



Dædalus

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Summer 2009

on being
human

Introduction 5

Hilary Rose

& Steven Rose

The changing face of human nature 7

Michael S. Gazzaniga

Humans: the party animal 21

Robert B. Pippin

Natural & normative 35

Ian Hacking

Humans, aliens & autism 44

Charles Darwin

excerpt from *The Descent of Man* 60

Harriet Ritvo

Humans & humanists 68

Geoffrey Galt Harpham

The science of language & human
self-understanding 79

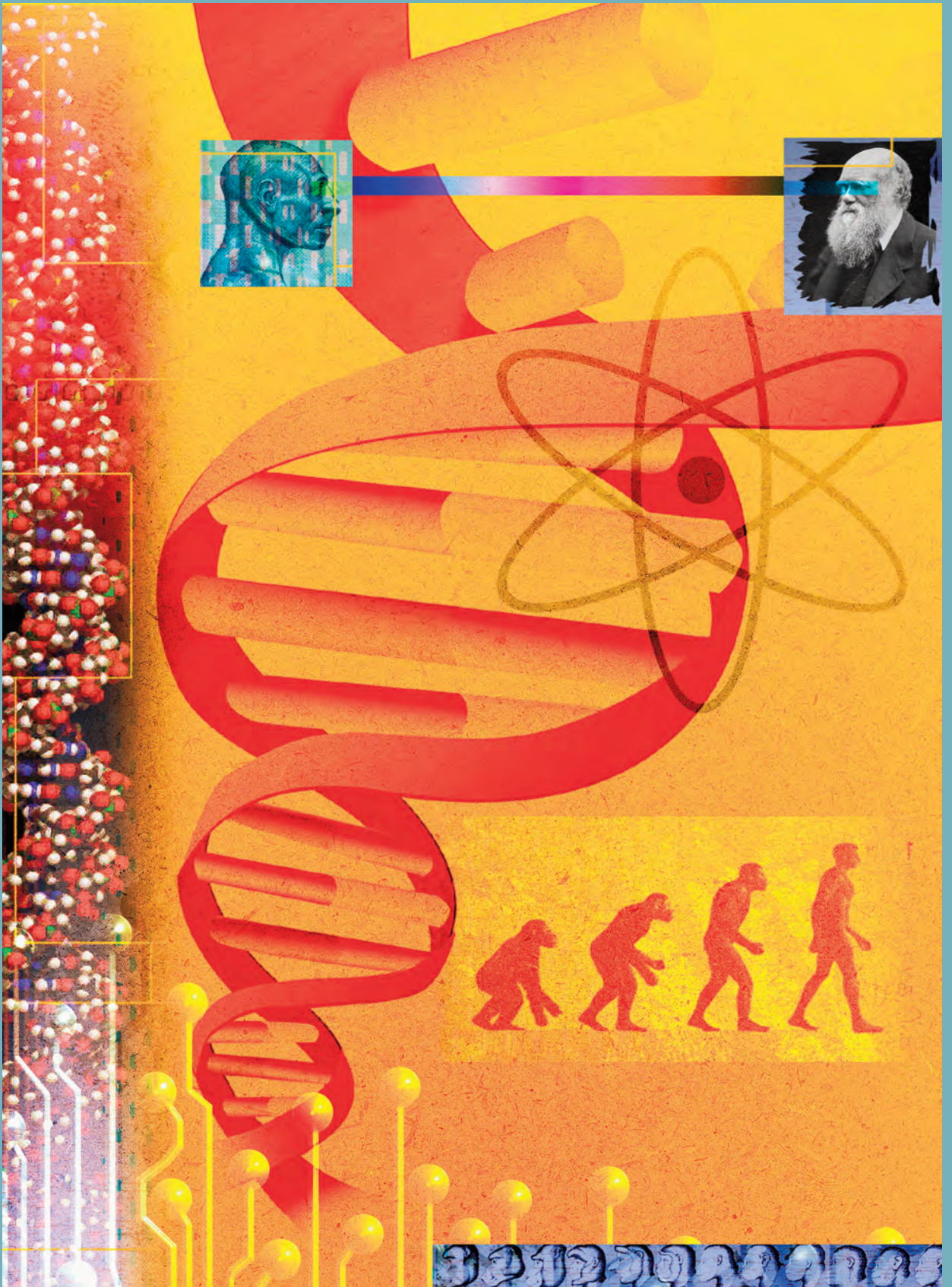
Kwame Anthony Appiah

Experimental moral psychology 92

poetry

Rita Dove

The Countess Shares Confidences
over *Karneval* Chocolate 103





Inside front cover: A digital composite of DNA, evolution, and Darwin.
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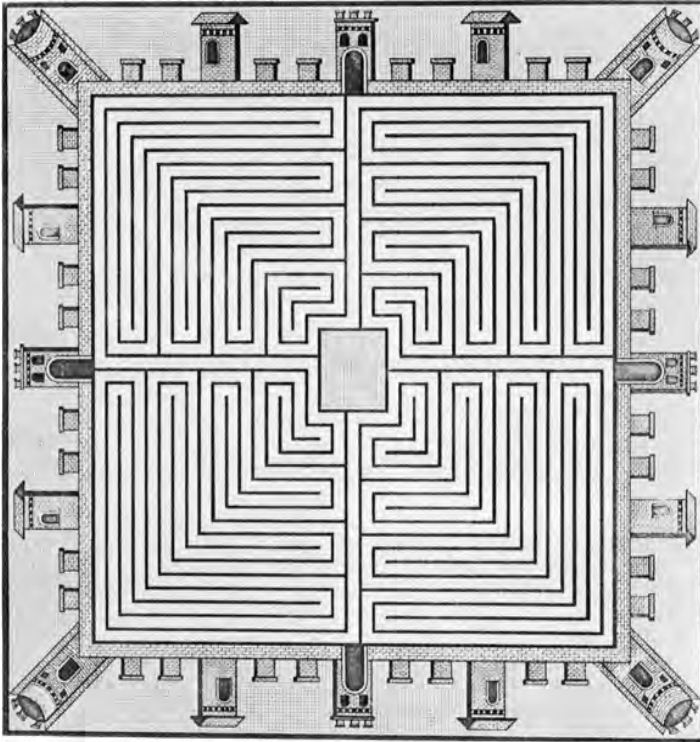
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Dædalus

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Nineteenth-century depiction of a Roman mosaic labyrinth, now lost, found in Villa di Diomede, Pompeii

Dædalus was founded in 1955 and established as a quarterly in 1958. The journal's namesake was renowned in ancient Greece as an inventor, scientist, and unriddler of riddles. Its emblem, a maze seen from above, symbolizes the aspiration of its founders to "lift each of us above his cell in the labyrinth of learning in order that he may see the entire structure as if from above, where each separate part loses its comfortable separateness."

The American Academy of Arts & Sciences, like its journal, brings together distinguished individuals from every field of human endeavor. It was chartered in 1780 as a forum "to cultivate every art and science which may tend to advance the interest, honour, dignity, and happiness of a free, independent, and virtuous people." Now in its third century, the Academy, with its nearly five thousand elected members, continues to provide intellectual leadership to meet the critical challenges facing our world.

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Introduction

The essays in this volume examine some of the ways that we, in the first decade of the twenty-first century, understand what it means to be human. It is a question that involves us, necessarily, in the traditional concerns of world religions and of the disciplines we call “the humanities.” Increasingly, it is also a driving question behind important scientific research.

Human distinctness has always been an implicit subject of scientific inquiry; today’s scientists address the question explicitly. With an extraordinary range of conceptual instruments, technologies, and methodologies, they investigate issues that Socrates once examined in philosophical dialogue, Shakespeare in dramatic verse, and Michelangelo in paint and marble. Geneticists, neuroscientists, and psychologists now join philosophers, poets, and artists in seeking a more adequate description of humanness. The results of this quest can be both exhilarating and dizzying as we strive to integrate multiple perspectives.

In 2006, the National Humanities Center launched a three-year study of how advances in science are enlarging the terms through which human life is discussed, and continuing to disturb traditional understandings of what it means to be human. The essays gathered here constitute a sampling of the scholarship inspired by the Center’s effort. This issue also marks the Center’s thirtieth anniversary.

One of the world’s leading institutes for advanced research in the humanities, the National Humanities Center was founded by the American Academy of Arts and Sciences in 1978. In the late 1960s, two distinguished literary scholars, Meyer Abrams of Cornell and Morton Bloomfield of Harvard, and philosopher Gregory Vlastos of Princeton spent a year together at the Center for Advanced Study in the Behavioral Sciences, where they found themselves “three humanists in a sea of social scientists.” They proposed the creation of a similar institution for the humanities, to encourage excellence in scholarship and to ensure the continuing strength of the liberal arts in American life.

John Voss, then Executive Officer of the American Academy, recognized the importance of the idea and invited literary scholar Steven Marcus of Columbia University to serve as project director. Beginning with a small grant of \$2,500 from the Academy’s own research funds, Voss and Marcus organized a planning committee that included sociologist Daniel Bell, philosophers Frederick Burkhardt and Charles Frankel, classicist and president of Princeton University Robert Goheen, and literary critic Lionel Trilling, among others. Initial grants from the Rockefeller, Ford, Carnegie, and Andrew W. Mellon Foundations, as well as from the National Endowment for the Humanities, enabled the planning committee to develop the goals of the Center and create its new home. Groundbreaking for the Center – in Research Triangle Park, North Car-

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olina – took place in fall 1976, and the first group of scholars arrived in 1978. Thirty years later, the Center thrives as a home for national programs, research, and publications on the humanities.

The Academy is proud of its role as principal catalyst in the establishment of the National Humanities Center; our representatives continue to serve on its board, and several of our directors take an active role in its activities. We are pleased to celebrate its anniversary with this issue of *Dædalus*.

Hilary Rose & Steven Rose

The changing face of human nature

In 1992, at the start of the surprisingly short decade's march toward the sequencing of the human genome, one of its key initiators, geneticist Walter Gilbert, claimed that "one will be able to pull a CD out of one's pocket and say, 'Here is a human being; it's me.'"¹ Gilbert's brilliant piece of theater was echoed by other leading molecular biologists in their campaign to win public support and enthusiasm for the Human Genome Project (HGP). It seemed not to matter how often the biologists employed the same theatrical device, whether in California or at London's Institute for Contemporary Arts: holding up a CD to a spellbound audience and saying, "this is human life itself" was a brilliantly chosen trope. The CD, so familiar to the audience of a high-tech society, was recruited to symbolize the merger of molecularization and digitalization heralded by the developing HGP. At once a science and a technology, this technoscience of human genomics simultaneously offered a new definition of human nature and new, promethean powers to repair and even redesign that nature.

DNA and genomics dominated the media throughout the 1990s, with its

deterministic gene talk and genes for everything from the most severe diseases to compulsive shopping and homelessness. While the CD played its part in the popularization of the HGP, it was the representation of DNA's double helix that came to be the dominant signifier of life itself. More subversively, numbers of graphic artists saw the potential surveillance powers of genomics, striking a more critical note than the CDs or the double helix by, instead, showing people with bar-coded foreheads. Here human nature was reduced to a mere commodity with no agency, to be read at the checkout counter.

The explosive growth of genomics, with its relatively subdued cultural debate, was not alone. Another powerful and expanding field, namely, neurobiology, led to the 1990s being nominated by the National Institutes of Health as the Decade of the Brain. (Europe was slower; its Brain Decade started about five years later.) By 2009, on both sides of the pond, neuroscientists claimed that advances in brain science had been so substantial that it had become the Decade of the Mind. Just as the double helix became the symbol of the HGP, so have the vivid, false-color skull-shaped images locating the "sites" of brain activity come to symbolize the new neuro-

science. These sites include not only well-understood regions within the brain, such as those associated with vision and speech, but also new ones, like regions thought to be associated with London taxi-drivers' knowledge of the London streets,² for example, or with "romantic love."³ Londoners were delighted to learn the location of their cabbies' "knowledge," persuaded by the high-tech images one could see in any newspaper. For those humanists who understand the concept of romantic love as originating with the medieval troubadours, the claim by leading imager Semir Zeki that this is a universal brain-located human phenomenon, unaffected by culture or history, is distinctly challenging.

Contemporary genomics and neuroscience not only claim to explain how the brain and, hence, the mind work, but also to put psychiatry on a sound scientific basis. While the drivers for the scientists may primarily be curiosity, as the conditions for exploring these latest scientific frontiers ripen, the practical implications, both for medicine and, more disturbingly, as tools for controlling and manipulating the mind, are profound. Patients' accounts of their experience of mental illness will become less or even unnecessary as brain scans and gene scans are taken as speaking more accurately about the underlying causes. Once again the human agent disappears and human nature becomes digitalized. In a biotechnological age, where major funding for genomics and neuroscience comes from the biotech and pharmaceutical industries as well as from venture capitalism, and universities move to protect their intellectual property with patents, disinterested curiosity increasingly belongs to a distant age of science.⁴ However, our concern here is not so much with these commercial implica-

tions, but with the claims that these technosciences now make: that they can provide a materialist account of human nature itself, whether body and brain or mind and consciousness.

In this, genomics and neuroscience are building on a materialist tradition that runs back to antiquity, but that gained increasing authority from the birth of modern science in the seventeenth century. Previous materialist claims by philosophers, such as Hume and la Mettrie, could not make the power move of offering an alternative theory; only the cultural authority of the growing natural sciences provided this. It isn't possible to understand and interpret the construction of human nature by present-day genomics and neuroscience without locating them, however sketchily, historically within this materialist tradition.

By the late eighteenth century, "animal electricity," mesmerism, and phrenology were attempting to locate mental attributes, and indeed life itself, within the explanatory realm of the natural sciences. The early-nineteenth-century materialist accounts of nature and human nature produced by natural philosophers (that is, scientists) found a receptive audience among intellectuals. High up in the Yorkshire Dales, the Brontë sisters (Bramwell was probably in the pub) would walk the several miles from the Haworth parsonage down to Keighley, their nearest town, to listen to a lecture on phrenology, the hottest materialist account of brain and mind. In the vivid descriptions of the head shapes of Mr. Rochester and Jane Eyre we find the influence of the new phrenology in the pen of Charlotte Brontë.⁵ In distant Cornwall, the young chemist Humphry Davy and the poet Samuel Coleridge formed a lifelong friendship, and Davy's speculations about electricity as a life

force lay behind Mary Shelley's unforgettable creation of Frankenstein's monster. Today, novelist Ian McEwan's *Enduring Love* embraces evolutionary psychology; A. S. Byatt's *Babel Tower*, genetics and neuroscience. Thus the humanities of past and present gesture toward the new materialist accounts of human nature.⁶

By the mid-nineteenth century, a fully reductive materialism, or to use philosopher Daniel Dennett's term, a "greedy reductionism,"⁷ had taken a firm hold within the sciences. In 1845, four rising German and French physiologists – von Helmholtz, Ludwig, du Bois-Reymond, and Brücke – swore a mutual oath to prove that all bodily processes could be accounted for in physical and chemical terms. The Dutch physiologist Jacob Moleschott put the position most strongly, claiming that "the brain secretes thought like the kidney secretes urine," while "genius is a matter of phosphorus."⁸ For the zoologist Thomas Huxley, mind was an epiphenomenon, like "the whistle to the steam train." But it was above all Charles Darwin who provided the intellectual and empirical bedrock for a materialist account of human origins and human nature. *On the Origin of Species*, published just 150 years ago, both precipitated and symbolized a transformation in Western society's understanding of human origins. As the geneticist Theodosius Dobzhansky confidently asserted, "[N]othing in biology makes sense except in the light of evolution."⁹ Certainly, biologists had been challenging the notion of the fixity of species for a good three quarters of a century before *Origin*, but it was the Darwinian mechanism that proved decisive. And indeed, in the intervening century-and-a-half, biologists have continued building on Darwin in insisting on a fully material-

ist account of nature and human nature – on what it is to be human, from our basic physiology to our powers of cognition, our emotions, and our beliefs.¹⁰ The supernatural and, hence, religious belief became unnecessary to the explanation of human nature and mind.

Origin set out a theory of evolutionary change through natural and sexual selection, displacing the centrality of Judeo-Christian theology and the two-page creation story from the book of Genesis. No longer were "kinds" to be understood as having been created independently in the brief interlude between God's separating heaven and earth and then resting on the seventh day. Rather than having been intelligently designed, as the Rev. William Paley had famously insisted half a century previously, species had evolved from a single common origin and been transformed by selection operating on random variation over long periods of geological time. (Evolution, according to one outraged opponent, was "the law of higgledy-piggledy.") *Origin* stories about who we are and where we come from are central to the belief systems of human cultures, and Darwin's contemporaries were quick to recognize that the European commitment to the Judeo-Christian origin story, which insisted on the immutability of God-created species, was under challenge from a materialist and evidence-based narrative of speciation through variation over time and place. The persistence of belief in creationism/intelligent design in the United States, still the research superpower, remains an extraordinary anomaly. While adhering to the late Stephen J. Gould's assertion that faith and science are non-overlapping magisteria, the intensity of such beliefs among U.S. evangelical Protestants challenges the comfortable assumption that secular-

ism would accompany the deepening of modernity.

Although Darwinian evolution rejected the Linnaean view of the Great Chain of Being, in which all living organisms were ranged in a God-ordained hierarchy, for Darwin evolution was still progressive, with lower organisms giving way to higher ones. Darwin represented this as a many-branched tree of life, with *Homo sapiens* at the highest point. (Today's Darwinists prefer the metaphor of the bush, with all currently extant species equally "evolved.") In *Origin*, Darwin only hints enigmatically at the relevance of his theory to humans. Not until *The Descent of Man, and Selection in Relation to Sex*, published eleven years later, does he finally affirm humanity's ape-like origins, and locate human differences – between races and sexes – within an evolutionary framework. Unlike some of his contemporaries, such as Huxley, Darwin embraced a monogenic view of the origin of the human species. Certainly *Descent* divides humanity into many distinct races, describing their differences in skin, eye, and hair color in some detail. But Darwin nonetheless insisted that there was but a single human origin, the various human races having separated from this common stock over evolutionary time. This difference from the prevailing polygenic view, in which the races constituted separate species with distinct origins, was a major issue for biological theory albeit minor in social practice.

Darwin, like the rest of his circle, shared the confidence of Victorian gentlemen at the height of Britain's imperial power, of a racial hierarchy ranging from the less evolved, degraded savages of Tierra del Fuego to the higher European civilization, not least that of Down House in the garden of England. Huxley

went further, arguing that the evolutionarily inferior black races would in due course be out-evolved and defeated by the whites. Evolution is an ongoing process so far as Darwin is concerned, without endpoint. Indeed, as a nineteenth-century progressive he speculates on the wonderful civilization of the future as the species evolves: "And as natural selection works solely by and for the good of each being, all corporeal and mental endowments will tend to progress towards perfection."¹¹ More negatively, his concept of variation within the species is trapped within a very nineteenth-century understanding of fixed social hierarchies. Thus, despite his hatred of slavery, Darwin's concept of race essentializes difference, so that variation within the species slides into hierarchy between the races.

