

Review

Lucas MacKenzie

Mark S. Blumberg. *Basic Instinct: The Genesis of Behavior*. Thunder's Mouth Press, New York, 2005, and

Michael Tomasello. *Constructing a Language: A Usage-Based Theory of Language Acquisition*. Harvard University Press, Cambridge, Mass., 2003.

Introduction

Blumberg is a neuroscientist (researcher in how the brain and nervous system work) and Tomasello is a cognitive psychologist (researcher in the human psychology of consciousness). They each, in different ways, attack and expose the fallacies in the widespread belief that genes are the main thing that determine behavior in animals and people. Genes are part of our DNA, long molecules in each of our cells – a characteristic of all living things from bacteria to plants to animals, including humans.

The primary role of genes in the determination of complex behaviors is an assumption subscribed to by most scientists in the fields of psychology, sociology, biology, etc. Scientists who maintain that behavior is predominantly determined by the genes and that therefore infants are born with these behaviors, or at least are born with tendencies toward these behaviors that unfold as they get older, are called “nativists,” from the word “innate,” meaning inborn or present at birth. The better known nativists include E. O. Wilson (insect scientist at Harvard), Steven Pinker (psychologist at Harvard), and Noam Chomsky (linguist at MIT).

The nativists further maintain that complex human behaviors are a result of natural selection – shown by Charles Darwin in the 1800s to be the main mechanism of biological evolution.

Instinct

Blumberg's book focuses on the role of instinct in human and animal behaviors. Instinct is generally taken to be one or another of the following: innate, genetically determined, "hardwired," universal to a species, not learned, and adapted during evolution of the species. Examples of behaviors said to be instinctive include lions hunting antelope, birds using calls that are peculiar to their species, moose fearing wolves, human babies preferring female faces, monkeys being aggressive toward one another, and so on.

Blumberg shows with scores of examples, however, that complex behaviors, instead of being instinctive, emerge in the process of development, from conception to death, of each individual member of a species.

Nativists often say that the universal nature of a particular behavior throughout a species proves that the behavior must be mainly determined by the genes, since genes are the only thing they can think of that are shared by all members of the species. It is true that genes and natural selection play a role, by granting animals the capability of learning and carrying out certain behaviors, but Blumberg shows that genes are not the only thing that members of a species share. Many pre- and postnatal *experiences* are also shared by all members of a species in their natural settings. These experiences help create similar behaviors within that species, just as surely as the nativists claim that genes do. These species-wide similar experiences often take a tremendous amount of work to discover, through painstaking, lengthy observations and experimentations. It is much easier to sit in one's office inventing plausible stories about how the genes arose through natural selection. The failure to look for early learning processes, before and after birth, leaves one with the illusion that the behaviors "must" be genetically inherited.

A few of Blumberg's many examples include the following:

- It is an observed fact that newly hatched ducklings of one species respond to their mothers' calls and do not respond to those of related species of ducks. But surgical removal of their vocal cords while still in the egg, which deprives them of their own sounds, also prevents them from recognizing their mothers'

calls after hatching. So it is pre-hatching *experience* with the genetically influenced species sounds (their own) that lead to post-hatching recognition of their mothers' calls, and not genetically determined instinct. Innate (present at birth) does not necessarily mean genetically inherited. Pre-birth experiences can also account for innate behaviors.

- Cowbirds raised with foster parents of another species learn the songs of their foster parents and not of their own species.
- Moose fear wolves in Alaska, where they have lived together for thousands of years. But in lower North America the wolf population has been severely reduced. When wolves are reintroduced into places like Yellowstone, the moose don't exhibit fear at first, since they have learned to live for generations without being attacked. They have to relearn the fear, so it clearly isn't genetically determined.
- Tree-dwelling black rats in Israel systematically strip scales off pine cones to get at the nutritious core. But when they are taken away from their cone-stripping mothers and put in the foster care of non-cone-stripping mothers, they grow up without developing that skill. Cone-stripping isn't inherited genetically, but rather is inherited *culturally*, i.e., through social transmission of the skill from generation to generation.
- Nativists conclude that the preference of 3-month-old human infants for female over male faces must be present at birth and therefore must be genetically determined and shaped by evolution. They ignore the experience accumulated by the infants in their first 3 months, during which time most infants spend most of their time being cared for by females. However, scientists who seek out father-raised infants find that such infants preferentially seek out male faces, demonstrating that the preference comes

from postnatal experience and is neither genetically determined nor shaped by evolution.

