disinhibits the innate reaction; and the purpose of the action is the discharge of the consummatory act (Richards, 1974).

For Lorenz, instinct was one part of a behavioral pattern consisting of mutually exclusive sequences of innate and learned or experience components. In addition, Lorenz saw the innate component of behavior as instinctive and not modifiable, and the learned or experience component of behavior as not related to the innate component. For Lorenz, instinct and experience were exclusive, and instinctive behavior did not evolve into what he called more flexible behavior.

Despite agreeing with Freud that instincts are the basis of behavior, Lorenz argued that human behavior resulted from the biological basis of neurobiological stimuli not Freud's claim of psychological drives. However, despite his views, Lorenz never really addressed how human behavior develops (Brigandt, 2003, 2005). Griffiths (2004) provides a more detailed overview of Lorenz's views and his critics including Lehrmann (1953) and Haldane (1956).

By the 1930s Ginsberg (1931) saw instinct as covering "those forms of behavior consisting of a series of inter-related acts which (1) are directed towards an end goal, (2) exhibit a certain adaptability and persistence with varied effort which might connote intelligence, but which (3) are performed in circumstances in which, in the absence of experience, and taking into consideration the level of mentality otherwise attained by the organism in question, there can be no knowledge of the end nor deliberate and conscious contrivance on the part of the individual" (p. 30).

In the 1950s Tinbergen (1951) explored instinct in young animals and examined how they performed behaviors despite no previous experience and suggested four causes of behavior: (1) immediate and proximate causation, (2) function, (3) development, and (4) evolution. In the 1960s cognitivist approaches had begun to reshape the debate with the emergence of ontology as the field examining behavior development and the influence of human development studies.

Late Twentieth Century Debate

In the late twentieth century the debate shifted more strongly towards examining the role of environment in determining behavior. This shift was influenced by scholars such as Wilson (1975/2000) who developed the field of socio-biology and the biological basis for social behavior, and Alexander (1989, 1990c) who proposed an Ecological Dominance and Social Competition/Cooperation (EDSC) model for explaining human behavior as affected by human competition and cooperation.

A more complex view of behavior based on both genes/inheritance, and environment and human development emerged with the growth of genetic research, and developmental and evolutionary approaches to psychology. The view was reflected by Bateson (2000) who highlights the still imprecise understanding of instinct and how instincts can be modified by human experience.

Linguist Stephen Pinker's (1994, 1997, 2003) books including *The Language Instinct* and *The Blank Slate* saw language as instinctive, and that much of behavior is best understood through instinct and the evolutionary forces that shape instincts' genetic foundation. Pinker's thinking on language had a major scientific impact, despite his lack of definition for the concept of instinct (Blumberg, 2005).

Developmental Viewpoint

Building on Pinker, neuroscientist Mark Blumberg reflects the most recent view that instinct is an important element for understanding behavior, however, "advances in our understanding of behavioral development are reshaping the meaning of instinct" (Blumberg, 2005, p. 85). Behavior is now seen within an evolutionary and developmental framework with "a recalibrated notion of inheritance and an expanded appreciation of development, the true nature of instinctive behavior reveals itself" (Blumberg, 2005, p. 224).

Behavior has two elements, one *instinctive* and one shaped by *human development* as "inherited environmental and experiential factors that reliably shape

development from generation to generation" (Blumberg, 2005, p. 224). Behaviors are instinctive and that predisposition is then shaped by species-typical and individual experiences. But not all behavior is predetermined in human genes and emerges during human development. Most behavior is initially instinctive and then modified in humans over their course of their life development.

Latest Thinking

The latest thinking underlines Blumberg's view of continuous and inextricable interrelations between genes and the environment in which genes are embedded. Geary (2004) also views behavior as having both instinctive mechanisms that operates at the subconscious level and also a mechanism driven by environmental and developmental influences that shape behavior.

Most recently, developmental psychologists have come to rephrase the debate from "how much" of any behavior is due to instinct versus environment to "how do instinct and environment interact to produce a particular pattern of behavioral development"?

The developmental approach explores how biological and environmental factors at multiple levels of organization transact to produce a particular pattern of ontogeny. From this perspective, new morphological structures or behaviors do not simply arise as a result of the reading of the genetic blueprint but emerge as a result of the continuous and bidirectional transaction between all levels of biological and experiential factors, from the genetic through the cultural.

Behaviors such as cooperation, sexual behavior, child rearing and aesthetics are seen as "evolved psychological mechanisms" (Buss, 2008; Dickens & Cohen, 2003; Geary, 2004) with an instinctive basis but environmental influences on their development. Evolutionary psychology and behavioral genetics are providing news insights into many behaviors, and led to the development of behavioral economics (Dickens & Cohen, 2003).

Key challenges for the behavioral sciences are to understand the origins of human behaviors, map the genetic, environmental and developmental influences on human behavior, and illuminate the social policy implications.

Shaping Information Behavior

Based on the latest view of behavior, we can understand information behavior as being shaped by an instinctive (genetic) basis that is affected by environmental, cultural and developmental factors. An individual's information behavior is determined by both instinctive and environmental dimensions. Humans consciously realize that they have an information behavior ability that is instinctive. Information behavior is universal to all humans and cultures and therefore has an instinctive dimension.

However, we must also recognize and explore the experiential, environmental, developmental and cultural influences that shape information behavior. Information behavior involves the interrelations between genes and the environment. The

challenge for information scientists is to understand how instinct and environment interact to produce information behavior.

Instinctive Dimensions

We initially asked how information behavior is shaped by instinctive versus environmental factors. Instinctive dimensions form the core of information behavior with instinctive mechanisms operating at a subconscious level. Information behavior is instinctive to humans to the level that they do not generally think about it; it develops during childhood with the development of other cognitive abilities, and is not explicitly taught to children.

Humans' instinctively know how to go about putting together a series of subprocesses such as information finding, organizing and using. They realize that they need to resolve an information problem by seeking out an information artifact such as the Web, or even talking with another person. A person may realize that they have a set of data that needs to be organized, collated and categorized. The results are then used to complete a task. This process that moves from gathering, to organizing and using, is instinctive.

Environmental Dimensions

Information behavior emerges instinctively in humans, but is further then shaped by environmental and cultural dimensions. How humans find, organize or even use information, and the artifacts they use to support their information behaviors are shaped by many factors. For example, a child in a developing country may little formal classroom education, but has information finding, organizing and using abilities that are shaped by language, cultural and political processes. If the child cannot read (is illiterate), has no access the artifacts such as libraries or the Web, and has little food – these attributes will shape the way the child can use their information behavior.

Mapping and understanding more about how these environmental dimensions shape information behavior and people's abilities to use their information behaviors is an interesting area of further research. These dimensions are quite complex and inter-related with many cultural aspects. Such research would also need to use both psychological and sociological research to most fully develop a theoretical framework for environmental factors and how they interact with the instinctive dimension.

Summary

This chapter brings our understanding of information behavior into line with the general thinking on behavior and instinct in the behavioral sciences and provides a basis for further research into the instinctive and environmental aspects of

information behavior. It also expands the intellectual and research horizons for information behaviorists who have largely focused on limited modeling of contemporary information behavior and information seeking as problem-solving or sense-making (Case, 2007; Spink & Cole, 2005). Limited focus has framed information behavior as both affected by environmental and instinctive factors.

We can now move forward with an important understanding in hand – *information behavior has an instinctive basis but is also affected by environmental and developmental factors*. This view is grounded in the latest thinking on human behavior and is an important element in our theoretical framework for information behavior. The next chapter explores in more detail information behavior as a human cognitive and social behavior.

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