Sexual selection is almost as central to Darwinian evolution as is natural selection, because it explains both the differences between the sexes within a single species and some of life's extreme and otherwise apparently non-adaptive features, such as the glories of the peacock's tail. Sexual selection accounts for the fact that males and females of the same species often differ in shape and size. Males compete for females; they may fight like stags, or display like peacocks. Females then choose the strongest or most beautiful male.¹² This serves to enhance the male characteristics that females find most attractive. Like his view of race, Darwin's view of the differences between the sexes was entirely conventional. Thus, he states, in humans the result of sexual selection is for men to be "more courageous, pugnacious and energetic than woman ... [with] ... a more inventive genius. His brain is absolutely larger ... the formation of her skull is said to be intermediate between the child and the

man.”¹³ Nineteenth-century biologists’ differentiation between the sexes was crucial in providing a biological basis for the superiority of the male and the explanation for the near invisibility of women (along with the common people of both genders). While female choice explains sexual selection, it is the males who evolve in order to meet the chosen criteria of strength and power.

By the mid-nineteenth century the universalism of the Enlightenment began to show its cracks – at least to feminists and abolitionists. The stirring calls for universal equality made throughout the revolutionary ferment of the preceding century, from Thomas Paine’s *Rights of Man* to the Declaration of Independence, were seen by pioneering feminists as excluding the claims of women. At an 1851 women’s rights convention in Akron, Ohio, the freed slave Sojourner Truth brought together the struggle against slavery and gender with her “Ain’t I a woman?” challenge. Darwin’s androcentricity was not missed by his contemporary feminist intellectuals; within five years of the appearance of *Descent* in the United States, Antoinette Blackwell Brown¹⁴ had published her critique. But it was not until a century later that sufficient numbers of women had entered the natural sciences, and so were inside rather than outside the production system of science, that feminist biologists returned to the critique much better armed. Ruth Hubbard bluntly asked of Darwinian theory, “Have only Men evolved?”¹⁵; ethologist Sarah Blaffer Hrdy pushed this argument further in her 1981 book *The Woman That Never Evolved*.¹⁶

Darwin did more than locate humans within an anatomical and physiological evolutionary continuity.¹⁷ He anchored

the human mind firmly into human biology and laid the foundation for an evolutionary psychology; human emotions and their expressions were for him evolutionary descendents of those of their ape-like ancestors. However, from Darwin’s day until recently, neuroscience was unable to cash out these promissory claims. It could, as in the view of the early-twentieth-century physiologist Charles Sherrington, trace the great neural pathways up from the periphery to the brain, and out again, enabling the organism to act on the world; but although what went on inside the three-pound mass of tissue inside the skull could be studied chemically and physiologically, science could not explain mental processes.

Over the past three decades, genomics and neuroscience have been transformed in scale, from small sciences to full-scale technosciences. While genomics’ goal is to read the book of life in the genes, neuroscience offers to solve the mind-brain problem. Both also share medico-technological ambitions: to eliminate disease, treat mental and neurological distress and disorder, and enhance technologies of social control. The scale of these new enterprises is prodigious. The scope and scale of genomics is familiar, but neuroscience begins to rival it. More than thirty thousand neuroscientists attend the annual meeting of the American Society for Neuroscience, including a large international contingent. Conferences, though few on this scale, proliferate in the rich researching nations. Add to the cost of the many conferences, those of salaries, laboratories, and the hugely expensive technologies and it becomes self-evident that the neurosciences, with their powerful, empirically rich knowledges, are funded on a totally different scale from the academic humanities and so-

cial sciences, with costs running into hundreds of millions of dollars annually.

This huge growth of investment in neuroscience from governments, including their military establishments, private foundations, and the pharmaceutical industry has not yet resulted in anything like a generally accepted theory of how brains/minds may work; rather, it has endorsed a multitude of new reductive insights and approaches, of which we single out four: two theoretical and two experimental. Theoretically, sociobiology and, later, evolutionary psychology claimed a closure of the Darwinian evolutionary program by integrating human social behavior within it. The theoreticians of informatics have sought in cognitive neuroscience to locate in the computer a mechanical metaphor for brain/mind processes that transcends the mere hand-waving of the past. The experimental advances in genetics and imaging have enabled the biomedical gaze to penetrate ever deeper into the brain to levels hitherto inconceivable. Thus if phrenology was a premature materialism, and Moleschott's claim was more of a provocation than a research program, the last years of the twentieth century, those of the Decade of the Brain and the current Decade of the Mind, have witnessed a resurgent confidence among neuroscientists. Finally they have in their hands the keys with which to open the mind to natural science's objectivity.

That the human mind and human nature have been shaped by evolutionary pressures is of course not in question. Humans are long-lived social animals whose offspring are born neotenus, requiring several years of caregiving before they can live independently. These parameters must play a central part in the formation of the human mind. Liv-

ing in groups requires learning social skills – that is, adjusting an individual's ways of being and thinking to the needs of others – a theme currently being actively explored by a variety of researchers. A new field, “social neuroscience,” is emerging, stimulated by neurophysiologists' discovery of so-called mirror neurons, which are active either when an individual performs a particular act or watches another doing the same – allegedly the neural base for empathy. Empathy (or at least mirror neurons) is present in humans' nearest evolutionary neighbors. The social nature of human existence also must have driven the evolution of mind and consciousness. As a result, evolution has ceased to be seen as an entirely biological process, and many now speak of the emergence of modern humans as a co-evolutionary process, involving both biology and culture.¹⁸ Such an argument insists on the inseparability of human biology from human culture, not as a matter of arbitrary partitioning – such-and-such a percent genes and such-and-such a percent environment – but of the continual interplay between both during development. Humans are biosocial beings.

However, as with eighteenth-century phrenology, the possibilities of an empirically based evolutionary psychology have been sullied by a group of self-proclaimed evolutionary psychologists, the more recent avatars of 1970s sociobiology, who have hijacked these possibilities. Evolutionary psychology bases itself not just on the assumption that human nature is an evolved property, but on the profoundly un-Darwinian assertion that human nature (by contrast with the rest of nature) was fixed in the Pleistocene, and there has not been enough evolutionary time for human nature to change subsequently. Thus, it is not just that the demands

of social living may have impacted the evolution of morality, but that humanity is, according to the evolutionary psychologist Marc Hauser, endowed with a universal set of moral principles, independent of culture or social context.¹⁹ Also prominent among these apparently fixed human characteristics is the expression of so-called basic emotions,²⁰ racial preferences, and gender relations. Male preferences for mating with younger women of defined body shape, and female for richer, older, more powerful males, do little other than repeat in contemporary language Darwin's own assertions in *Descent*. Evolutionary psychology has been subject to severe criticism. Scholars across disciplines, from the humanities and the social and life sciences, have challenged its theoretical base and empirical adequacy.²¹

To evolutionary psychologists, the human mind is "massively modular," consisting of a large number of semi-autonomous, innate components. (Leda Cosmides and John Tooby liken it to a swiss army knife.²²) However, not only is this claim disputed by those who argue that the mind's specificities are formed during development through an infant's interaction with a social environment,²³ but brain imaging studies also find no evidence for such modularity. The complexity of the brain, with its hundred billion nerve cells, and hundred trillion internal connections, still defies comprehension. Twenty-two thousand genes cannot begin to specify in any more than generalities the pattern of these connections, which are shaped by the activities of the developing child.

"Mapping the brain" is conceptually and technically orders of magnitude harder a task than sequencing the genome, which is a linear and stable sequence; the brain is a dynamic structure organized in three dimensions of

space and one of time. However, the power of informatics is making possible a human brain project modeled on the Human Genome Project, though more informally organized. The idea is to produce a brain-gene map, in which all of the genes expressed in the brain are localized, and from which the mind can be divined. How such a map may change our concept of how the brain works is, however, another matter. Identifying sites or genes "for" particular brain processes or mental attributes ignores both the complexity and dynamism of the brain.

The advent of brain imaging, coupled with informatics, has technically driven such proposals. Placing subjects into a functional magnetic resonance imager (fMRI) and asking them to think of God or contemplate moral dilemmas identifies regions of the brain that show increased blood flow compared with controls. In such studies, blood flow is taken as a surrogate measure for neural activity. Another technique, magnetoencephalography, which measures the fluctuating transient magnetic fields around the head, offers millisecond-by-millisecond records of the brain's activity during such thought processes. Reciprocally, focusing an intense magnetic beam through the skull onto specific brain regions can influence thoughts and emotions. The mathematical manipulations that lead to the identification of these brain regions are disguised by the dramatic false-color representations that grace the plethora of popular books and articles describing the latest aspect of human nature to be thus given a specific site within the brain.²⁴

Taken together, these theoretical and investigative tools have opened the way to an increasingly assertive reductionism, in which the collapse of mind into

brain is unquestioned. This programmatic agenda has been articulated by the new neurophilosophers, notably Patricia and Paul Churchland, with their robust dismissal of mind language as mere folk psychology, to be replaced by the rigors of computational neuroscience,²⁵ a project committed to digitalization and shared by many leading neuroscientists. Consciousness theorist Gerald Edelman quotes Emily Dickinson's poem "The brain is wider than the sky" before asserting, "[Y]ou are your brain"²⁶; neurobiologist Eric Kandel comfortably agrees.²⁷ For Semir Zeki, the brain, rather than the mind, has "knowledge" and "acquires concepts."²⁸ Larry Young, extending Zeki's brain localization of romantic love and reprising Moleschott, argued in a recent *Nature* essay that human love (by analogy with the mating practices of voles) depends on a polymorphism in the *AVPR1A* gene.²⁹ Francis Crick is in robust Alice in Wonderland mode: "You're nothing but a bunch of neurons," he writes, before going on to speculate that "free will" is located in the anterior cingulate gyrus.³⁰ Crick's mischievous localization exemplifies the internal phrenology that brain imaging fosters: Franz Gall and Cesare Lombroso redux.

The neuroscientific reach into the mind has by now gone beyond even love and religious experience to approach what many consider humans' most enigmatic attribute, that of consciousness itself. Consciousness studies no longer inhabit a borderland between the speculations of theoretical physicists and new-age mysticians, but instead occupy ambitious young neuroscientists, who employ all the armory that brain imaging and computer simulation can provide (although the still proliferating books on mind and con-

sciousness are written mainly by their seniors). In the past, philosophers of mind pondered the problems of qualia and first- versus third-person experience, without feeling the need to relate them to findings from the neurosciences; this is no longer adequate. Philosophers (at least in the United States) are beginning to enter labs to observe scientists at work.³¹ But the confidence, even hubris of neuroscientists that their accounts of brain functioning will explain mind can indicate a failure by the neuroscientist to understand what the philosopher is saying, as in the case of the public debate between the neurochemist Jean-Pierre Changeux and the hermeneutic philosopher Paul Ricoeur.³²

Perhaps this helps explain why, despite the explosion of literature coming from the neurosciences, the most satisfying accounts of "mindedness" have come not from "basic" laboratory-based accounts, but from researchers who are also clinicians. At the birth of both modern physiology and sociology, there was an interesting debate between Claude Bernard and Auguste Comte. Bernard's project was to put medicine onto a proper scientific basis, arguing that the route to scientific understanding was through the study of normal physiological mechanisms. Comte, by contrast, insisted that one best approached the normal via the pathological – that is, through the clinic and patients' lived experiences of pain and suffering. The same seems true today. No neuroscientist studying memory has explored its vagaries more richly than the Soviet neuropsychologist Aleksandr Luria.³³ Oliver Sacks's *Awakenings* combined a study of the clinical effects of l-Dopa in patients with a sensitive understanding of their existential crisis in being wakened from the deep sleep of encephalitis. More recently, Pat Wall's

approach to understanding the neurophysiology of pain has been enriched by his listening to patients suffering intractable pain.³⁴ And it is perhaps not surprising that some of the most detailed attempts by a neuroscientist to come to terms with the complexities of human consciousness have come from Antonio Damasio, whose collaboration with the neurologist Hanna Damasio has required not just brain imaging, but listening to their patients suffering from disturbances of will and emotion.³⁵ He describes one patient with severe frontal brain injury who showed none of the anticipated cognitive effects; surprised, Damasio tells of how he came to realize that the negative effects were in Elliot's lack of emotional response despite having been through terrible trauma. In this meticulous storytelling – which also makes a philosophical point – Damasio says that he realized he was more distressed by Elliot's telling him of the traumatic events than was Elliot himself. It is the minded clinician who makes the diagnosis when purely cognitive tests cannot.

As this neurological example illustrates, imaging techniques are used increasingly for neurological diagnoses. But, more disturbingly, there has been an increasing enthusiasm for employing them to predict potential “antisocial” behaviors, from attention deficit hyperactivity disorders in children to criminality, psychopathy, and terrorism.³⁶ Coupled with the power of the new genomics, for biological determinists this opens the possibility of a eugenic social policy. Such thinking stretches back to Francis Galton's 1869 foundational text, *Hereditary Genius*, which saw genius as passing down through the male line. Galton's central concept

of eugenics crystallized a growing concern among the social and cultural elite with the quality of the national stock in late Victorian England. Darwinian theories provided a substantial ideological support to the nascent eugenics movement, itself given strength in the early twentieth century with the rediscovery of Mendel's genetics. The widespread enthusiasm for the new science of eugenics was shared by Euro-American intellectuals of almost all persuasions (barring Catholics) and professions, and ranged from conservatives through pro-birth-control feminists to Scandinavian social democrats, above all the Myrdals. For the Myrdals, eugenics was an essential plank in the formation of the welfare state, understood as a science-based social policy, necessary to maintain the collective well-being of the nation. The welfare state could not – would not – carry the burden of the unfit. Hereditarian biologists (with Cold Spring Harbor in the United States and University College London's Galton Laboratory as key locations) envisaged moral or mental deficiency as inherited and as weakening the national stock. The body of the nation thus took priority over the body of the individual. The chosen method of inhibiting the breeding of the “unfit” (above all, the learning disabled) varied from country to country, ranging from compulsory sterilization in the United States and Scandinavia to sexually segregated incarceration in the United Kingdom and Holland. Both social technologies served eugenics equally well.

Such comfortable and explicit acceptance of eugenics, at least by the cultural and political elite (though more dubiously by their subjects), was shattered by the advent of Nazism and its ideological underpinnings of race science, publicized by the influential race scientists

Baur, Fischer, and Lenz.³⁷ Some races, Jews and Gypsies in particular, were *untermenschen* and therefore outside the definition of what it is to be human. After 1945 and the Nuremberg trials, whether these were victors' justice or marked the advent of bioethics, the word eugenics became taboo. Geneticists (above all, clinical geneticists) dissociated their discipline from eugenics and its hideous past. This distinction was uneven though, as numbers of Nazi race scientists were reappointed to leading positions in genetics labs in postwar West Germany. The practices of eugenics continued until the mid-1970s, still guided by biomedicine and still ranging from compulsory sterilization to incarceration and sexual segregation. It was the explosion of the new social movements of the late 1960s and 1970s, not least the women's liberation movement, with their new demands for personal and cultural freedom, which helped terminate these practices.

Despite the UN 1948 Declaration of Human Rights, with its intended death-blow to the very idea of race, outside the mainstream of science biological racism flowed steadily as a highly conservative response to the social challenges, within the United States, of the civil rights movement and Johnson's War on Poverty. This conservatism extended from Jensen's attack on Project Head Start,³⁸ a waste of resources in his view because of the inherited lower IQ of black Americans, to Herrnstein and Murray's *Bell Curve*,³⁹ which argues that those at the bottom of the curve formed a genetic underclass and were outside the reach of progressive social policies. By the end of the century, the hierarchical difference of biological racism had been largely replaced by cultural difference, fought out politically as a clash between multicultural-

ism and cultural racism. Social groups now identify themselves (and are identified by others) according to culture rather than biology or even nationality, and are still frequently seen through the hostile prism of racism. In the United Kingdom, Pakistanis became Muslims, subject to increasing and violent Islamophobia. This dangerous brew has been intensified by the rise of Muslim fundamentalism and its terrorist attacks on civilians and by the wars in Iraq and Afghanistan. Ironically, it is only now, at the beginning of the twenty-first century, that the life sciences show tendencies to re-racialize difference through the discourse of genomics.⁴⁰

Even as compulsory eugenics retreated, prenatal diagnostic techniques grew. By the 1960s, Down's syndrome could be identified during pregnancy, and women and their partners offered the possibility of termination. With the Human Genome Project, DNA diagnostics proliferated; but despite the vocal promises of molecularized genomics, few safe, effective gene therapies have been delivered: the main option offered by DNA diagnostics has been abortion. Few (other than right-to-lifers) would argue against the desirability of tests for such devastating conditions such as Tay Sachs or Lesch-Nyhan, conditions associated with extreme suffering and death in infancy. Genetic or brain imaging diagnostics for late-onset conditions, such as the probability of Alzheimer's or the certainty of Huntington's disease, raise more complex issues. Optimists like Philip Kitcher⁴¹ regard this situation as offering a "utopian" eugenics, in which the desire of women and their partners to have healthy babies coincides with the utility to the state of fewer children being born with severe and expensive dis-

abilities. Many feminists, influenced by the growing international disability movement, have been more skeptical, questioning the cultural assumption that what women want is a perfect baby.

Such skepticism, reinforced by the challenges from the disability movement, has had a measurable effect in the United Kingdom; today, despite the increasing availability of NHS diagnostic testing for Down's, there are more babies born with the condition, not fewer. People with Down's syndrome are increasingly valued in themselves, and are not, as ethicist John Harris⁴² would have it, doomed to live worthless lives. The complexity of what it means to have a worthwhile life is demonstrated by the recent claim of autism researcher Simon Baron-Cohen that testosterone levels *in utero* can predict autism and could therefore offer the possibility of termination. Baron-Cohen himself recognizes the dilemma that this diagnostic technique raises.⁴³ The same newspaper that reported Baron-Cohen's concerns on the front page also carried the story of the young autistic man who hacked into the Pentagon. While his action is reprehensible, it was done, it seems, for fun, and it unquestionably indicates formidable talent. Such extreme talent is rare, though those with autism share a typical lack of social and moral sensibility. But do we want, and can we afford, a conception of human nature that is so narrow – and potentially so boring? Many of the most talented in our society seem to have more than a touch of Asperger's.

Nor does the debate get easier. Issues around designer babies, savior siblings,

and human cloning have led the philosopher Jürgen Habermas to raise the profound question of the desirability of a society in which human beings are made, not born.⁴⁴ Conversely, are we to be reassured by anthropologists Sarah Franklin and Celia Roberts⁴⁵ that this is a false dichotomy and that human beings can be both? The lines between nature and culture shift: as technosciences, genomics, and neuroscience define human nature as fixed, they also offer technologies of manipulation and modification. Yet even if it is this generation that comfortably decides what is at fault in the fetus within a woman's womb and how to fix it, and then fixes it, it is not the generation that has to live with the results. At their bleakest, twenty-first-century technosciences threaten to add formidable powers to the burden the poet Philip Larkin already sees: "They fuck you up your Mum and Dad, they may not mean it but they do."

Over the two hundred thousand years since the appearance of recognizably modern humans on earth, human nature has been subtly transformed in response to the evolutionary pressures resulting from rapid ecological, social, technological, and cultural change. Whether this "nature" has the resilience to respond adequately to these latest challenges remains to be seen. Big and powerful brains may not be the best of all survival strategies. After all, as Darwin pointed out, the fossil record is full of once successful and now extinct species. And at the core of evolutionary thinking is the recognition that the future is not predictable.