The book contains many other equally revealing examples, and exposes the nativists as lazy, dishonest, self-delusional, or dull-witted. In our final section we touch on what forces might push them to militantly defend their clearly unscientific and false conclusions.

Language

What Blumberg does for instinct, Tomasello does for language and the way infants and children acquire the ability to understand and speak a language. The leading nativist concept concerning language acquisition was developed by Noam Chomsky, who has been called the Einstein of linguistics. This is the sort of hyperbole to which Mark Twain was referring with his famous quip that reports of his death had been exaggerated. Einstein, as it turns out, was correct about relativity theory, as thousands of experiments have demonstrated.

Published in the 1950s and 1960s, Chomsky's theory claims that since infants are born without knowing any language but somehow they learn to understand and speak in the first few years of life, there is no way that they could get from here (total ignorance) to there (accomplished users of the language) unless they started with some characteristic that gave them a head start. While this may be true, Chomsky claims that this characteristic is an innate universal human grammar – the rules by which a language is organized. In more recent times, Steven Pinker has written about the language instinct, further developing Chomsky's theory, and indeed there is an entire Chomskian school of linguistics.

While Pinker has used experiments, Chomskians in general are weak in the use of experiments to supplement passive observations. Experiments are at the core of modern linguistic theorizing. Tomasello is a leading experimenter in this field, and his book describes a large number of his experiments, and those of many other modern linguists, with children of various ages from infancy to the school years. Rather than guessing

what exactly it is that children understand about what they are hearing or saying, Tomasello and others do detailed experiments designed to extract exactly what is in a child's mind at various ages, as they first learn to understand and later to produce speech themselves.

The essence of his approach is to recognize that the acquisition of language by children around the world is imbedded in all the other aspects of social interaction with adults and other children, and imbedded in the entire cultural surroundings in which the learning takes place. Language acquisition by children does not take place in a learning vacuum.

In particular, he notes that the important steps are first that the infant learns to share *attention* with an adult. For example, the infant's father holds up a ball and tries to say something to the infant about it, and the infant then also looks at the ball. Second, the infant catches on to the fact that her father has some *intention* in trying to say something about the ball, i.e., her father is deliberately trying to communicate something to her, so the infant becomes even more attentive. And third, the relevant *cultural* form that both the father and the infant share includes the particular language spoken by the father, and cultural transmission from generation to generation begins.

In this way, Tomasello says that children can indeed get there from here, and that the nativists who claim that the child cannot do so without an innate grammar are simply substituting their ignorance for the hard work of detailed observation and experimentation. Furthermore Tomasello shows that the very concept of grammar is an adult way of analyzing how language is structured, after the fact; i.e., it is derived from examining how the language is used in practice. Grammar is not at all part of the child's recognition of what she/he is doing when she/he is speaking. That's one reason why it is so difficult for children to learn grammar in school.

Incidentally, like a number of other modern authors, Tomasello strictly uses the feminine "her" when referring to a child, no doubt to combat the common default use of "he" to stand for all children or humans.

Furthermore, while Chomsky claims that grammar is universal throughout the world, Tomasello shows with many examples the major differences in grammatical structures between different languages around the world. These differences between

languages that arose independently of each other are random and accidental and demonstrate that there can be nothing innate and common to the entire species of humans about grammar.

In fact, it is difficult to see how DNA could possibly contain grammar, since all DNA does is constitute a blueprint for the cells to refer to as proteins are constructed out of strung-together amino acids. Grammar is as far removed from DNA as a pickup truck is from an iron atom. But that sort of issue is regarded by nativists as a question not worth asking – or more accurately perhaps, worth not asking, as we discuss below.

In order to head off a common misunderstanding fostered by nativists – dishonestly, we might add (see the paragraph after next) – we hasten to add that genes/DNA are definitely involved in the development of language, just as iron is involved in a pickup truck. Genes are involved in the emergence of relatively large and complex human brains with the *capability* for acquiring language, just as iron is involved in giving, for example, the stiffness and tensile strength necessary to hold a pickup truck together. More particularly, genes are involved in producing two areas in the brain, one of which becomes specialized for the receipt and comprehension of written or spoken language (called Wernicke's area) and another nearby area that becomes specialized for the production of written or spoken language (called Broca's area), both of which are on the left side of the brain in most, but not all, people. In fact, people who suffer strokes in one or the other of these two areas have trouble understanding language or formulating thoughts to speak.