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 - ⁹ Theodosius Dobzhansky, "Nothing in Biology Makes Sense Except in the Light of Evolution," *American Biology Teacher* 35 (1973): 125 – 129.
 - ¹⁰ Elisabeth Roudinesco, *Philosophy in Turbulent Times: Canguilhem, Sartre, Foucault, Althusser, Deleuze, Derrida*, trans. William McCuaig (New York: Columbia University Press, 2008).
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 - ¹² It should be noted that although biologists today regard sexual selection as one of the core features of evolutionary theory, and popular writing, especially from evolutionary psychologists, accepts it unquestioningly, attempts to demonstrate it empirically among, for example, peacocks have not proved very successful. Furthermore, there is evidence that both sexes have other potential sexual strategies. Thus, while massively antlered stags are rutting, females may choose to mate quietly with less well-antler-endowed males – a strategy memorably described by the evolutionary biologist John Maynard Smith as that of the "sneaky fuckers."
 - ¹³ Charles Darwin, *The Descent of Man*, 2nd ed. (1879; London: Penguin, 2004), 622.
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Michael S. Gazzaniga

Humans: the party animal

By definition, the species *Homo sapiens* is unique. Over a time course of approximately seven million years, humans have evolved into quite a different animal from what was the last common ancestor we share with our closest surviving relative, the chimpanzee. Trying to figure out how we came to be what we are, and identifying what aspects, both physical and behavioral, we share with other animals, most especially the chimpanzee, and those that are uniquely human has been of ongoing interest.¹

Take a minute the next time you go to a dinner party, barbecue, wedding reception, or baby shower – run-of-the-mill events for us *Homo sapiens* – to ponder the fact that such events are completely unheard of in any other species. What other animal would plan an event, provide food to unrelated others, and sit together and share it without a food fight, all while laughing about stories of the past and hopes and dreams of the future? There is none. No matter how smart your family dog may be, he would not divvy up a prime rib roast and pass it out to the other dogs of the neighborhood with a happy little bark; neither would our closest relatives, the chimps. Humans are social beings, and although

there are other animal and insect species that are social, our species takes sociability to a previously unknown level. We are party animals, and on our way to becoming such we have evolved a whole host of unique features – features so unique that we humans are playing in another ballpark.

Although many may suggest that humans act “like a bunch of animals,” and the daily news intimates that we are endlessly fighting with one another, it is by cooperating with and helping unrelated others that we are unparalleled among animal species. Something is markedly different in our brains: we are “wired” differently. The results of this altered wiring allow humans to read books, or to go to the symphony, school, or jail. That is not to say humans are 100 percent different. In fact, most of our automatic processing is much the same as in other animals.

Although all species are unique unto themselves, all have a common origin and are made up of the same materials. It isn't surprising that when Charles Darwin first proposed that humans were descended from the great apes, he thought that the difference between us and our closest relatives, the chimpanzees, was a quantitative difference, not a qualitative one. We were just fancier apes with bigger brains, Darwin rea-

soned. In the mid-1960s, however, Ralph Holloway added to Darwin's theory, concluding that brain reorganization, rather than brain size alone, resulted in the evolutionary changes in cognitive capacity. Evidence for Holloway's insight is accumulating.

What exactly is brain reorganization, and how has it affected brain computations and the human mind? Cognitive scientists Derek Penn, Keith Holyoak, and Dan Povinelli, "happy to be the hostage[s] of empirical fortune,"² claim:

The profound biological continuity between human and nonhuman animals masks an equally profound functional discontinuity between the human and nonhuman mind. . . . [That discontinuity] pervades nearly every domain of cognition – from reasoning about spatial relations to deceiving conspecifics – and runs much deeper than even the spectacular scaffolding provided by language or culture alone can explain.

This "discontinuity of human cognition," they propose, was a watershed change that occurred after the hominid line diverged from our last common ancestor with the chimp, and it resulted in our exceptional relational ability. We far exceed other species in our ability to grasp analogies and to combine relations into higher-order structures. Mindful that there are no "unbridgeable gaps" in evolution, figuring out how this came to be is the question. Regardless of whether or not our ability to form higher-order relations is the basis for our cognitive differences, something very different is going on in the human brain.

There is no question that the human brain is big. After the hominid line diverged from the last common ancestor we share with the chimps, the brain underwent a huge growth spurt. In com-

parison to a chimp's brain, which weighs about 400 grams, an average human brain weighs about 1,300 grams. *Homo neanderthalensis*, however, had a bigger brain than modern-day humans, and although it is clear through fossil evidence that their culture was more advanced than that of the chimp, they were not in the same league as *H. sapiens*. Thus brain size is not the only variable in human uniqueness.

In non-primate mammals, the brain's prefrontal cortex has two major regions that work together to contribute to the "emotional" aspects of decision-making. We do, of course, make many of our decisions quickly and based on our emotions, and so still utilize these two evolutionarily older regions. However, some decisions are based on rational thinking. Only primates possess a third, evolutionarily newer region, the lateral prefrontal cortex, where the intriguing Brodmann Area 10 is located. One hundred years ago, German neurologist Korbinian Brodmann identified fifty-two distinct regions of the human cerebral cortex, based on the underlying cytoarchitectonics. Area 10 in humans is disproportionately larger compared to the rest of the great ape brains, and is densely interconnected with other still larger regions in human brains. Area 10 is concerned mainly with the "rational" aspects of decision-making and is involved with all sorts of abilities in which humans excel: memory and planning, cognitive flexibility, abstract thinking, initiating appropriate behavior and inhibiting inappropriate behavior, learning rules, and picking out relevant information that is perceived through the senses.

The posterior parietal cortex is another disproportionately enlarged area. One of our hominid ancestors, *Australopithecus africanus*, displayed the first signs of enlargement of this cortex, the part of

the brain active when objects are manipulated and motor activities are planned. Also disproportionately large are the connective pathways of the temporal lobe, indicating increased local connectivity between neighboring cortical fields, which support the formation and processing of declarative memory; self-recognition; visual, auditory, and language processing; and the detection of biological motion.³

Neurobiologist Georg Striedter suggests that the human brain has not enlarged randomly, but that an entire circuit that has made humans more flexible and capable of finding novel solutions to problems has enlarged. Perhaps one of the most important abilities included in this circuit is that of inhibiting automatic response, which is notoriously difficult or impossible for other animals, including our chimp relatives. Only with this ability can one respond in novel ways, and utilize the cognitive flexibility that we uniquely possess. (These systems are not fully developed in adolescent humans, offering a possible explanation for their impulsive ways.)

When brain size increases, what actually increases is the number of neurons, their width, and their connections. In general, the larger the area, the better connected it is. Each neuron, however, can connect to only a limited number of other neurons, a number that does not change as the overall number of neurons increases. As absolute brain size increases, proportional connectivity tends to decrease, and the internal structure changes as the connectivity pattern changes. In turn, less dense connections force the brain to specialize, create local circuits, and automate. The human brain has billions of neurons that are organized into local, specialized circuits, known as modules.

Over the last several years, we have also learned of many specialized brain functions that are lateralized in the human brain. This means that one hemisphere of the brain may perform a specific function that the other hemisphere cannot perform. The first hint of human lateralization of function came in 1836, when a French neurologist observed that three of his patients that had lesions of their left hemispheres had speech disturbances. Twenty-five years later, Paul Broca, after studying the postmortem brains of aphasic patients, concluded that the speech center was located in the left hemisphere. There are some anatomical asymmetries to be found in the non-human primates and, more notably, in the great apes; however, there is scant evidence for lateralization of function in other mammalian species. The corpus callosum, the great track of neurons that transmits information from one hemisphere to the other, may have provided the evolutionary innovation that allowed cortical capacity to expand. Without increasing brain size, it allowed mutations leading to innovations in one half of the brain, while preserving cortical function in the other half. There are also microscopic asymmetries in the cellular organization of the neocortex that have not been found in other species and are thought to be uniquely human.⁴ Clearly, our brains are physically different. It should come as no surprise, therefore, that they also function differently.

Our brains and abilities evolved because our bodies evolved along with them: changes in one happened in concert with changes in the other. Between five and seven million years ago (some recent studies suggest that it may have been more than ten million)⁵ we shared our last common ancestor with the

chimpanzee. For some unknown reason, most likely climactic changes resulting in a change in the food supply, the hominid line split. The branch of the family that produced the chimps stayed in the tropical forest and remained much the same. The other branch stepped out into the woodlands, where life was quite different, evolving to become bipedal and, over time, undergoing a host of other changes as well that have led to our current abilities.

Particularly important among the anatomical results of bipedalism are our elongated necks and the fact that our tongue and pharynx dropped lower down into the throat. Unlike the chimps that have two separate passageways for food and air, we developed a unique system, in which air and food share a common pathway in the back of the throat. We have a structure, the epiglottis, that closes the pathway to the lungs when we swallow and opens when we breathe. The unique anatomy of the pharynx, specifically the larynx, enables us to utter the wide variations in sound that we can and makes speech possible. No doubt, the survival advantage we gained was an increased ability to communicate, even though we face an increased risk of death by choking. Bipedalism also set our hands free, and our thumbs became unique. Both humans and chimps have opposable thumbs; chimps, though, don't have ulnar opposition: they can't arc their thumbs across to their baby fingers. Hence, we can pick up objects with the tips of our fingers, not with just the sides, as chimps do. We also have more sensitive fingertips, with thousands of nerves per square inch that send information to the brain.

One major physical problem presented by bipedalism was a smaller pelvis, and thus birth canal. (A wider pelvis would have made bipedalism mechanically im-

possible.) Birth became more difficult as brains and heads enlarged. In comparison to other apes, human babies are born one year prematurely, and, unlike chimps, their heads and brains continue to grow for several years.

From our current viewpoint, bipedalism seems only advantageous; yet the late psychologist Leon Festinger saw the proverbial fly in the ointment. He pointed out that "bipedalism, in and of itself, must have been a nearly disastrous disadvantage,"⁶ making us slower and less able to climb, and its evolution needed a special explanation.

Before we leave Festinger's bipedal quandary, we should pause to consider a study done by the evolutionary biologists Willem de Winter and Charles Oxnard. Rather than looking at overall brain size, de Winter and Oxnard suggested that a brain part's size is, to a certain extent, related to its functional relationships with other brain parts. Using brain-part ratios from 363 species, they ran multivariate analyses, with fascinating results. Groups emerged based on similar lifestyles (locomotion, foraging, and diets), rather than on phylogenetic relationships. For instance, New World insectivorous bats had brain-part ratios more closely linked with Old World carnivorous bats, rather than with their phylogenetically closer relatives, the New World fruit eating bats.

The primates fell into three groups, also based on lifestyles that cut across phylogenetic lines: those with hind-limb-dominant locomotion; the four-limb dominant; and the upper-limb dominant – those that hang from branches while eating, reach above their heads for fruit, and escape by upper-limb acrobatic activities. (This group included chimps and gorillas, along with the phylogenetically distant spider and woolly monkeys.)

Oxnard's analysis revealed that the species within a lifestyle group had similar brain organizations: that the convergence and parallels in brain relationships are most likely associated with convergences and parallels in lifestyles that cut across phylogenetic groups. Humans, however, the only species of the 363 studied that have a bipedal lifestyle, fell into a group unto themselves, with a highly significant 22 standard deviation difference between them and chimpanzees. Oxnard concluded, "The nature of human brain organization is very different from that of chimpanzees, which are themselves scarcely different from the other great apes and not too different even from Old World monkeys."⁷ Something about the human bipedal lifestyle is related to our very different brain organization.

Festing suggested that the primary factor allowing this "seriously handicapped species" to survive was an inventive brain and neural system that could figure out just what to do with those appendages that would be fruitful and adaptive. But perhaps it was the disadvantage of being slower that later resulted in so many cognitive changes. The open woodlands were a radically different environment. Food sources were highly scattered, and although there were more animals for our ancestors to hunt, there were also more animals hunting them. And just when our ancestors were being exposed to bigger and more dangerous predators, they could no longer run as fast or climb as well. There are two ways to discourage predators: either be bigger and faster than they, or live in a larger group. Unable to choose the former, the early hominids banded together in large groups not only to provide better protection, but to make both hunting

and gathering more efficient, thus providing more food for the growing brain.

Over the years there have been many suggestions as to what forces were driving the relentlessly enlarging brain. It is coming to be accepted that, through the process of natural and sexual selection, two factors were pushing the increase in overall brain size: a diet that provided the added calories needed to feed the metabolically expensive bigger brain; and the challenges originating from living in those large groups – "the social world" – necessary to guard against predators.

Many proposals have been tendered as to what diet provided the necessary amount of calories to feed that metabolic furnace of a growing brain. Richard Wrangham, a primatologist who has studied chimpanzees in Uganda for over thirty years, suggests that *Homo sapiens* are uniquely biologically adapted to eat cooked food, and that cooked food, which has more calories than raw food and is faster to eat, drove the expansion of the brain by increasing calories and decreasing the amount of time and energy it takes to ingest and digest them – in turn freeing up more time for hunting and socializing. And, as the saying goes, free time is the devil's playground.

Banding together in social groups for protection against predators presents its own set of problems, such as competition with conspecifics for resources (both food and prospective mates). Thus the cognitive challenge of surviving in increasingly larger social groups was likely the other driver of increasing brain size, as psychologists Richard Byrne and Andrew Whiten suggest. Their proposal, now dubbed the Social Brain Hypothesis, states:

Most monkeys and apes live in long-lasting groups, so that familiar conspecifics

are major competitors for access to resources. This situation favours individuals that can offset the costs of competition by using manipulative tactics, and skillful manipulation depends on extensive social knowledge. Because competitive advantage operates relative to the ability of others in the population, an “arms race” of increasing social skill results, which is eventually brought into equilibrium by the high metabolic cost of brain tissue.

Successfully living in social groups involves more than competition; it also involves cooperation. Very recently, developmental and comparative psychologists Henrike Moll and Michael Tomasello proposed the Vygotskian Intelligence Hypothesis. They assert that although cognition in general was driven mainly by social competition, the unique aspects of human cognition – the cognitive skills of shared goals, joint attention, joint intentions, and cooperative communication needed to create such things as complex technologies, cultural institutions, and systems of symbols – were driven, even constituted, not by social competition, but social cooperation.⁸

Anthropologist and evolutionary biologist Robin Dunbar has been searching for social and ecological indices that correlate with primate brain size. He has found five aspects of social behavior that correlate with brain size, the first of which is social group size: the bigger the neocortex, the larger is the social group. The great apes require a bigger neocortex per given group size than other primates, indicating that the social milieu of the great apes is more cognitively taxing. Dunbar’s research has shown that the factor limiting social group size is the ability to manipulate and coordinate information and social relation-

ships. The other social skills that he has correlated with brain size are the number of individuals with whom an animal can simultaneously maintain a cohesive intimate relationship; how much social skill is required in male mating strategy; the ability to manipulate others in the social group without the use of force; and the frequency of social play.

While a chimp maxes out juggling a social group size of about 55 individuals, Dunbar has calculated from the brain size of humans that we have a social group size of about 150. Initially this seems rather surprising when you think of the huge cities that many humans inhabit; but when you look more closely, it begins to make more sense. One hundred fifty individuals is the typical size of hunter-gatherer clans, also the typical number of individuals on a modern-day Christmas card list or in military units and businesses that can be run informally. It appears to be the maximum number of people an individual can keep track of and for whom he would be willing to do a favor. And the extent to which humans do favors is unique.

Doing favors is altruistic, and Darwin himself could never quite figure out how it occurred through natural selection. Why would an individual do anything that would increase the survival of another to his disadvantage? The late William Hamilton, an evolutionary biologist, realized that altruistic behavior could evolve if the benefiting individuals were genetically related to the provider, because helping one’s close relatives survive and reproduce also passes your genes on to the next generation.

Humans, however, help unrelated others all the time. We are the superlative Helpful Henrys of the animal world, and this behavior has its foundations in

reciprocal altruism, first described by sociobiologist Robert Trivers. If an individual does a favor for an unrelated individual and is sure it will be returned at a later date, then that could provide a survival advantage. Reciprocal altruism is very rare in the animal world, and several problems have to be overcome in order for it to work. First, the commitment problem: how could any individual be sure (trust) that the favor would be returned? Second, an individual has to be able to recognize another individual specifically; third, he has to be able to remember a favor was done and what it was; fourth, he has to live in close enough contact that predictable occasions will arise for reciprocation; and fifth, he has to be able to evaluate the cost of his favor and make sure he gets one back of equal value. Marc Hauser, a professor of psychology and evolutionary biology at Harvard University, thinks that our impressive mathematical abilities evolved with the emergence of social exchange systems. However, because there is a time lag between the completion of a favor and its reciprocation, cheating can occur. Not surprisingly then, a species that practices reciprocal altruism has mechanisms to identify cheaters. Evolutionary psychologist Leda Cosmides has developed a test that indicates that the human mind has a specific module that detects individuals who cheat in social exchange situations. She has found that cheater detection develops at an early age, operates regardless of experience and familiarity, and detects cheating, but not *unintentional* violations.

Identifying cheaters is only half the job. Game theory researchers have shown that for prolonged social reciprocity to exist, not only must cheaters be detected, but they also must be punished; otherwise, cheaters, who invest

less but receive an equal benefit, will out-compete the non-cheaters and take over. If cheaters take over, no one foots the bill and reciprocity crumbles. Humans have evolved two abilities that are necessary components for *prolonged* reciprocal social exchange and are on the short list of uniquely human capacities: the ability to inhibit actions over time (a.k.a. delayed gratification) and punishment of cheaters in reciprocal exchange.

The importance of reciprocal exchange should not be understated. Cosmides observes, "As humans, we take for granted the fact that we can help each other by trading goods and services. But most animals cannot engage in this kind of behavior – they lack the programs that make it possible. It seems to me that this human cognitive ability is one of the greatest engines of cooperation in the animal kingdom."⁹ Moll and Tomasello think that the unique aspects of human cognition were driven by social *cooperation*.

Indeed, cooperation is rare in our chimp relatives, and recent studies show that it only happens in competitive situations, and only under certain circumstances with certain individuals.¹⁰ Brian Hare and Michael Tomasello suggest that the temperament of the chimp constrains his behavior, and that the human temperament might be necessary for the evolution of more complex forms of social cognition. Before hominids were able to work cooperatively, they had to become less aggressive and competitive and more tolerant and friendly with one another.

Hare and Tomasello suggest that this may have been achieved by a kind of self-domestication process that selected for systems that controlled emotional reactivity, such as aggression. Perhaps individuals in a group would either ostracize or kill overly aggressive or des-

potic others. Dubbed the “emotional reactivity” hypothesis, it is based on continuing studies done by geneticist Dmitry Balyaev, who began domesticating foxes in Siberia in 1959 by selecting only for a single criterion: whether they exhibited fearless and non-aggressive behavior toward humans. In other words, he selected for fear and aggression *inhibition*. The experimentally domesticated foxes are as skilled at using human communicative gestures – pointing and gazing, for example – as domestic dogs.¹¹ These results suggest that sociocognitive evolution has occurred in the experimental foxes as a correlated by-product of selection on systems mediating fear and aggression. Dog domestication is thought to have occurred by a similar process. Wild dogs that were less fearful of humans were the ones that approached them, stuck around, and reproduced.

Reciprocal exchange is not only an engine of cooperation, it is one of the driving forces behind our innate morality. Many researchers studying morals and ethics propose that we have “ethical” modules. These modules have been derived from the common emotions and the behaviors they engender, which we share with other social species and which include being territorial; having dominance strategies to protect territory; forming coalitions to garner food, space, sex; and reciprocity. These modules have evolved to deal with specific circumstances, common to our hunter-gatherer ancestors, that involved what we now consider moral or ethical issues.

An environmental trigger activates these modules, which induce an automatic judgment of approval or disapproval. If the trigger is strong enough, a moral emotion is elicited. The emotional state produces a moral intuition

that may motivate an individual to action. We share many of our so-called moral intuitions with other animals. Humans differ by way of the *reasoning* about the judgment or action that comes *afterward*, as the brain seeks a rational explanation for an automatic unconscious reaction. This is when the uniquely human left brain’s interpreter device (see below) provides an explanation for the moral emotion, intuition, and the action. Also unique to humans, some moral emotions can evidence themselves in blushing or tears, and are difficult to counterfeit. As a result, these behaviors are a good advertisement that an individual has a conscience or is compassionate. Such visual proof of a moral emotion can indicate that the individual would be trustworthy and a good partner for reciprocal exchange.

It appears that the moral emotions of shame, embarrassment, guilt, disgust, contempt, sympathy, and compassion are also uniquely human. Moral emotions solve the commitment problem presented by social exchange and allow the first move. Jonathan Haidt, a social psychologist, points out that moral emotions aren’t just for nice guys, and this is a very important point. Some moral emotions can also lead to ostracism, shaming, and murderous vengeance. Oddly enough, it may be that those moral emotions are what actually made us nicer: moral emotions motivate the punishment of cheaters, which is necessary to sustain reciprocity and cooperation. Perhaps they were part of the self-domestication process proposed by Hare and Tomasello. We know that our relatives the chimps understand intention and are vengeful. In experiments with humans, chimpanzees will become more upset when a human intentionally interrupts a feeding ses-

sion, than when he accidentally does¹² and will retaliate against personally harmful actions.¹³

But all this does not explain why people will leave a tip in a restaurant that they will never return to, or why people will cooperate with unknown others or sacrifice for non-kin. Haidt suggests that sociologist Emile Durkheim's insight, that morality binds and builds groups, can answer this question: "Morality constrains individuals and ties them to each other to create groups that are emergent entities with new properties." He suspects that reciprocal altruism is supplemented with a type of "indirect reciprocity." Here, it pays to be virtuous by following the morals of the community, because such behavior enhances your reputation or status, and rewards you with increased future cooperation.¹⁴

Certain abilities are necessary to feel the uniquely human moral emotions:

- In order to feel sympathy and compassion, one must understand that another has feelings, and be able to identify them and take another's perspective, which requires inhibiting the default mode of self-perspective.
- In order to feel the "self-conscious" emotions of guilt, shame, and embarrassment, one also has to be self-aware and conscious of these emotions.
- In order to cooperate with another, one must share intentions, attention, goals, and possess Theory of Mind, the understanding that the other has beliefs, goals, and intentions. Once again, in order to enact this suite of behaviors, one has to inhibit self-perspective.

How might this all work in the brain? Many neuroscientists think that the so-called mirror neurons are fundamental for the development of self-awareness,

Theory of Mind, and language, and there are those who think the neurons were fundamental for human consciousness. Scientists studying macaque monkeys discovered these premotor neurons, which fired both when a monkey observed or heard another manipulating an object with his hand or mouth and when he himself manipulated an object. Mirror neurons are the first concrete evidence of a neural link between observation and imitation of an action. Subsequently, more extensive mirror neuron systems have been described in the human, where they are not restricted to just hand and mouth movements, as in the monkey. They correspond to movements all over the body; in fact, the same neurons are active even when we only imagine an action.

Mirror neurons are implicated not only in the imitating of actions, but also in understanding the intention of actions. Humans also appear to have mirror systems in the insula involved with understanding and experiencing the emotions of others, mediated through the viceromotor response. Such systems, by unconsciously internally replicating actions and emotions, may be the mechanism behind what gives us an implicit grasp of *how* and *what* other people feel or do, and contribute input used in our theorizing about the reason (the *why*) for the actions and emotions of others. Giacomo Rizzolatti, who first discovered mirror neurons, and Michael Arbib, director of the University of Southern California Brain Project, suggest that the mirror system was fundamental for the development of speech and, before speech, for other forms of intentional communication, such as facial expression and hand gestures. Mirror neurons also serve to synchronize our feelings and movements with those of others around us: for example, everyone in the

audience claps in unison to bring the performer back out for one more rendition of their favorite song. Mirror neurons are one of the psychological mechanisms that create group cohesion.

But if the same neurons are active when I observe an action as when I perform the action, how can I tell who has done it? Beyond the shared neural networks that are active in both cases, when we take a personal perspective, parts of the somatosensory cortex, the part of the brain with specific areas that map to specific parts of the body, are also active. When we take another's perspective, however, we activate one area of the temporal parietal junction that has input and output connections with many parts of the brain and plays a part in differentiating self from other, as well as a part of Area 10 in the prefrontal cortex. The activation of Area 10 is what inhibits self-perspective; damage to the area can lead to excessively egocentric behavior. It has been suggested that errors in assessing another's perspective are a failure of suppressing one's own. Inhibiting our own perspective gives us flexibility to take another's, and although chimps appear to be able to do it to a limited extent (even then only while in competition), humans can do it voluntarily without constraints.

Neither reality nor visibility constrains humans. We can feel an emotion through abstract input, such as reading, or by merely imagining it. The emotion of disgust activates the same brain circuitry (the operculum) whether one is experiencing it oneself or observing or imagining the disgust of others. The output of this region, however, is connected to the rest of the brain in a modality *specific* way, so these modalities feel different.¹⁵

Complex social interactions depend on our ability to understand the mental

states of other people. Having a Theory of Mind (ToM), also known as "intuitive psychology," is our intuitive understanding that others have invisible states – beliefs, desires, intentions, and goals – that can cause behaviors and events. Some cognitive psychologists think ToM is the foundation of what is unique about the human mind. Children slowly develop the full suite of ToM abilities over the first five years of age, but some of the abilities are up and running as early as nine months. While we share some aspects of ToM with our chimp relatives, other aspects are uniquely human. Chimps and children less than four can understand what others perceive, and the perceivable goals of their actions, but they can't understand that another may have a false belief. This ability in children is evident between four and five years old, when they begin to understand that what others believe may not actually be true. A full-blown ToM is needed for manipulating others' thinking, which is the basis of classroom learning. Actively teaching is a uniquely human ability.

Humans possess not only an intuitive psychology, but also an intuitive biology and physics, some aspects of which are shared by other animals, and some which are uniquely human. We humans automatically categorize whatever we run across as either an animate or inanimate object. In every society, people intuitively think about animate objects – plants and animals – in the same special hierarchical way. This intuition is the hardwired knowledge that animate objects have an underlying causal nature, or *essence*, which is responsible for their appearance and behavior. Harvard researchers Alfonso Caramazza and Jennifer Shelton claim that there are domain-specific knowledge systems

(modules) for animate and inanimate categories that have distinct neural mechanisms. These domain-specific knowledge systems aren't actually the knowledge itself, but systems that make you pay attention to particular aspects of situations in order to increase your specific knowledge. For instance, we intuitively understand that a large animal that has forward facing eyes and sharp teeth and that stalks is a predator; so, too, do other animals. We aren't born knowing what specific predator it is. If an object meets the innate criteria for the animate category and has biological motion, then we place it in the animal category and we automatically infer it has specific properties that all such things have: it's alive, it requires food and water, it can die, it has goals, intentions, and, inaccurate though it may be, ToM! This automatic bestowal of ToM on all animals is why it is so easy to anthropomorphize our pets, and why it is so difficult to believe that humans have a different psychology from other animals.

This, however, is different from how we think about inanimate objects. If something is placed in the inanimate category, a different set of properties are inferred, such as "is solid," or "won't disappear." The full extent of the intuitive physics in other animals is not known, but as Marc Hauser suggests, along with five-month-old babies, other animals must understand object permanence, otherwise if an animal didn't understand that the lion that went behind the bush is still there, there would be no prey animals left. Daniel Povinelli and Jennifer Vonk have reviewed what is known about the physical knowledge of non-human primates and have concluded that even though they can reason about the causes of observed events, they do not understand

the causal forces that underlie their observations. They appear to know by observation that fruit will fall to the ground, but they don't reason that if they are reaching for something and drag it across a hole in a table, that it, too, will fall into the void. Povinelli and Vonk suggest that humans are unique in their ability to *reason* about causal forces, and this extends to the psychological realm and is used to predict and explain events or psychological states.

Intuitive psychology is a separate domain from intuitive biology and physics. A "desire" or a "belief" isn't labeled with physical properties such as "has gravity" or "is solid," or biological properties such as "walks," "breathes," or, most importantly, "dies." This separate processing of object understanding from psychological understanding is what Yale psychologist Paul Bloom says gives rise to our "duality of experience." Humans are dualists; they act as if (and usually believe that) a person has both a physical body and another part – a soul, spirit, or "essence" that defines that person. The body, an animate object, gets tagged by our intuitive biology as something that eats, sleeps, walks, has sex, and dies. However, because the psychological part is not visible and does not have an obvious physical substance, it is subject to different inferences; "it dies" is not one of them. Humans have an intuitive belief that one's body and one's essence are separate.

Because the mental separation happens automatically, it is easy to think that either the body or the essence can exist separately, hence the concepts of a zombie, the body without the mind, or the soul, spirit without the body. Humans, unsurprisingly, have been even more creative, inventing other essences such as ghosts, angels, demons, the dev-

il, and gods or God. If Povinelli and Vonk are correct that other animals cannot form concepts about imperceptible entities or processes, and they do not possess a full ToM, then being a dualist and conceiving of such entities as spirits or God are uniquely human qualities.

Humans endlessly generate explanations and reasons for everything. My colleagues and I noticed this tendency while studying split-brain patients. The surgical procedure to cut the corpus callosum is a last-ditch treatment for patients with severe intractable epilepsy, for whom no other treatments have worked. Very few patients have had this surgery, and it is done even more rarely now because of improved medications and other modes of treatment. The treatment has been very successful, and most patients seemed completely unaware of any changes in their mental processes. Cutting the corpus callosum isolates the right hemisphere from the speech center, which usually is in the left hemisphere, so not only can the right hemisphere not communicate to the left hemisphere, it can't talk to anyone else either. With special equipment, you can give a command to the right hemisphere only. For example, you could ask the right hemisphere to pick up an apple from a bowl of fruit. The right hemisphere controls the left hand, so the patient would pick up the apple with his left hand. When you ask the patient why he picked up the apple, his speech center, in the left hemisphere, answers. The left hemisphere, however, doesn't know why the left hand picked up an apple, because it didn't see the command. This is no problem for the speech center; it will answer anyway. It may say, "I'm hungry," or "I prefer apples." In these patients, the left hemi-

sphere will smoothly make up a reason why an action, which was initiated by the right brain and of which it has no knowledge, was done.

This device, which we dubbed "the interpreter," takes all incoming information, assembles it into a "makes sense" explanation, and spews it out. It can only work with the information that it receives, and if there are gaps in this information, it is of no consequence: it will generate a story to fit the information it has. For example, in one experiment with a split-brain patient, we showed a command to the right hemisphere to laugh, and she did. When we asked her why she was laughing, instead of the left brain answering that it didn't know, she said, "You guys are so funny!" The speech center in the left hemisphere had not seen the command to laugh, but certainly was receiving the input that its person was laughing. Since that was all the information it had, it had to come up with a "makes sense" answer. It will also explain emotional states. In another experiment, we used a visual stimulus to trigger a negative mood in the right hemisphere. This time, although the patient denied seeing anything, she suddenly said that she was upset and it was the experimenter who was upsetting her. She *felt* the emotional response to the stimulus, all of the autonomic results, but her left hemisphere had no idea what caused them.

The interpreter is the device that puts all the incoming information together; it creates order out of chaos, and creates a narrative of and explanation for our actions, emotions, thoughts, memories, and dreams. It is the glue that keeps us feeling unified and creates the sense that we are rational agents. It tells our story. I propose that the left-brain interpreter is uniquely human. Receiving input from a wide variety of sources – the same sourc-

es that are available to other animals – it integrates that informational input in a unique way to create our self-conscious self, giving humans a distinct type of self-awareness that goes beyond the physical self-awareness exhibited by mirror self-recognition.

The evolutionary changes that the hominid line has undergone have brought us to our current state of being as a species, *Homo sapiens*. We share many features with our distant relatives, the chimpanzees, but we also have many unique qualities, ranging from differences in our brain anatomy (on both a macro- and microscopic level) to differences in behavior and cognition. However, the mystery remains of what exactly that change was that occurred between our last common ancestor with the chimps, and that perhaps is the founda-

tion block of our unique cognition. But neuroscientists are not alone in trying to divine ancient secrets.

There is a section in the Grand Canyon called the “Great Unconformity,” which is the surface between the rock strata called the Tapeats Sandstone, which averages 545 million years old, and the 1.8 billion-year-old metamorphic rock called Vishnu schist that it sits upon. This unconformity represents a time gap of 1.2 billion years of unknown geologic history – or about 25 percent of the earth’s history. I guess if geologists can keep plugging away at the mysteries of the 1.2 billion years missing in the geologic record, then we neuroscientists can keep plugging away at the 7 million years making up the Great Discontinuity, that unknown record of the evolution of human cognition.

ENDNOTES

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- ³ Natalie M. Schenker, Anne-Marie Desgouttes, and Katerina Semendeferi, “Neural Connectivity and Cortical Substrates of Cognition in Hominoids,” *Journal of Human Evolution* 49 (2005): 547 – 569.
- ⁴ There is more neuropil, the space between cell bodies that is filled with dendrites, axons, and synapses, in the left hemisphere’s speech center, in the area of the primary motor cortex designated to the hand, the primary visual cortex, and extrastriate areas.
- ⁵ See discussion in Charles Oxnard, “Brain Evolution: Mammals, Primates, Chimpanzees, and Humans,” *International Journal of Primatology* 25 (2004): 1127 – 1158.
- ⁶ Leon Festinger, *The Human Legacy* (New York: Columbia University Press, 1983), 4.
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Robert B. Pippin

Natural & normative

The flood of recent books in the last decade or so by neuroscientists, primatologists, computer scientists, evolutionary biologists, and economists about issues traditionally considered of interest to the humanities – issues like morality, politics, the nature of rationality, what makes a response to an object an aesthetic response, and value theory – and the incorporation of such research methods by some academics traditionally thought of as humanists have provoked a great deal of discussion, some controversy, and a growing number of conferences about the “two cultures.” The great majority of this discussion has involved a kind of invitation to humanists to make themselves aware of the new discoveries and new possibilities opened up by this research, and to reorient their thinking accordingly. As far as I have been able to discover, relatively little of the discussion has been concerned with what scientists working in this area might profitably learn from humanists, or whether becoming better informed about traditional and modern humanist approaches might suggest some hesitations and qualifications about just what the phenomena actually are that our friends in the sci-

ences are trying to explain. I do not in any way count myself an expert in this emerging literature, but I do want to offer some initial and very general reasons to hesitate before jumping on some of these particular bandwagons.

I work within a strand of the modern philosophical tradition that can be said to have begun with two extremely influential essays by Jean-Jacques Rousseau. In 1749, Rousseau won first prize in a contest held by the Academy of Dijon in answer to the question, “Has the progress of the sciences and arts contributed to the corruption or to the improvement of human conduct?” Rousseau’s answer, famously, was “corruption.” In 1754, responding again to an Academy question, he wrote his *Discourse on the Origin and Basis of Inequality Among Men*, another blistering attack on modernization, including the presumptions of scientific and technical modernization. These two essays represented one of the first attempts to mark out the limits (in principle; not limits based on temporary empirical ignorance) of modern scientific understanding in contributing to human self-knowledge. The essays insisted on an unusual sort of necessary independence (unusual for not relying on theology or revelation, as in much of the Eu-

ropean counter-Enlightenment, or any form of traditional metaphysical dualism), and they privileged the importance of moral and normative matters. In the way he argued for the distinctness of human beings, Rousseau became a major influence on German philosophy in its classical period from the end of the eighteenth to the first third of the nineteenth century, and many of the arguments, as formulated by Kant and Hegel especially, continue to be relevant to these new naturalizing enterprises.

Of course, those thinkers who later objected to the belief that the natural scientific paradigm is wholly and exclusively adequate for human self-knowledge were nowhere near as radical as Rousseau. He seemed to be decrying the ethical insufficiency of modernity itself, claiming that its social organization and division of labor were creating forms of human dependence that weaken and enervate, degrade and immiserate; that we were busily creating a novel way of life that was as unsuited for human flourishing as life in a zoo is to the animals therein. Yet there is a more common, narrower concern that often derived from Rousseau and that persists as a complex problem.

Let us say that the basic problem is the status of *normative considerations*, considerations that invoke some sort of “ought” claim. Two such claims have always been more important than any other: what ought to be believed and what ought to be done. For me, these claims are at the heart of what we in this country call the humanities (what elsewhere are called the *Geisteswissenschaften* or *les sciences humaines*), and they contribute to the traditional case that the humanities form the indispensable core of any credible university education. While these considerations seem like distinctly philosophical questions

(and while philosophers have often been rightly accused of imperialist ambitions, treating everything else in the humanities as bad versions of philosophy, rather than as possible good versions of what they are), I don’t think the questions are confined to philosophy. They turn up everywhere: how a text ought to be interpreted (that is, what it means to get a text right or wrong); how a character’s professions of love in a novel ought to be assessed (is he lying, a hypocrite, self-deceived, honest but naive?); whether and, if so, how an abstract expressionist painting can be said to mean something, and, if so, of what significance or importance is such painterly meaning; what ought we to believe about the significance of the crisis of modernism in music in the late nineteenth century (why does so much contemporary art music sound so different from the way music had almost always sounded; what is of value in the new music?); and traditional philosophical issues, like under what conditions is the state’s use of coercive power justifiable.

Before we reach any question of interdisciplinary cooperation with the sciences, I should note that it has become extremely controversial within the humanities to treat the humanities like this, as if all were contributing to the same conversation about various “live” normative issues. For instance, the idea that literary products or paintings could be said to imply, presuppose, or require truth or value claims has in itself very little purchase on the contemporary academic mind. The idea that these are truth claims about normative matters – that there simply *are* truth claims about normative matters that ought to be pursued – and that these ought to be discussed and assessed as such, rather than only as deeply historically contextual-

ized bits of evidence about what people believed at a specific time and place, now sounds like a rather stale humanism. It is often immediately assumed that any proponent of such views must serve a conservative agenda.

This is so for a number of complex reasons. One, there is a great suspicion about there being any one way to address or engage these normative issues (ought claims) at a first-order level, that is, by simply taking them on, trying to think about them and making up one's mind in conversation with texts and with others about what one ought to believe or what one, or some character, ought or ought not to do or have done. The idea is that this would be naive, uncritical, or unreflective, ignorant of the collapse of the notion of objective natural moral order, a hierarchical chain of being and of natural purposes linked in a harmonious whole that provides a basis for such normative judgments. Without such a secure natural whole and harmony, how could there be any objective basis, any independent truth makers, for such a conversation? I'm not saying that this is a particularly good objection; just that it has been extremely influential.

Another suspicion is that first-order normative claims have been so various and have changed so often that we have a better chance of explaining why people have come to have various views about what ought to be believed or ought to be done, rather than we have of assessing the quality of their answers. Paul Ricoeur once referred to the nineteenth-century thinkers who inspired this skepticism – Marx, Nietzsche, and Freud – as the “Masters of Suspicion.” Such suspicion has had the most lasting impact in the Western academy on the study of art, literature, and some philosophy, prompting a kind of shadow scientism, which traces the meaning of various

representative activities to the psychological or social conditions of their production.