Genes are *not*, however, involved at a higher level, as nativists claim, in the very structure of thousands of different grammars that have emerged and developed randomly and independently in thousands of languages around the world – any more than iron is involved in the shape of fenders, the size of truck beds or the horsepower of engines.

As to dishonesty on the part of nativists, see, for example, Steven Pinker's book *The Blank Slate*, the entire theme of which implicitly mischaracterizes his opponents' stance as one of denying *any* role to genes in human intellectual development – a ludicrous charge against geneticists, among others, whose entire careers are centered on the role of genes in development.

Basically Tomasello's theory is a materialist theory, based on what the child's environment is like and the way that the child acts within that environment. Chomsky's theory, on the other hand, is an idealist theory that claims that the content of the child's language is derived from the innate idea of grammar. Materialist philosophy is at the heart of Marxist theory, while idealism is at the heart of capitalist theory, though Tomasello says (in a personal communication) that he does not necessarily consider himself a Marxist, since Marxism covers so many different things. He is, however, a follower of Lev Vygotsky, who was a pioneering Soviet Marxist linguist in the early 1900s. The better scientists are inevitably materialists.

Tomasello's book is not as easy to read as Blumberg's, as it is not written so much for the lay person. But both of them are well worth reading, even if Tomasello's book requires a much greater degree of persistence.

Nativists and their keepers

Nativists generally arrive at their belief that complex behaviors are "hardwired" in the genes, without the necessity of experience and learning, primarily by jumping to conclusions and by preferring prejudice to demands for evidence. If it is false that complex behaviors are "hardwired" in the genes as part of "human nature," and Blumberg and Tomasello are among many researchers who demonstrate that it *is* false, the question arises, How can so many scientists (we venture to guess the great majority) be so misled?

The fundamental answer lies in the existence of tremendous social pressures on scientists to conform to a nativist outlook if they want to be able to make a living and enjoy some job security. The main source of these pressures is the capitalist ruling class (the big bosses and owners of industry, banks, mines, farms, etc.). Through their ownership of the vast majority of the wealth in the U.S., the capitalists are able to control the main forms of scientific research by hand-picking university administrators who in turn control the job security and promotions of college professors. The capitalists also exert pressure on scientists through their control over the main funding of research grants

and publishing outlets, and of the mass media, which often give prominent publicity to books and articles that adhere to the capitalists' outlook.

The two sides of the debate between the genes-do-it-all advocates, on the one hand, and those who tenaciously seek to find the experiences and active learning processes through which complex human and animal behaviors arise, on the other hand, are not just two contending ideas struggling with each other on a level playing field to prevail. The ground is decidedly sloped, with the genes-do-it-all advocates on the high ground.

And as if to provide a piece of evidence for our contention, today the Bush administration sent word to the U.S. Geological Survey – a government agency for research on the earth, oceans, and atmosphere – that the scientists from now on will have to clear with the administration everything they say to the public. The agency scientists recognize the aim of this censorship: to prevent their scientific discoveries from getting out to the public when they contradict the administration's contention that capitalism has nothing to do with things like global warming, or that global warming doesn't even exist.

Yet despite all this pressure to the contrary, there are still a significant number of scientists, like Blumberg and Tomasello, who are more interested in seeking the truth about, among other things, human behavior, and who manage to get by even though they constitute a minority in their respective fields. However, even the honest scientists are made useful to the capitalists, since they help to conceal the general thrust of behind-the-scenes capitalist control over science.

One question that neither Blumberg nor Tomasello asks is, Why do the world's capitalist ruling classes care so much about the outcome of this debate over whether human behavior is mainly genetically-determined instinct or mainly learned through cultural transmission? The answer lies in the capitalists' need to preserve their political and economic power over the vast majority of us, namely the working class. They are fearful that when the working class learns that complex behaviors like racism, sexism, exploitation and genocide are caused by the selfish and competitive nature of the capitalist system and not by any instinctive human nature, it will help clear the way for workers to rise up in fury as one and demolish the ruling class, along with its infinitely

destructive power over us. This fear by the ruling class is neither instinctive nor genetically inherited, but rather is *culturally* inherited . . . and entirely valid.