I would suggest that this skepticism about the independent or autonomous status of the normative, the state of being “fraught with ought,” as the philosopher Wilfrid Sellars described it, is something like a necessary condition for the ever more popular empirical study of why people have come to believe what they generally do, or did, at a particular time. That's all one would really think there *is* to study or research if there is no way to resolve first-order questions of normative truth. In addition, many people have also come to believe that a defense of any perspective on human animals other than a strictly naturalist one will unfairly and dangerously, and for many, immorally privilege the human animal above all others, thus playing an ideological role in how we farm, eat, and experiment on other animal species. Others believe that such an enterprise must be ideological, where this is understood to mean either uncritically accepting the views of the modern West, or being unaware of how contingent, possibly otherwise, such views are.

This is all understandable in a more general sense, too. A great deal of humanistic study is devoted to objects not created to be studied: not academic research projects, but Greek plays written for communal religious festivals, church music, wall hangings for the rich and mighty, commercial story writing, Hollywood films, and so on. It is only very recently in the long history of the university that it came to be considered appropriate to devote university resources to the study of not merely Greek and Latin classics, but vernacular art and literature; to study not just Christian texts and Christian apologists, but the issue of secular morality. It is perhaps then un-

derstandable that while we have some vague sense that an educated person should be familiar with some such famous objects, we have not yet settled on anything remotely like a common research program for studying them. And this sort of uncertainty (accompanied often by a vague lack of confidence) has recently led to these even more serious qualifications on any putative “independence” of such normative issues, all in favor of more naturalist accounts.

If truth claims are at issue – if we want to know why a particular picture of human life appeals to us, or not; why a certain character repels us; why we cannot make up our mind about another; whether a character’s sacrifice of his self-interest for a greater good was rational or foolish; what form of pleasure we take in reading a poem or looking at a Manet – then, according to an often unexpressed assumption, why shouldn’t we assume that some advanced form of the evolutionary-biological and neurological sciences, or at least the social sciences, will explain that to us?

I am not trying to dispute that there are valuable things that can be learned when some of the social and natural sciences take as their object of study various representational and imagination-directed human activities. It is a strange thing for people to gather in the dark and watch other people pretend to be people they aren’t while doing ghastly things to each other (sometimes singing about it all); to care so much about what happens to little Nell or Hedda Gabler; to travel thousands of miles to stand in front of a temple in Kyoto. And these aesthetic appreciators, though human, occupy space and time like any other bit of extended, causally influence-able matter. The problem I am interested

in is what happens when such explanatory considerations are understood to have *replaced* or superseded what I have been calling first-order normative questions (what *ought* to be believed and/or done), all in favor of so-called sideways on or second-order questions: what *explains* why people do this or that, believe this or that?¹

“What problem?” you might ask.

Well, simply that the two sorts of questions are logically distinct and irreducibly different. Normative questions, I mean, are irreducibly “first-personal” questions, and these questions are practically unavoidable and necessarily linked to the social practice of giving and demanding reasons for what we do, especially when something someone does affects, changes, or limits what another would otherwise have been able to do. By irreducibly first-personal, I mean that whatever may be our “snap judgments” or immediate deeply intuitive reactions, whenever anyone faces a normative question (which is the stance from which normative issues are issues), no third-personal fact – why one as a matter of fact has come to prefer this or that, for example – can be relevant to what I must decide, unless I count it as a relevant *practical* reason in the justification of what I decide ought to be done or believed.

Knowing something about evolutionary psychology might contribute to understanding the revenge culture in which Orestes finds himself in Aeschylus’s *Oresteia*, or why he at once feels compelled to avenge his father’s murder by his mother Clytemnestra and horrified at the prospect of killing her in cold blood. But none of that can be, would be, in itself at all helpful to Orestes or anyone in his position. Knowing something about the evolutionary benefits of altruistic behavior might give us

an interesting perspective on some particular altruistic act, but *for the agent*, first-personally, the question I must decide is whether I ought to act altruistically and, if so, why. I cannot simply stand by, waiting to see what my highly and complexly evolved neurobiological system will do. The system doesn't make the decision, *I* do – and for reasons that *I* find compelling, or that, at least, outweigh countervailing considerations. Of course, there are times when I cannot provide such reasons; perhaps I am even surprised that, given what I thought my commitments and principles were, I acted as I did. However, we cannot *leave* the matter there, especially when confronted by another's demand for a reason, and given that what I did affected what she would otherwise have been able to do. It is in this sense that the first-personal perspective is strictly unavoidable: I am not a passenger on a vessel pulled hither and yon by impulses and desires; I *have* to steer. Or as Kant put it: everything in nature happens according to law; human actions happen in accord with some conception of law.²

Freud's famous remark about psychoanalysis, and the third-personal, explanatory stance it seems to encourage persons to adopt toward their own motivations, provides another fine example of what I'm trying to suggest. His remark, in effect, confirms the unavoidability of the distinction we have been discussing, if one is actually to take up the position of, as we say, leading one's life: "*wo Es war, soll Ich werden*" ("what was It [or Id] should become I [or Ego]"). Such an "I," or ego, must make an evaluation of herself and of the attitudes that she should take up toward herself and others. Something is going *wrong* – haywire – if these determinations are the result of the "It," or id. Psychoanalysis tries to "cure" precisely what goes

wrong when a subject experiences her own deeds as not hers, as the product of psychological forces outside her intentional control.

This is all compatible with the possible discovery of neurological dispositions toward certain attitudes or actions. My point isn't to dispute that, but to suggest that no such discovery can of itself count as a reason *to do or forebear from doing* anything; it cannot eliminate the agent's perspective whenever she has to decide what to believe or do. It is also compatible with the fact that people are often self-deceived, or even grossly ignorant, of why they do what they do, devising reasons or fables for their actions only afterward, in what we have come to call rationalization. But there is simply no translation or bridge law that will get one, qua agent, from those facts to a claim like, "Well, they have discovered at MIT that people often act without being able to explain or justify why, so the hell with it: I'm just going to steal Sam's idea and pass it off as my own." The claim is that *I* can no more answer the question, "Why did you do that?" with, "No reason; I just did," than I can answer the question, "What caused the fire to start?" with, "There was no cause; it just started."

Social relations make this much clearer. None of us, I would venture to bet, when we offer to a friend what we take to be compelling moral reasons concerning an action that friend is contemplating, would be at all happy for our friend to respond with an explanation of why such reasons seem to us compelling based on an account grounded in biology and evolution. Such a response is, in that context, an evasion, not a response, and we would justly feel "treated like an object" by such a claim, rather than as a co-equal subject.

The point I am making is a simple one: that the autonomy, or possible self-rule, at issue in these discussions is not a metaphysical one, but involves the practical autonomy of the normative. Yet the point still needs emphasis. Consider the book published by the Harvard biologist Marc Hauser called *Moral Minds: How Nature Designed Our Universal Sense of Right and Wrong*. Hauser made his reputation in animal communication, working with monkeys in Kenya and with birds, and his book is an almost perfect example of what often goes wrong with some of this purportedly “interdisciplinary” work. Hauser proposes that people are born with a “moral grammar” wired into their neural circuits by evolution, and that this grammar generates instant moral judgments, which, in part because of the quick decisions that must be made in life-or-death situations, are inaccessible to the conscious mind. Since Hauser argues that this moral grammar operates in much the same way as the universal grammar proposed by the linguist Noam Chomsky as the innate neural machinery for language, he has to claim some sort of common Chomsky-like moral universals for all suitably evolved human animals. This he does with breathtaking sweep, even while conceding some local variations of emphasis, or local “parameters.” Human behavior is said to be so tightly constrained by this hard wiring that many rules are in fact the same or very similar in every society: do as you would be done by; care for children and the weak; don’t kill; avoid adultery and incest; don’t cheat, steal, or lie. Moreover, he claims that the now universal moral grammar probably evolved into its final shape at a particular stage of the human past, during the hunter-gatherer phase in northeast Africa some fifty thousand years ago. Here is a typical summary of his claim:

We are equipped with a grammar of social norms based on principles for deciding when altruism is permissible, obligatory, or forbidden. What experience does is fill in the particular details from the local culture, setting parameters, as opposed to the logical form of the norm and its general function.

Or,

The universal moral grammar is a theory about the universal suite of principles and parameters that enable humans to build moral systems. It is a toolkit for building a variety of different moral systems as distinct from one in particular.

And,

Underlying the extensive cross-cultural variations we observe in our expressed social norms is a universal moral grammar that enables each child to grow a narrow range of possible moral systems. When we judge an action as morally right or wrong, we do so instinctively, tapping a system of unconsciously operative and inaccessible moral knowledge. Variations between cultures in their expressed moral norms is like variation between cultures in their spoken languages.³

Hauser is willing to concede that from the point of view of the agent one often does not do what one is powerfully inclined to do (however quickly comes the inclination), and that one can often do what one feels an aversion to. Nevertheless, he remains wedded to a view of our possessing a “core” or biological basis for moral response and motivation, never conceding that the perspective of an agent is – indeed cannot but be – that of a practical reasoner, not an animal responder. (Animals, of course, act for reasons – the feeling of fear providing a reason to flee or fight, for example – but not reasons such as deliberative considera-

tions that may be acted on or not, depending on the justificatory force of the reason.)⁴ Not to mention that almost all great literature, from Sophocles to Shakespeare to Henry James to John Coetzee, is not just about moral conflict and tragic dilemmas, but concerns the extreme difficulty of moral interpretation, about which more in a minute. Only the hopelessly jejune assumptions operative here about what the moral point of view consists in could allow Hauser even to begin to make his simplistic case about moral universals and evolutionary fitness.

Indeed, the most obvious interpretive question that we would have to settle before Hauser's ideas could be entertained concerns what separates morality from other social proprieties, like etiquette and prudential reasoning.⁵ Beyond that (and Hauser does very little to help us with this general issue, besides occasionally appealing to the greater emotional weight that attends moral questions), the very questions of, for example, *what we are doing*, what another is up to, or how to assess our own motives are far more complicated than ever admitted in Hauser's book.

Take Henry James's novel *Washington Square*. A father, also a widower, forbids future contact between his shy and not socially successful daughter and a young suitor. James leaves the reader to confront a number of interpretive possibilities. Is he protecting his daughter from a fortune hunter? Does he have some important stake in continuing to infantilize his daughter? Is he romantically jealous of the suitor because his daughter has become a kind of wife-substitute? Might he be simply reluctant to give up his companion, afraid of loneliness? Is he a tyrant, unable to accept any challenge to his authority and rule

over his household? He is in fact a tyrant, and the situation in the novel is so complicated because each of these possibilities is a plausible explanation and potentially true. (To complicate matters further, the suitor *is* a fortune hunter; but it remains very hard to know just how that fact is relevant to the father's conduct.) It seems very unlikely that the father's avowed intention – to protect his daughter – is true, and it is quite possible that he has some sense that any one of the other possibilities might more correctly describe what he is after. But it would not be correct to say that he “knows” he is motivated by something other than his professed commitments, and that he is hiding that knowledge from himself. The situation is far too unstable, complex, and subject to too many various interpretations for that to be the definitive analysis. We – and more interestingly the father himself – will not know what view to settle on until we, and he, come to learn how he acts in many other situations. Even then, the matter will remain quite difficult.

What really takes one's breath away, though, is Hauser's claim that we are “hardwired” with moral universals: do as you would be done by; care for children and the weak; don't kill; avoid adultery and incest; don't cheat, steal, or lie. This banal list of modern, Christian humanist values was written by a Harvard professor in a contemporary world still plagued by children sold into slavery by parents who take themselves to be entitled to do so; by the acceptability of burning to death childless wives; by guilt-free spousal abuse; by the morally required murder of sisters and daughters who have been raped; by “morally” sanctioned ethnic cleansing undertaken by those who see themselves as entitled to do so – one could go

on and on. Again, Hauser concedes variations and local parameters, but he thinks the essential picture of our moral nature, governed by these moral universals, has now come into focus.

Hauser deals most directly with the problem of very wide variations in deep moral intuitions when he discusses the evidence that philosopher Jesse Prinz has brought against Hauser's claims of moral universals. It becomes increasingly unclear what Hauser would count as any sort of empirical disconfirmation of his basic claim:

Prinz, for example, trots out many examples of close relatives having sex, of individuals killing each other with glee, and of peaceful societies lacking dominance hierarchies. These are indeed interesting cases, but they are either irrelevant or insufficiently explained with respect to the nativist position. They may be irrelevant in the same way that it is irrelevant to cite Mother Theresa and Mahatma Gandhi as counterexamples to the Hobbesian characterization that we are all brutish, nasty and short [*sic*].⁶

Prinz, though, cited not one or two individuals, but whole societies existing over many generations. What *else* could possibly count as counterexamples to Hauser's theory if such evidence can't? At least Chomsky's theory is open to possible disconfirmation, as the recent

discussion about the putative absence of recursion in the Pirahã language studied in Brazil by Dan Everett makes clear.⁷ Hauser seems to have arbitrarily insulated his theory.

And there is no need to appeal only to contemporary evidence. Well over fifteen hundred years ago, the Greek historian Herodotus reported with amazement about cultures where it was considered morally abhorrent to bury or burn one's dead relatives rather than eat them, and the many others where nothing could be imagined more abhorrent than eating one's dead relatives. If we are to talk about interdisciplinary collaboration on, say, moral universals in any meaningful way, perhaps the first, most reasonable suggestion would be that Hauser spend a quiet Sunday with Herodotus and Henry James. This is not what people usually have in mind when they encourage cooperation between contemporary science and the humanities. As noted at the outset, they usually mean something like "applying" "the exciting new discoveries" to that area of the academy that "does not seem to ever make any progress." I want to say that this attitude reveals a profound confusion about the humanities from the outset, and reveals especially a lack of appreciation for the permanently unsettled and irreducibly normative nature of much of the humanities.

ENDNOTES

¹ Here I use "explains" to mean a nomological, ultimately causal explanation, as it does in the natural sciences. In the specific example I will discuss later, Marc Hauser's *Moral Minds: How Nature Designed Our Universal Sense of Right and Wrong* (New York: Harper Collins, 2006), the author is very clear about the "shift" for which he wants to argue: "This account [his] shifts the burden of evidence from a philosophy of morality to a science of morality"; *ibid.*, 2. The book that undoubtedly has had the greatest influence in recent years is Richard Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, 1976). See also Frans de Waal, *Good-Natured: The Origin of Right and Wrong in Humans and Other*

Animals (Cambridge, Mass.: Harvard University Press, 1996), and his recent Tanner lectures, *Primates and Philosophers: How Morality Evolved* (Princeton: Princeton University Press, 2006); and S. R. Quartz and T. J. Sejnowski, *Liars, Lovers, and Heroes: What the New Brain Science Reveals About How We Become Who We Are* (New York: William Morrow, 2002). Especially revealing about the simplicity with which many such researchers treat the notion of “morality” is Laurence Tancredi’s *Hardwired Behavior: What Neuroscience Reveals about Morality* (Cambridge: Cambridge University Press, 2005).

- ² I am not entirely sure of Hauser’s final position on this issue. The extreme ambition of the book’s title (“Our Universal Sense of Right and Wrong”) and many of the things he says are to some degree undermined by his concession that he means something very restricted by the word “sense.” At some points he opens the door to the concession that whatever “science” might teach us about our immediate moral reactions to events and persons, those reactions are quite preliminary and may not contribute very much to an explanation of our all-things-considered or final moral judgments. Cf., “Taking account of our intuitions does not mean blind acceptance. It is not only possible but likely that some of the intuitions we have evolved are no longer applicable to current societal problems”; Hauser, *Moral Minds*, xx. This leaves open quite a lot that, in other respects, his book appears to want to fill with an evolutionary and biological account of our moral lives.
- ³ *Ibid.*, 190, 300, 410.
- ⁴ Cf. the commentary by Christine Kosgaard, in de Waal, *Primates and Philosophers*, 98 – 119, esp. 112 and 117: “Even if apes are sometimes courteous, responsible, and brave, it is not because they think they should be.”
- ⁵ This is a point made by Richard Rorty in his review of Hauser’s book; “Born to be Good,” *The New York Times*, August 27, 2006. Rorty also points to the weakness of Hauser’s analogy with Chomsky’s program in linguistics. He notes that moral codes are not assimilated with the astonishing rapidity of language acquisition, and that the grammaticality of a sentence is rarely a matter of doubt or controversy, “whereas moral dilemmas pull us in opposite directions and leave us uncertain.”
- ⁶ I use “*sic*” here because I don’t think Hobbes’s point was that most of us are little people. We are not brutish, nasty, and short, life is.
- ⁷ John Colapinto, “The Interpreter,” *The New Yorker*, April 16, 2007.

Ian Hacking

Humans, aliens & autism

Contraries illumine what they are not. Aliens, typically from outer space, are almost by definition not human. Current portrayals of aliens may show more about who we, the humans, are than they do about our extragalactic contraries. In portrayal by opposites there is often a large dose of fear: for example, that we may be all too like the aliens we imagine. That leads to a paradox about autism and aliens. A persistent trope in some autism communities is that autistic people are aliens, or, symmetrically, that non-autistic people seem like aliens to autists. Some autists are attracted to the metaphor of the alien to describe their own condition, or to say that they find other people alien. Conversely, people who are not autistic may in desperation describe a severely autistic family member as alien.

I wonder less what this phenomenon shows about autism than what it reveals about what it is to be human. It is to be expected that what contraries teach may not be something hidden, but something that has always been on the surface, almost too banal for us to notice. The revelation of the obvious is not to be despised, for often the obvious is blinding.

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Oliver Sacks used a remark by Temple Grandin as the title of an essay about autism, which became the title of his book *An Anthropologist on Mars*. Grandin, an extraordinarily able autist, had said to Sacks, “Much of the time I feel like an anthropologist on Mars.”¹ She felt that interactions with other people were often as difficult as interviewing Martians. We move on from Mars to the extragalactic planet Aspergia, whose denizens have, unfortunately, been exiled to Earth. They find that the inhabitants of Earth are aliens with whom they are forced to share a planet, while earthlings in turn regard them as an alien species.

A nasty variant was used in a disturbing autism awareness sound bite given wide distribution a couple of years ago by the advocacy organization CAN: Cure Autism Now. After a bit of ominous music, an intensely concerned young father intones, “Imagine that aliens were stealing one in every two hundred children. . . . That is what is happening in America today. It is called autism.” This is the ancient myth of the changeling, the troll child substituted in the dead of night for an infant sleeping in his cot at home.

I spoke of *some* autism communities toying with the metaphor of aliens. Autism is a highly contested field, and there are many collectives with quite distinct

agendas. I have to make clear from the start that, far from regarding people with autism as aliens, I believe it to be a very substantial human achievement that room is being created for autistic people to live more comfortably among those who are not autistic. More and more resources are available to serve such ends, and the social history of this ongoing progress is a promising tale of hard work, a ray of light.

This essay uses autism as a foil. What is it about autistic people that prompts the trope of the alien? How are autists different from other human beings, in such a way that a gifted autist can feel that living among humans is like living with Martians? How can a gross but effective sound bite create the sense that aliens are snatching our children to make them theirs? I am of the school that thinks you can learn about X by reflecting on what makes something not-X. What does the metaphor of the alien, insofar as it's connected to autism, show about humanity?

Alien invasion is the lowest form of intergalactic fiction, but the word *alien* dates back to earliest English, and has always had an association with otherness or foreignness. In America, the term “resident alien” is used for non-citizens allowed to live and work in the United States – a term so demeaning that, colloquially, Americans tend to refer to immigrants as having a green card, rather than as being resident aliens. Although “resident alien” isn't incorrect in its denotation, I shall use *alien* with its recent connotations, which seem to have entered common usage in post-World War II science fiction. Aliens come from outer space – or, at least from somewhere other than Earth.

Humans and the “other-worldly” have been available as a duet for a very

long time.² Seventeenth-century Europe is especially rich in extraterrestrial utopias, satires, scientific speculation, and moral reflection. Their inhabitants, be they evil or models of virtue, served as foils for human beings. In that respect they are like the extragalactic creatures of our day. They also served as a screen question – a question that, like Freud's screen memories, hides what is really being asked, namely, whether the indigenous people of the Americas had souls.³

Aliens in modern space adventures may talk and walk like us, but by definition they are not human. Hence *human* and *alien* are a tightly bonded pair. Aliens can be better than us, as in moral fables such as *ET*. Most of the time they seem to be bent on destroying us. Monsters are terrifying, but when push comes to shove, they are closer to humans than aliens. At least they are on our side in *Monsters vs. Aliens*. In that recent movie, DreamWorks studios' first animated 3D release, a bride is hit by a meteor on her wedding day, and, like Alice, grows to fifty feet tall, less an inch. The U.S. Air Force kidnaps her to a secret concentration camp for monsters, populated by Dr. Cockroach, Ph.D. (humanoid body, cockroach head), a 350-foot-long grub, and their ilk. Earth is invaded by an alien robot that sets about destroying the United States, and the president responds by enlisting the monsters, who save America. Message: prefer terrestrial monsters to extragalactic aliens. A metaphor for an immigration policy?

Friend or foe, aliens are definitely not us. However, we seem to hold up aliens as mirrors to teach what is best or worst in us or in the human condition. Let us now move past this doublet to a triangle in which autism occupies the third point, and where the very word *alien* is a second-order metaphor. At zero order, an alien is a foreigner. At first order, an

alien is a rational and sentient being from outer space. At second order, the word is used as a metaphor for the strangeness of autistic people.

Hardly anyone had heard of autism before *Rain Man* in 1988, some twenty years ago. There is an astounding story behind the word *autism* – from its introduction around 1910 as the name of self-absorbed schizophrenic behavior, through the name of a diagnosis for children in 1943, and up to its radical expansion in recent years – yet until fairly recently, the word was unfamiliar. Today every reader knows about autism, if only because it is blazoned on everything from billboards to bus stop shelters. Many know someone diagnosed on the autistic spectrum, which includes Asperger’s syndrome. Since everyone has some common knowledge about the condition, my first task is to record ten reservations, qualifications, and cautions, in order to guard against this or that misapprehension.

First and foremost, all of those children and adults with autism are very different from each other. There are books titled or subtitled “The Autistic Child,” but there is no such entity, the autistic child, as if it were a subspecies of human beings. One current slogan, “If you know about one autistic person, you know about *one* autistic person,” cannot be emphasized too much. In what follows I shall pay special attention to one trait of autism in its more severe forms, but I do not mean to imply that anyone diagnosed with autism exemplifies this trait to a strong degree. I use an abstraction based on a stereotype of this trait to think about all humanity; it does not reflect in any way on the details of a life lived by any individual. I am using autism as a vehicle, and am not discussing the condition in its own right.

Second, the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* classifies autism as a mental disorder, a pervasive developmental disorder, in fact. But it is not a kind of madness, or a mental disorder like bipolar disorder. In the highly contested world of autism, some argue that it is not a disorder at all, only a *difference* from other people. Hence, like black pride or gay pride, there is something akin to autism pride, which at present may be settling into a “neurodiversity movement.”

Members of this loosely defined faction agree that autism is a neurological condition, but so, after all, is the state of what they call *neurotypicals*. Most people who will read this essay are, despite our oddities, neurotypicals. It is also true that many people who will read it can, like its author, notice autistic traits in themselves. For millennia we neurotypicals have refused to acknowledge neurodiversity and so (it is said) do not understand even ourselves.

People with autism are part of this diversity, celebrated in an era and a culture such as ours, where difference is understood as a good thing. The movement is a fascinating development in the odyssey of autism. But beware: I have noticed that when I say “neurotypical” in mixed or neurotypical company, many neurotypicals say “neuro-normal” back to me. That’s *exactly* to miss the point. The neurodiversity movement rejects the idea that there is neuro-normality.

Third qualification: autism is filed as a pervasive *developmental* disorder, one that can be noticed very early in life. What we now call autism began as infantile autism, but never forget that *autism is for life*. There is neither a known cause nor a known cure. Matters stand differently, however, from the ways they stood a few decades ago. We now know how to work with very young autistic children,

in order to help them compensate for their differences and adapt to the world of neurotypicals. Many labor-intensive programs are available, although autistic communities say there are not yet nearly enough.

We are also doing a fair job of helping neurotypicals to be less uncomfortable in the company of autistic people. This is not a ground for complacency, but the lives of many families with one or more severely autistic children are a great deal better than they could have been even twenty years ago.

A fourth reservation is that there are a great many approaches to autism, none of which is definitive. There are also many advocacy groups with different targets, which is why I spoke of autistic communities in the plural. Some of the differences arise from the nature of the autistic individuals involved; others arise from very different conceptions of autism and even of disability. Some autistic communities reject the very idea of a cure, which Cure Autism Now (CAN) espouses. Another organization, Defeat Autism Now! (DAN!) emphasizes diet and supplements, among other things. The Autism National Committee (AUTCOM) urges that autistic people are the real experts on autism. At present it argues for the importance of facilitated communication, a technique that others hold to be a sham.

Fifth, it is now standard to speak of the autistic spectrum and of autistic spectrum disorders, “ASDs.” A spectrum is intended to emphasize the previous point about variety, but the image is problematic: spectra are linear and autism isn’t. The metaphor suggests that you can arrange autistic people on a line, from more to less. It does make sense to speak of high-functioning people with autism, but that covers an extraordinary range of people. It also makes sense to

speaking of being severely autistic – which, if anything, covers an even wider range of individuals. Spectrum is a metaphor from optics; if we are to use a metaphor from the sciences, I would prefer to speak of an autistic manifold. But the terminology of spectra is too established to root out.

Sixth, it is common to distinguish three groups of difficulties experienced by autistic children, namely, social and linguistic difficulties and fixedness; these persist in various degrees through life. This triad, as it is called, may be more of a mnemonic than a definition, although it is canonized in diagnostic protocols. It focuses on three difficulties deemed to be central, but there are many other aspects of autism, some more physical than mental.

Many people with autism have (a) various kinds of disadvantage in social interactions with neurotypicals. Most important for the purposes of this essay are their problems understanding what other people are doing, thinking, and feeling. Many cannot read your state of mind from your body language in the way that most children can. I do not refer here to the theory that autists lack a “Theory of Mind”; I mean something prior to theory, not something theoretical about a theory and its absence in autists. I try to stay closer to phenomena, best put by saying that many autistic people do not immediately know what another person is doing and have to work it out from clues. This is one part, but an essential one, of a larger canvas of difficulties in human relationships, including those within the family. This aspect of autism – which, to repeat, shows up in innumerable ways and in many degrees – is my focus below. Not surprisingly, we shall find that it is a primary ground for the metaphor of aliens.

In addition, many autistic children have (b) difficulties acquiring spoken language, to the point that some are mute for life, and many (c) are upset by change. They take what is said literally. They do not understand pretending, and they do not play, even alone, in the ways in which most children do. I call this fixedness, but many other terms are in use. A diagnosis on the autistic spectrum demands that at least two of these three deficits, or differences, are apparent.

Many autistic children find their differences from most people to be both deeply frustrating and frightening. The communal and family worlds in which they are expected to live are hospitable to most neurotypical children, but are constantly threatening for many autistic ones. Some of them succumb to violent temper tantrums. Others just want to get away to a safe place, curling up, for example, in a closet or on a stairwell.

Seventh, there are many aspects of autism beyond the triad. Many autistic children are subject to seizures. Many are hypersensitive to loud sounds, bright colors, and itchy surfaces, even the texture of a drink. A quite different group of problems, sometimes gathered under the label dyspraxia, is quite common. It primarily involves motor skills: bad balance, a tendency to bump into things, poor hand-eye coordination, difficulties in initiating or stopping movements, and even a poor hand-grasp, which makes it hard to use a key or a pencil. Many dyspraxic children begin to crawl, stand, and jump much later than their peers. Thus, although autism is usually thought of as a cluster of mental and emotional disabilities, there may also be many physical disabilities – or, to speak with the neurodiversity movement, many physical differences.

An eighth observation is that no one knows whether these several problems arise from a single neurological anomaly, or have distinct causes. Likewise, no one knows what is going to help. Even when we have two autistic brothers, and hence a presumed shared genetic basis for their autism, a regime that helps one may be useless to his brother. For example, in Charlotte Moore's biography of her two autistic sons, *George and Sam*, one boy is much helped by a gluten-and-casein-free diet, but it is useless for his brother.⁴ Yet the brother is much helped by a program intended to help autistic children "integrate" sensory experiences that overpower them; this does not help the first boy at all. (Moore is one parent who emphasizes the physical aspects of autism that are so often underplayed in textbooks and manuals.)

A ninth reservation, of a different type, is that I shall use the word *autism* to talk about anything said to be on the autistic spectrum. Take Asperger's syndrome, introduced about 1980 by Lorna Wing, a British psychiatrist, in the name of a Viennese doctor who long before had diagnosed a small group of children with autistic difficulties but who did not have notable problems acquiring language. The name Asperger's is now often used synonymously with "high-functioning," but there are also debates as to whether it is something different altogether.

Lorna Wing, who also characterized the triad of difficulties mentioned above, is no longer content with the classification she created. It is said that some members of the developmental disorders task force for the future *DSM-V* want to eliminate Asperger's as a diagnosis. I take no position, except that despite the current popularity of the label "Asperger's," I shall avoid it. I use autism for the entire manifold of

associated difficulties. This does not imply any criticism of the very large number of people who cheerfully call themselves Aspies. Likewise, I shall not say “on the autistic spectrum.” Once we have agreed that autism is polymorphic in its manifestations, it is better to speak simply of autism.

A tenth remark concerns some all-too-frequently-asked questions. I shall answer two of them without argument, not to take a stand, but to evade the questions while showing where I do stand. One question is about incidence: are there really more autistic children born every year than ever before in history? Are the amazing increases in reported prevalence due to an epidemic of autism? My answer is no. The increases are thanks to expanding criteria of diagnosis, much greater alertness on the part of primary-care physicians and teachers to the possibility of autism, and to the fact that a diagnosis of autism gets a troubled child much better care for special needs than any other diagnosis. Thus a decent GP with the option of diagnosing autism will almost always do so, because it is good for the child and the family.

A second question is about the mercury in the old-fashioned MMR, which includes the measles vaccine. Does it predispose toward, or cause, autism? No.⁵ But let me add a caveat. A child’s brain, from conception to the age of two years, grows at a prodigious rate. It is an unbelievably sensitive instrument, putting itself together over the course of thirty-three months. We should be very wary of subclinical toxic substances in the environment. My two youngest grandchildren are under two. When their respective mothers were pregnant, I strongly urged both mothers to go organic, and to avoid the armory of toxic cleansers found in most modern homes. I take toxicity very seriously indeed. I also

take rubella very seriously, and consider it horrible that parents, relying on ill-founded rumors about vaccines no longer in use, have stopped vaccinating their children.

Autism picked up the trope of the alien about twenty years ago. It has been flourishing in some autistic quarters, and is reviled in others. For starters, there are books with titles like *Through the Eyes of Aliens*, whose author is herself autistic,⁶ or *Women from Another Planet?* whose author is afflicted by, among other things, Asperger’s syndrome and has organized a women’s collective to tell stories of their lives with Asperger’s.⁷ A chapter in the latter book is called “How I came to understand the neurotypical world.”⁸ You can hear two types of voice behind the titles of these books: yes, we are aliens, and it is great to be different, quirks and all; no, we are not aliens, we are women here on Earth, out to reorganize social norms.

There is also a new genre of fiction, featuring novels in which an autistic character plays an essential part in the plot. A significant proportion of these works are written by parents or relatives of autistic children, including Marti Leimbach’s *Daniel Isn’t Talking*, a book that resonates with many parents of autists. In that novel, we are set up from the start: shopping with her mother, the twenty-two-year-old future mother of Daniel says, “I could only give birth to an alien.” Her mother replies, “You will have the most beautiful babies.” Later on in the book, after her son is diagnosed with autism, Daniel’s mother feels “as though I started the journey this morning with my beloved little boy and am returning with a slightly alien, uneducable time bomb.”⁹

Another novel, Cammie McGovern’s thriller *Eye Contact*, features a ten-year-

old severely autistic boy who (perhaps) witnesses the murder of a slightly older girl. A special-needs aide says, "I used to think: Here are a bunch of kids so brilliant, so truly ahead of us intellectually, they came out of the womb, took one look around this screwed-up world and said to themselves, Good-bye. I'll go on living, but not here. Not on this planet."¹⁰

The trope is found in science fiction, as well as in tales for children. *Of Mice and Aliens* combines both genres. Zeke, an alien, crash-lands in the backyard of Ben, a boy who has recently been declared to have Asperger's syndrome. Together they set out to explore Ben's suburban Australian world and its inhabitants. "With Ben learning to cope with his newly diagnosed Asperger's syndrome, and Zeke trying to cope with life on Earth, things are not always as they seem."¹¹ Here it is not autists as aliens, but aliens and autists in cahoots.

All permutations seem to be played out. Pamela Victor's character Baj, on the planet Aulnar, has not only a flying bicycle, but a magical communication kit (the Word Launcher) and an invisible Calming Cape. There is also the equivalent of a magical ear trumpet, which enables Baj to spot the point of what someone is saying to him.¹²

Back in the real world, contrast such enthusiasm for aliens with Tito Rajarshi Mukhopadhyay's reaction to Portia Iversen's *Strange Son*.¹³ Mukhopadhyay, seriously handicapped except when he is at a computer keyboard, is a gifted autistic author. *Strange Son* is about Iversen's own son, and his and her encounters with Mukhopadhyay and his mother. Iversen is a founder of Cure Autism Now, whose alien abduction ad was mentioned earlier. She brought both mother and son from India to America so she could disseminate the

mother's amazing teaching practices. In a review of Iversen's book on Amazon's U.S. site, Mukhopadhyay writes: "The book *Strange Son* felt like a 'slap' on my face. . . . My actions have been mentioned as 'beastly,' 'alien being,' 'possessed by a demon.'" He hates many of Iversen's statements, such as, "When I left their apartment that day I felt as if I'd glimpsed into the mind of an alien being."¹⁴ Some people find the trope of the alien a powerful way to state the obvious, while others find it odious.

In 2005, Bob and Suzanne Wright founded Autism Speaks. It has become the engine of charities for autism research in the United States, and it is now assuming that role in the United Kingdom. Mr. Wright is CEO of NBC Universal, and a powerhouse in the corporate world. Why did he and his wife found Autism Speaks? He is often quoted as saying, "I want my grandson back!" The metaphor of abduction feels overpowering to some families; a baby that was a lovely human being has disappeared.

Jim Sinclair, in a talk titled "Don't Mourn for Us,"¹⁵ countered this attitude. He urged parents not to go around pining for a child they wanted but never had. To Sinclair, there never was the grandson that the Wrights thought they had. If they need to mourn, they should go to a grief counselor who helps parents of children who died in infancy.

Sinclair was speaking for yet another advocacy organization, GRASP: The Global and Regional Asperger Syndrome Partnership. For the autistic child, he said, it is the parents and the neurotypicals who are alien:

Each of us [autistic people] who does learn to talk to you, each of us who manages to function at all in your society, each of us who manages to reach

out and make a connection with you, is operating in alien territory, making contact with alien beings. We spend our entire lives doing this. And then you tell us that we can't relate.

The trope of the alien, then, is symmetric: autistic people are aliens; or neurotypicals are aliens for autistic people. I have already mentioned an entertaining version that combines both angles, namely Aspergia.¹⁶ "Each human culture has a mythology to account for its existence and whence it came. Now we have one too!" Aspergia is today's Atlantis, a planet from which the Aspergians came to Earth. (One blogger calls Aspergia her utopia). Aspergians have found that Earth is inhabited by some alien form of life called humans.

Why does the metaphor of the alien crop up so often in fact and fiction? Let us take Temple Grandin's comment – "Much of the time I feel like an anthropologist on Mars" – seriously for a moment. Wittgenstein thought, "If a lion could talk, we could not understand him."¹⁷ If a Martian spoke, would we understand it? Only if we shared or came to share some "forms of life," some ways of living together. That is precisely the problem for a person with severe autism. Autistic people have a great deal of difficulty sharing any form of life with the neurotypical community. But the evocative phrase, "form of life," is never more than a pointer; we need to be more specific about what's missing.

"The eyes are the mirror of the soul," or window to the soul. At least since Roman times, some version of this maxim has been in circulation, evident in such places as the Latin proverb, *Oculus animi index*. The well-known literary figures who use this saying play with it as a standing reference point that everyone

already knows. Thus in the dialogue *De Oratore*, Cicero has Crassus say, "the face is an image of the soul, while the eyes reflect it."¹⁸ Cicero is not idly repeating some piece of general knowledge. His protagonist is discussing the delivery of a speech, and seems to be counseling the orator to use his eyes *as if* he means what he says: even if you do not feel such-and-such an emotion, use your eyes to simulate the emotion. Here Cicero exploits an already well-understood conceit.

It is much the same with St. Jerome, who of course knew his Cicero. Writing to a widow, telling her how to preserve her modesty and chastity, Jerome begins a paragraph, "Avoid the company of young men." He goes on to warn, "The face is the mirror of the mind and a woman's eyes without a word betray the secrets of her heart."¹⁹

Dante's *Convivio*, composed after the death of Beatrice as a poet's version of *The Consolations of Philosophy*, is a strange work, parts of which are written in the form of poems followed by commentary on the poems. The soul, writes Dante, "reveals herself in the eyes so clearly that the emotion present in her may be recognized by anyone who gazes at them intently."²⁰ This is part of a commentary on the lines:

In her countenance appear such things
As manifest a part of the joy of Paradise.
I mean in her eyes and in her sweet smile,
For here Love draws them, as to himself.

The "her" of the commentary is construed as Dame Philosophy herself, and the entire work is an incredibly overworked conceit. My point is only that Dante was playing with a saying he could assume to be familiar to anyone.

To judge by printed dictionaries of proverbs, the maxim appears as a proverb in all modern European languages. A list of English printed versions of the

saying, from 1545 to the present decade, is readily found in the *Oxford Dictionary of Proverbs*, with the last entry taken from a South Florida thriller: “All that windows-of-the-soul bullshit.” The speaker, usually dismissive of eyes as windows, recants on looking at an old school photo of the villain. He had been viewing the FBI’s state-of-the-art digital processing of photos on a screen. “It was excellent work, but like every computer enhancement he’d seen, something was lost from the original photograph. Some spark in the eyes.” In the small class photo there is “a brooding defiance,” such as one might see in torture victims whose whole sense of fear has mutated, but “also a glint of bitter humor. This was some smug little alien bastard.”²¹ Not from outer space, Hal is just a very nasty piece of work, a “psychopath” employed as an assassin by a drug cartel.

The faded photograph, with those eyes, is something of a window on Hal’s soul. “On the television screen, however, his eyes were flat and empty. Drained of any hint of humanity by the digital rendering.” This is a shrewd observation. The farther you are from the material body, the less you can see in the eyes. Notice that the hero saw a brooding defiance; he *inferred* from such cues that this was some smug bastard.

The eyes, as mirror of the soul, or as window on the soul, have served as a standard metaphor in the West for millennia. Autism connects with this metaphor by way of autists’ notorious difficulty with eye contact. For whatever reason, autistic people, when they look at someone’s face at all, tend to focus on the lower part of the face (the mouth and chin) and not the eyes. This phenomenon has an immediate consequence. *For a person with autism, the eyes*

of another are not a window to the soul of that other person. Emotions, says Dante, can be recognized in the eyes by anyone “who gazes at them intently”; but that is exactly what most seriously autistic people cannot do: gaze at the eyes intently, or perceive emotions therein.

Conversely, the eyes of the autistic are not a clear mirror of the soul within, as neurotypicals would expect. Many autistic children seem positively cherubic when they are at peace. (Yes, cherubs are from another world.) Yet one cannot see what is going on in their heads. Some neurotypicals are frightened by the blankness, for they feel that maybe there is no soul there.

But there is the face, too. Analogous sayings, evidenced by Cicero himself, refer to the face as mirror or image of the soul. Dante’s stanza begins, “In her countenance appear such things,” for it was the eyes and the mouth that struck the poet. That is precisely why smiley faces and their variants are such good icons. They are now used, in some teaching regimens, to train autistic children how to recognize the emotions of others.

Cicero discussed the face and eyes in the larger context of the body and its gestures. So let us turn to the whole body, its movements, and its stance. A point easily missed is that, whether it is the eyes, the face, or the body, the tradition that is packed into the proverbs always conveys the idea of seeing directly, and not of inferring. There is no apparent reasoning going on: one just looks into, or through, the eyes to see the soul. More generally, as Wittgenstein has it, “The human body is the best picture of the human soul.”²²

Wittgenstein was hardly being original when he penned that aphorism, speaking from a tradition at least as old

as Cicero. His remark is one of many in Part II of the *Philosophical Investigations* that seem to encapsulate ideas found in the middle part of Wolfgang Köhler's *Gestalt Psychology*, first published in 1929.²³ (Wittgenstein devoted some of his classes to the first edition of that book.) Köhler thinks many aspects of the body provide "pictures" of the inner thoughts and feelings. For Köhler, it is not only stance, but also body-language, as we now say: "[N]ot only the so-called expressive movements but also the practical behavior of human beings is a good picture of their inner life, in a great many cases."²⁴

Both men give numerous examples of such phenomena of seeing in the eyes and in the movements of the body, as well as through agitation, what a person feels, thinks, or intends; seeing that a person is in a bad mood; noticing that a child both wants to touch a dog and is frightened of doing so. Köhler is now mostly remembered for his work with apes, and for his theory of visual organization, part of the Gestalt theory of perception. But the middle of his book is dense in close observations of ordinary behavior, some of which were recast into elegant phrases by Wittgenstein.²⁵ Here is a more complex case:

If my attention is attracted by a strange object, a snake for instance, I feel directed toward it and at the same time a feeling of tension is experienced. A friend, even if he has not recognized the snake, will see me and especially my face and eyes directed toward it; in the tension of my face he will have a visual picture of my inner tension, as in its direction he has a direct picture of the direction which I experience.²⁶

Some readers will see in this vignette the friend *inferring* from Köhler's behavior that he is unnerved, and inferring where to look for the source of Köhler's feeling.

I, though, believe Köhler is absolutely correct in describing the phenomena; there is nothing worth the name of inference here. The friend just sees; he has a "direct picture." Of course, in every one of Köhler's examples there will be cases which call for inference. The point is not that one never infers, but that often one just "sees." A neurocognitivist may insist that there must always be a "computation" that passes from the sensory input to an understanding of the mental state of another person. Köhler would say that, if so, it must be different in kind from the "computation" involved in inference.

Köhler knew he was only describing, and he hoped that later generations of workers would be able to explain and understand the phenomenon. He wrote that his account "gives us neither an altogether new nor an altogether perfect key to another person's inner life; it tries only to describe so far as it can that kind of understanding which is *the common property and practice of mankind.*" He hoped for future work "when the simpler facts described in this chapter will have found more general acknowledgement."²⁷

I do not think we have fully come to terms with the "simpler facts" Köhler presents. They certainly bear on autism, for that kind of immediate understanding that Köhler described is *not the common property and practice of that part of humankind that is autistic.*

We should pay attention to Köhler's and Wittgenstein's contrast between, on the one hand, what one sees in the eyes, face, body, and the movements and gestures of another, and, on the other hand, what is inferred. The existence of such immediate understanding does not imply that what one sees is merely the exercise of an innate faculty, for it is to some

extent learned or acquired in the community of others. For example, one does not so readily see what foreigners are doing, let alone see into their souls, as is the case with one's compatriots.

Köhler's phenomena should make us rethink an idea widely shared by analytical philosophers: the idea that one knows the mind of another – or indeed that others have minds at all – “by analogy with one's own case.” We would be better to heed Lev Vygostky's proposals, that concepts of the mental life come later than an understanding of communal life, and are “internalized” not as an entry ticket to society, but only in the course of growing up and living among groups of people, starting with the extended family.

Underlying the “Other Minds” picture is a fundamental misconception, namely that I get the idea of mind and soul from knowledge of my own mind. The reasoning seems straightforward. I know what I think and feel and hope for; I know whom I love and whom I despise; I know my left foot is sore. How do I know? By looking inside myself, how else?

That picture prompts what is called the Problem of Other Minds. It is not a universal or timeless problem of philosophy. It was brought to the fore only in the early twentieth century by men such as William James and Bertrand Russell.²⁸ How do I know what you are thinking since I cannot look into your mind? By analogy to my own case, answered Russell and James. Later in the century, analytic philosophers said that it is not analogy, but explanation that is used. I explain your behavior by postulating that you have a mind like mine. This is called “an inference to the best explanation.”

The next step in this sequence of ideas is part of the overall repertoire of cogni-

tive theory. We do not infer other minds by analogy; instead, we come equipped with a Theory of Mind module, a faculty for attributing mental states to other people. This has become a canonical part of psychology, much preferred to models of analogy or inference. The idea was inaugurated by David Premack and Guy Woodruff studying chimpanzees. Quickly it led in 1983 to the false-belief tests devised by Heinz Wimmer and Josef Perner. Autistic children fare poorly on these tests, which require thinking about what other people believe, given the evidence that they possess. Thanks to Simon Baron-Cohen, Alan Leslie, and Uta Frith, among others, the tests have joined the arsenal for diagnosing autism. Many people hardly waste the time to write out “Theory of Mind” any more, they just write “ToM.”²⁹ I do not follow this practice, because the very fact that we use an abbreviation makes us take it for granted, as some sort of proven fact.

One great virtue of the Theory of Mind approach is that the ability to know what other people feel and think is no longer supposed to be a matter of analogical inference, as the old Anglo philosophers thought. Rather, it is an innate capacity, one that kicks in at an early stage as the child matures, and which may be associated with a Theory of Mind mental module. As a corollary, it does not kick in as early, or as well, for most autistic children.

Further speculation is fuelled by the idea of mirror neurons. Brain scans indicate that when Jones sees that Smith is sad or angry, blood flows to those same neurons it flows to when Jones himself is sad or angry. In general, when Jones observes Smith doing something, or feeling an emotion, the very parts of Jones's brain that are activated when he is so acting or feeling are activated by his observing Smith. This phenomenon, it

may be conjectured, underlies the phenomena described by Köhler and aphorized by Wittgenstein.

Hence there is promising research that suggests that the mirror neurons of autistic people are not in working order; either they are absent, or they function differently. I emphasize that these fascinating investigations are still open, however. A cynic may propose that the story is being told backward: Jones's relevant neurons are active on seeing Smith sad simply because he sees Smith sad – not, he sees Smith sad because his sadness neurons have been triggered.

Having acknowledged some of the truly exciting theories and conjectures about the mind now in circulation, let us return to the phenomena described by Köhler. They are familiar to most people, but are precisely what are *not* familiar, automatic, immediate, or instinctive for most autistic people. As we have said, they are not “the common property and practice” of that part of mankind that is autistic. Expert observers report that autistic children do not see that someone is in a bad humor; they do not follow the direction of a startled person's gaze; they do not readily understand what another person is doing – that is, they do not easily recognize intentions.

Conversely, ordinary people cannot see what an autistic boy is doing when, to take a banal example, he is furiously flapping his hands. What on earth is hand-flapping? The parent or other outsider knows vaguely that there must be some kind of agitation, yet the child seems so tranquil when hand-flapping. Articulate autists tell us how calming it is. So we are now able to infer a bit of what's going on; but instinctive neurotypical ways of interacting with other people do not enable us to look and see what the child is feeling.

More disturbing is an inability even to see what autistic children are doing. Their actions make little sense, their intentions are opaque. With the severely autistic, it may seem as if they do not even *have* many intentions. Hence they are taken to be emotionally “thin” children, who grow up to be “thin” men and women, lacking a “thick” emotional life. Or so it has seemed to most people, including many parents and many clinicians.

At best, the feelings and emotions of the severely autistic must be inferred. We are not even confident of our inferences, not because we lack enough evidence, but because we may doubt that the concepts that have evolved over millennia for the description of neurotypicals are apt for the autistic life. Here it is necessary to repeat my first caution. I am using an abstraction from one of many autistic traits in order to think about the human condition, and am not speaking directly to questions about the nature of autism or the experience of autistic individuals.

Language matters. I would guess that as long as there has been human communication, there have been ways to describe emotions and intentions. Perhaps that is a mistake. Perhaps there is a long prehistory of human self-realization. That is, the Vygotskian project of crafting a language for the emotions of others and ourselves may have taken many, many generations of our remote ancestors to complete. And only late in prehistory, on this scenario, would this language have been internalized. What is now called first-person authority over awareness of our own emotional states would, then, have come into being slowly. If so, individuals with autism would not have stood out in the same way that they do now. (I am here speaking of prehistory, not of the quite different fact

that compulsory universal elementary education was a prerequisite for noticing various kinds of cognitive difficulty in a systematic way.)

Whatever evolutionary psychohistory we choose to imagine, it is a fact that there has been a language for the intentions, desires, and emotions of other people for all of historical time. It was, however, crafted by and for neurotypicals. We are only just beginning to adapt that language to the autistic life. In this we are much helped by autobiographies, novels, and the immensely rich world of autism lived on the Internet. It is very common to say that autobiographies describe autism “from the inside.”³⁰ I suggest there is little ready-made language to describe this inside, and that the autobiographies and the blogs are creating it right now.

We asked, “Why does the metaphor of the alien crop up so often in fact and fiction?” We can now state an answer: because of the absence of Köhler’s phenomena in relations between neurotypicals and autistic people. These phenomena are the “bedrock” for a “shared form of life,” to use two of Wittgenstein’s compelling phrases. Not only does Temple Grandin feel like an anthropologist on Mars, but neurotypicals feel they are confronted by unintelligible Martians when they first confront the reality of autism. It is important that she says Mars, and not Papua New Guinea. Innumerable languages are spoken in that part of the world, and the customs first encountered by Europeans are passing strange. But in no time at all, visitors and inhabitants were talking, generating creoles, taking advantage of each other. They did not share a common civilization, but they shared something far more fundamental, captured by Wittgenstein’s metaphor of bedrock.

Neurotypicals and severely autistic people do not initially share a form of life because the bedrock is lacking, and so an artificial platform must be constructed. That is one way to describe what is going on right now. In retrospect, we shall almost certainly see today’s Internet as making possible a form of life in which autistic people can thrive. It is precisely the medium for human communication that does not depend on body language or eye contact – in short, it does not need Köhler’s phenomena.

What distinguishes us from aliens (as we depict our contraries) is notoriously not rationality, but our emotional lives. We are fellow humans in that we grasp each other’s intentions, feelings, wants. Köhler’s phenomena enable such understanding to be taken for granted in our common ways of life. *They are the bedrock of our humanity.*

This conclusion is “obvious”; yet because the phenomena are so familiar, it takes an acute observer of human and animal behavior to point it out to us. It takes a great philosopher to see what the observer has noticed, and to cast that into an aphorism. The insights of Köhler and Wittgenstein have been virtually forgotten, even when the latter’s aphorisms are cited in thoughtless awe. An inquiry into the trope of autists and aliens may have been useful not only to notice something about autism, but also to remind us of a fundamental fact about human beings.

Köhler made an interesting observation on the score of what is obvious. “It is not our fault that, to a deplorable degree, the obvious has disappeared from learned psychology, so that we have to rediscover it.”³¹ There is a great affinity between Wittgenstein and Köhler on this attitude to what we do not notice, both because it is always before our eyes,

and also because we theorize instead of looking.

It is well to conclude with a quite generous remark about human nature. We tend to be exclusive. Anthropology and sociology teach that human groups hang together partly because of who they include and partly because of who they exclude. Our instinct has always been to exclude aliens, first the terrestrial ones and then the extraterrestrial. There are a few fans of the SETI project, the Search for Extra-Terrestrial Intelligence, who see themselves as welcoming intelligent beings from outer space. But in general, the rule is “keep the others out.”

Neurotypical society has certainly excluded severely autistic people, consigning them, at best, to the role of village idiots or feral children, and, at worst, consigning them to institutions that, in retrospect, seem absolutely horrific. Whether or not the metaphor has been used, the practice has been to exclude the severely autistic as if they were aliens. But now there are remarkable endeavors afoot that aim at integrating autistic individuals into a larger social world.

Precisely because autistic children do not share in Köhler’s phenomena, it is

now common practice to try to teach them how to *infer* the feelings and intentions of other children and adults from behavior, gestures, and tone of voice. There are even posters showing what many people look like when they are happy or sad. These may include devices as simple as smiley faces and their kin. There are far more elaborate programs to teach how to tell, for example, when the person you are talking to is getting bored, so that you will not go on enthusing about the topic on which your passions are fixed, be it brontosaurus or electric coffee-makers.

There is immense controversy about what helps what person. Sometimes bitter words are exchanged as one school of thought and action confronts another. Desperate parents of the severely autistic try everything. It is becoming pretty clear that no specific agenda is good for every autistic person. But there is good reason to hope that, as I said at the start, the social history of this ongoing progress is a promising tale of hard work. It is a ray of light in the rather gloomy history of humans of the past few decades.

ENDNOTES

- ¹ Oliver Sacks, “An Anthropologist on Mars,” *The New Yorker*, December 27, 1993; reprinted in Sacks, *An Anthropologist on Mars: Seven Paradoxical Tales* (New York: Knopf, 1995), 295.
- ² Starting, perhaps, with Lucian of Samosata (ca. 125 – ca. 182), *A True Story*, trans. A. M. Harmon, Loeb Classical Library 14 (Cambridge, Mass.: Harvard University Press, 1968), 247 – 357.
- ³ A short but wise passage in Leibniz captures many of the uses of aliens; *New Essays Concerning the Human Understanding*, trans. Jonathan Bennett and Peter Remnant (Cambridge: Cambridge University Press, 1981), III, vi, section 22, as well as the notes. (This is mostly omitted from the abridged edition of 1982.)
- ⁴ Charlotte Moore, *George and Sam: Two Boys, One Family, and Autism* (London: Viking, 2004).

- ⁵ Leave aside the statistical analyses of the Centers for Disease Control and other authorities (which, as it turns out, detect no effect) to consider that Japan cut mercury out of vaccines at the first whiff of trouble, and the rapid increase in autism diagnoses continued much as in the United States and the United Kingdom.
- ⁶ Jasmine Lee O’Neill, *Through the Eyes of Aliens: A Book about Autistic People* (London: Jessica Kingsley Publishers, 1998).
- ⁷ Jean Kearns Miller, *Women from Another Planet? Our Lives in the Universe of Autism* (1st Books Library, 2003). Miller says she has been diagnosed with attention deficit disorder with Asperger’s syndrome traits, as well as major depression.
- ⁸ *Ibid.*, 141.
- ⁹ Marti Leimbach, *Daniel Isn’t Talking* (London: Fourth Estate, 2006), 4, 91.
- ¹⁰ Cammie McGovern, *Eye Contact* (New York: Viking, 2006), 60.
- ¹¹ The quotation is from the back cover blurb. Kathy Hoopmann, *Of Mice and Aliens* (London: Jessica Kingsley Publishers, 2001). This book is a sequel in the Asperger Adventures series to Hoopmann’s *Blue Bottle Mystery* (London: Jessica Kingsley Publishers, 2001), in which Ben first finds out what ails him.
- ¹² Pamela Victor, *Baj and the Word Launcher: Space Age Asperger Adventures in Communication* (London: Jessica Kingsley Publishers, 2006).
- ¹³ Portia Iversen, *Strange Son: Two Mothers, Two Sons, and the Quest to Unlock the Hidden World of Autism* (New York: Riverhead Books, 2006).
- ¹⁴ *Ibid.*, 129.
- ¹⁵ A talk given at the International Conference on Autism, Toronto, 1993, and published in *Our Voice*, the newsletter of Autism Network International; available at <http://www.grasp.org/media/mourn.pdf>. One self-described “deconstruction” of Sinclair’s may be found on a website whose name repudiates the trope of the alien: *Whose planet is it anyway?* The site features a blog, “Don’t Mourn, Get Attitude” (August 9, 2006), whose title, the author explains, “is intended to make one thing clear: We are not, and never were, extraterrestrials flying around in UFOs, freakish mutants wandering the galaxy, or aliens lost in space, and we have just as much right to be on Planet Earth as anyone else.” The blog refers to the umbrella organization Autism Speaks as a “hate group”; <http://autisticbfh.blogspot.com/2006/08/dont-mourn-get-attitude.html>.
- ¹⁶ I am quoting from <http://www.aspergia.com/>, accessible through 2006, but no longer active.
- ¹⁷ Ludwig Wittgenstein, *Philosophical Investigations*, rev. 3rd trans. (1953; Oxford: Blackwell, 2001), 190e.
- ¹⁸ Cicero, *De Oratore*, 3.221: “*Ut imago est animi voltus sic indices oculi*,” from *Cicero on the Ideal Orator*, trans. James M. May and Jakob Wisse (New York and Oxford: Oxford University Press, 2001), 294.
- ¹⁹ St. Jerome, *Letters*, Letter 54, *To Furia*. I have used the old translation from *The Principal Works of St. Jerome*, trans. W. H. Fremantle (Oxford: Parker & Company, 1893). The Loeb version, *Select Letters of St. Jerome*, trans. F. A. Wright (Cambridge, Mass.: Harvard University Press, 1933), has the accurate translation, “The face is the mirror of the mind, and eyes without speaking confess the secrets of the heart,” but the older version better conveys the intent of the letter.
- ²⁰ Dante, *Convivio*, Trattato III, chap. 8, between line markers 9 and 10: “*Dimostrasi ne li occhi tanto manifesta, che conoscer si può la sua presente passione, chi bene là mira*,” from *Dante’s Il Convivio (The Banquet)*, trans. R. H. Lansing (New York: Garland, 1990), 111.
- ²¹ James W. Hall, *Rough Draft* (New York: Macmillan, 2001), 23. I do not know whether the author intended it or not, but he gives Hal traits common among autistic people, including

echolalia, the practice of repeating back what a speaker has just said. He cannot be said to experience most human emotions, but he has learned to work out what other people are feeling and how it will affect their behavior.

- ²² Wittgenstein, *Philosophical Investigations*, 152e.
- ²³ Wolfgang Köhler, *Gestalt Psychology* (New York: Horace Liveright, 1929).
- ²⁴ *Ibid.*, 250.
- ²⁵ I provide exact citations in “Autistic Autobiography,” *Philosophical Transactions of the Royal Society B (Biological Sciences)* 364 (1522) (2009): 1467–1473. I owe my first reflections on Köhler and Wittgenstein to Janette Dinishak, “Wittgenstein and Koehler on Seeing and Seeing Aspects” (doctoral thesis, University of Toronto, 2008). She has helped me a good deal with this and other writings on autism.
- ²⁶ Köhler, *Gestalt Psychology*, 250–251.
- ²⁷ *Ibid.*, 266–267; emphasis added.
- ²⁸ An early discussion of the Problem of Other Minds is in John Stuart Mill, *An Examination of Sir William Hamilton’s Philosophy and of the Principal Philosophical Questions discussed in his Writings* (London: Longman, Green, Longman, Roberts & Green, 1865), Chapter XII. The Problem seems to be insular, peculiar to the English language. There are major entries for Other Minds in standard English-language philosophical encyclopedias (Edwards, Routledge, Stanford Online), but not in those of other languages. We find, for example, in French a “*problème des autres esprits*” only where the author refers to Anglo writers. In their books *Problems of Philosophy*, which mark the onset of the idea that philosophy consists of problems, such as the Problem of Other Minds, both James and Russell present the problem, and the solution, by analogy.
- ²⁹ David Premack and Guy Woodruff, “Does the Chimpanzee Have a Theory of Mind?” *Behavioral and Brain Science* 1 (1978): 515–526; Uta Frith and Francesca Happé, “Theory of Mind and Self-Consciousness: What is it Like to be Autistic?” *Mind & Language* 14 (1999): 1–22.
- ³⁰ See Hacking, “Autistic Autobiography” for examples of this practice.
- ³¹ Köhler, *Gestalt Psychology*, 350.

Charles Darwin

Comparison of the Mental Powers of Man and the Lower Animals – continued

Editors' note: This year marks the bicentennial of Charles Darwin's birth. Darwin famously breathed new life into the philosophical and scientific debates about humanness by asserting in "The Descent of Man" (1871) that "the difference in mind between man and the higher animals, great as it is, is certainly one of degree and not of kind." In chapter 4, excerpted here (from the second edition, 1879), Darwin examines the roots of morality in the instincts of lower animals.

I fully subscribe to the judgment of those writers who maintain that of all the differences between man and the lower animals, the moral sense or conscience is by far the most important. This sense, as Mackintosh remarks, 'has a rightful supremacy over every other principle of human action', it is summed up in that short but imperious word *ought*, so full of high significance. It is the most noble of all the attributes of man, leading him without a moment's hesitation to risk his life for that of a fellow-creature; or after due deliberation, impelled simply by the deep feeling of right or duty, to sacrifice it in some great cause. Immanuel Kant exclaims, 'Duty! Wondrous thought, that worketh neither by fond insinuation, flattery, nor by any threat, but merely by holding up thy naked law in the soul, and so extorting for thyself always reverence, if not always obedience; before whom all appetites

are dumb, however secretly they rebel; whence thy original?'

This great question has been discussed by many writers of consummate ability; and my sole excuse for touching on it, is the impossibility of here passing it over; and because, as far as I know, no one has approached it exclusively from the side of natural history. The investigation possesses, also, some independent interest, as an attempt to see how far the study of the lower animals throws light on one of the highest psychical faculties of man.

The following proposition seems to me in a high degree probably – namely, that any animal whatever, endowed with well-marked social instincts, the parental and filial affections being here included, would inevitably acquire a moral sense or conscience, as soon as its intellectual powers had become as well, or nearly as well developed, as in man. For, *firstly*, the social instincts lead an animal to take pleasure in the socie-

ty of its fellows, to feel a certain amount of sympathy with them, and to perform various services for them. The services may be of a definite and evidently instinctive nature; or there may be only a wish and readiness, as with most of the higher social animals, to aid their fellows in certain general ways. But these feelings and services are by no means extended to all the individuals of the same species, only to those of the same association. *Secondly*, as soon as the mental faculties had become highly developed, images of all past actions and motives would be incessantly passing through the brain of each individual; and that feeling of dissatisfaction, or even misery, which invariably results, as we shall hereafter see, from any unsatisfied instinct, would arise, as often as it was perceived that the enduring and always present social instinct had yielded to some other instinct, at the time stronger, but neither enduring in its nature, nor leaving behind it a very vivid impression. It is clear that many instinctive desires, such as that of hunger, are in their nature of short duration; and after being satisfied, are not readily or vividly recalled. *Thirdly*, after the power of language had been acquired, and the wishes of the community could be expressed, the common opinion how each member ought to act for the public good, would naturally become in a paramount degree the guide to action. But it should be borne in mind that however great weight we may attribute to public opinion, our regard for the approbation and disapprobation of our fellows depends on sympathy, which, as we shall see, forms an essential part of the social instinct, and is indeed its foundation-stone, *Lastly*, habit in the individual would ultimately play a very important part in guiding the conduct of each member; for the social in-

stinct, together with sympathy, is, like any other instinct, greatly strengthened by habit, and so consequently would be obedience to the wishes and judgment of the community. These several subordinate propositions must now be discussed, and some of them at considerable length.

It may be well first to premise that I do not wish to maintain that any strictly social animal, if its intellectual faculties were to become as active and as highly developed as in man, would acquire exactly the same moral sense as ours. In the same manner as various animals have some sense of beauty, though they admire widely different objects, so they might have a sense of right and wrong, though led by it to follow widely different lines of conduct. If, for instance, to take an extreme case, men were reared under precisely the same conditions as hive-bees, there can hardly be a doubt that our unmarried females would, like the worker-bees, think it a sacred duty to kill their brothers, and mothers would strive to kill their fertile daughters; and no one would think of interfering. Nevertheless, the bee, or any other social animal, would gain in our supposed case, as it appears to me, some feeling of right or wrong, or a conscience. For each individual would have an inward sense of possessing certain stronger or more enduring instincts, and others less strong or enduring; so that there would often be a struggle as to which impulse should be followed; and satisfaction, dissatisfaction, or even misery would be felt, as past impressions were compared during their incessant passage through the mind. In this case an inward monitor would tell the animal that it would have been better to have followed the one impulse rather than the other. The one course ought to have been followed, and the other ought not; the one would have

been right and the other wrong; but to these terms I shall recur.

[...]

It is, however, impossible to decide in many cases whether certain social instincts have been acquired through natural selection, or are the indirect result of other instincts and faculties, such as sympathy, reason, experience, and a tendency to imitation; or again, whether they are simply the result of long-continued habit. So remarkable an instinct as the placing sentinels to warn the community of danger, can hardly have been the indirect result of any of these faculties; it must, therefore, have been directly acquired. On the other hand, the habit followed by the males of some social animals of defending the community, and of attacking their enemies or their prey in concert, may perhaps have originated from mutual sympathy; but courage, and in most cases strength, must have been previously acquired, probably through natural selection.

[...]

Although man, as he now exists, has few special instincts, having lost any which his early progenitors may have possessed, this is no reason why he should not have retained from an extremely remote period some degree of instinctive love and sympathy for his fellows. We are indeed all conscious that we do possess such sympathetic feelings; but our consciousness does not tell us whether they are instinctive, having originated long ago in the same manner as with the lower animals, or whether they have been acquired by each of us during our early years. As man is a social animal, it is almost certain that he would inherit a tendency to be faithful to his comrades, and obedient to the leader of his tribe; for these qualities are common

to most social animals. He would consequently possess some capacity for self-command. He would from an inherited tendency be willing to defend, in concert with others, his fellow-men; and would be ready to aid them in any way, which did not too greatly interfere with his own welfare or his own strong desires.

The social animals which stand at the bottom of the scale are guided almost exclusively, and those which stand higher in the scale are largely guided, by special instincts in the aid which they give to the members of the same community; but they are likewise in part impelled by mutual love and sympathy, assisted apparently by some amount of reason. Although man, as just remarked, has no special instincts to tell him how to aid his fellow-men, he still has the impulse, and with his improved intellectual faculties would naturally be much guided in this respect by reason and experience. Instinctive sympathy would also cause him to value highly the approbation of his fellows; for, as Mr Bain has clearly shewn, the love of praise and the strong feeling of glory, and the still stronger horror of scorn and infamy, 'are due to the workings of sympathy'. Consequently man would be influenced in the highest degree by the wishes, approbation, and blame of his fellow-men, as expressed by their gestures and language. Thus the social instincts, which must have been acquired by man in a very rude state, and probably even by his early ape-like progenitors, still give the impulse to some of his best actions; but his actions are in a higher degree determined by the expressed wishes and judgment of his fellow-men, and unfortunately very often by his own strong selfish desires. But as love, sympathy and self-command become strengthened by habit, and as the power of reasoning becomes clearer, so that man can value

justly the judgments of his fellows, he will feel himself impelled, apart from any transitory pleasure or pain, to certain lines of conduct. He might then declare – not that any barbarian or uncultivated man could thus think – I am the supreme judge of my own conduct, and in the words of Kant, I will not in my own person violate the dignity of humanity.

[...]

A moral being is one who is capable of comparing his past and future actions or motives, and of approving or disapproving of them. We have no reason to suppose that any of the lower animals have this capacity; therefore, when a Newfoundland dog drags a child out of the water, or a monkey faces danger to rescue its comrade, or takes charge of an orphan monkey, we do not call its conduct moral. But in the case of man, who alone can with certainty be ranked as a moral being, actions of a certain class are called moral, whether performed deliberately, after a struggle with opposing motives, or impulsively through instinct, or from the effects of slowly-gained habit.

[...]

Concluding Remarks – It was assumed formerly by philosophers of the derivative school of morals that the foundation of morality lay in a form of Selfishness; but more recently the ‘Greatest happiness principle’ has been brought prominently forward. It is, however, more correct to speak of the latter principle as the standard, and not as the motive of conduct. Nevertheless, all the authors whose works I have consulted, with a few exceptions, write as if there must be a distinct motive for every action, and that this must be associated with some pleasure or displeasure. But man seems

often to act impulsively, that is from instinct or long habit, without any consciousness of pleasure, in the same manner as does probably a bee or ant, when it blindly follows its instincts. Under circumstances of extreme peril, as during a fire, when a man endeavours to save a fellow-creature without a moment’s hesitation, he can hardly feel pleasure; and still less has he time to reflect on the dissatisfaction which he might subsequently experience if he did not make the attempt. Should he afterwards reflect over his own conduct, he would feel that there lies within him an impulsive power widely different from a search after pleasure or happiness; and this seems to be the deeply planted social instinct.

In the case of the lower animals it seems much more appropriate to speak of their social instincts, as having been developed for the general good rather than for the general happiness of the species. The term, general good, may be defined as the rearing of the greatest number of individuals in full vigour and health, with all their faculties perfect, under the conditions to which they are subjected. As the social instincts both of man and the lower animals have no doubt been developed by nearly the same steps, it would be advisable, if found practicable, to use the same definition in both cases, and to take as the standard of morality, the general good or welfare of the community, rather than the general happiness; but this definition would perhaps require some limitation on account of political ethics.

When a man risks his life to save that of a fellow-creature, it seems also more correct to say that he acts for the general good, rather than for the general happiness of mankind. No doubt the welfare and the happiness of the individual

usually coincide; and a contented, happy tribe will flourish better than one that is discontented and unhappy. We have seen that even at an early period in the history of man, the expressed wishes of the community will have naturally influenced to a large extent the conduct of each member; and as all wish for happiness, the 'greatest happiness principle' will have become a most important secondary guide and object; the social instinct, however, together with sympathy (which leads to our regarding the approbation and disapprobation of others), having served as the primary impulse and guide. Thus the reproach is removed of laying the foundation of the noblest part of our nature in the base principle of selfishness; unless, indeed, the satisfaction which every animal feels, when it follows its proper instincts, and the dissatisfaction felt when prevented, be called selfish.

The wishes and opinions of the members of the same community, expressed at first orally, but later by writing also, either form the sole guides of our conduct, or greatly reinforce the social instincts; such opinions, however, have sometimes a tendency directly opposed to these instincts. This latter fact is well exemplified by the *Law of Honour*, that is, the law of the opinion of our equals, and not of all our countrymen. The breach of this law, even when the breach is known to be strictly accordant with true morality, has caused many a man more agony than a real crime. We recognise the same influence in the burning sense of shame which most of us have felt, even after the interval of years, when calling to mind some accidental breach of a trifling, though fixed, rule of etiquette. The judgment of the community will generally be guided by some rude experience of what is best in the long run for

all the members; but this judgment will not rarely err from ignorance and weak powers of reasoning. Hence the strangest customs and superstitions, in complete opposition to the true welfare and happiness of mankind, have become all-powerful throughout the world. We see this in the horror felt by a Hindoo who breaks his caste, and in many other such cases. It would be difficult to distinguish between the remorse felt by a Hindoo who has yielded to the temptation of eating unclean food, from that felt after committing a theft; but the former would probably be the more severe.

How so many absurd rules of conduct, as well as so many absurd religious beliefs, have originated, we do not know; nor how it is that they have become, in all quarters of the world, so deeply impressed on the mind of men; but it is worthy of remark that a belief constantly inculcated during the early years of life, whilst the brain is impressible, appears to acquire almost the nature of an instinct; and the very essence of an instinct is that it is followed independently of reason. Neither can we say why certain admirable virtues, such as the love of truth, are much more highly appreciated by some savage tribes than by others; nor, again, why similar differences prevail even amongst highly civilised nations. Knowing how firmly fixed many strange customs and superstitions have become, we need feel no surprise that the self-regarding virtues, supported as they are by reason, should now appear to us so natural as to be thought innate, although they were not valued by man in his early condition.

Notwithstanding many sources of doubt, man can generally and readily distinguish between the higher and lower moral rules. The higher are founded on the social instincts, and relate to the welfare of others. They are supported

by the approbation of our fellow-men and by reason. The lower rules, though some of them when implying self-sacrifice hardly deserve to be called lower, relate chiefly to self, and arise from public opinion, matured by experience and cultivation; for they are not practised by rude tribes.

As man advances in civilisation, and small tribes are united into larger communities, the simplest reason would tell each individual that he ought to extend his social instincts and sympathies to all the members of the same nation, though personally unknown to him. This point being once reached, there is only an artificial barrier to prevent his sympathies extending to the men of all nations and races. If, indeed, such men are separated from him by great differences in appearance or habits, experience unfortunately shews us how long it is, before we look at them as our fellow-creatures. Sympathy beyond the confines of man, that is, humanity to the lower animals seems to be one of the latest moral acquisitions. It is apparently unfelt by savages, except towards their pets. How little the old Romans knew of it is shewn by their abhorrent gladiatorial exhibitions. The very idea of humanity, as far as I could observe, was new to most of the Gauchos of the Pampas. This virtue, one of the noblest with which man is endowed, seems to arise incidentally from our sympathies becoming more tender and more widely diffused, until they are extended to all sentient beings. As soon as this virtue is honoured and practised by some few men, it spreads through instruction and example to the young, and eventually becomes incorporated in public opinion.

The highest possible stage in moral culture is when we recognise that we ought to control our thoughts, and 'not even in inmost thought to think

again the sins that made the past so pleasant to us'. Whatever makes any bad action familiar to the mind, renders its performance by so much the easier. As Marcus Aurelius long ago said, 'Such as are thy habitual thoughts, such also will be the character of thy mind; for the soul is dyed by the thoughts.'

Our great philosopher, Herbert Spencer, has recently explained his views on the moral sense. He says, 'I believe that the experiences of utility organised and consolidated through all past generations of the human race, have been producing corresponding modifications, which, by continued transmission and accumulation, have become in us certain faculties of moral intuition – certain emotions responding to right and wrong conduct, which have no apparent basis in the individual experiences of utility.' There is not the least inherent improbability, as it seems to me, in virtuous tendencies being more or less strongly inherited; for, not to mention the various dispositions and habits transmitted by many of our domestic animals to their offspring, I have heard of authentic cases in which a desire to steal and a tendency to lie appeared to run in families of the upper ranks; and as stealing is a rare crime in the wealthy classes, we can hardly account by accidental coincidence for the tendency occurring in two or three members of the same family. If bad tendencies are transmitted, it is probable that good ones are likewise transmitted. That the state of the body by affecting the brain, has great influence on the moral tendencies is known to most of those who have suffered from chronic derangements of the digestion or liver. The same fact is likewise shewn by the 'perversion or destruction of the moral sense being often one of the earliest symptoms of mental derangement';

and insanity is notoriously often inherited. Except through the principle of the transmission of moral tendencies, we cannot understand the differences believed to exist in this respect between the various races of mankind.

Even the partial transmission of virtuous tendencies would be an immense assistance to the primary impulse derived directly and indirectly from the social instincts. Admitting for a moment that virtuous tendencies are inherited, it appears probable, at least in such cases as chastity, temperance, humanity to animals, &c., that they become first impressed on the mental organization through habit, instruction and example, continued during several generations in the same family, and in a quite subordinate degree, or not at all, by the individuals possessing such virtues having succeeded best in the struggle for life. My chief source of doubt with respect to any such inheritance, is that senseless customs, superstitions, and tastes, such as the horror of a Hindoo for unclean food, ought on the same principle to be transmitted. I have not met with any evidence in support of the transmission of superstitious customs or senseless habits, although in itself it is perhaps not less probable than that animals should acquire inherited tastes for certain kinds of food or fear of certain foes.

Finally the social instincts, which no doubt were acquired by man as by the lower animals for the good of the community, will from the first have given to him some wish to aid his fellows, some feeling of sympathy, and have compelled him to regard their approbation and disapprobation. Such impulses will have served him at a very early period as a rude rule of right and wrong. But as man gradually advanced in intel-

lectual power, and was enabled to trace the more remote consequences of his actions; as he acquired sufficient knowledge to reject baneful customs and superstitions; as he regarded more and more, not only the welfare, but the happiness of his fellow-men; as from habit, following on beneficial experience, instruction and example, his sympathies became more tender and widely diffused, extending to men of all races, to the imbecile, maimed, and other useless members of society, and finally to the lower animals – so would the standard of his morality rise higher and higher. And it is admitted by moralists of the derivative school and by some intuitionists, that the standard of morality has risen since an early period in the history of man.

As a struggle may sometimes be seen going on between the various instincts of the lower animals, it is not surprising that there should be a struggle in man between his social instincts, with their derived virtues, and his lower, though momentarily stronger impulses or desires. This, as Mr Galton has remarked, is all the less surprising, as man has emerged from a state of barbarism within a comparatively recent period. After having yielded to some temptation we feel a sense of dissatisfaction, shame, repentance, or remorse, analogous to the feelings caused by other powerful instincts or desires, when left unsatisfied or balked. We compare the weakened impression of a past temptation with the ever present social instincts, or with habits, gained in early youth and strengthened during our whole lives, until they have become almost as strong as instincts. If with the temptation still before us we do not yield, it is because either the social instinct or some custom is at the moment predominant, or because we have learnt that it

will appear to us hereafter the stronger, when compared with the weakened impression of the temptation, and we realise that its violation would cause us suffering. Looking to future generations, there is no cause to fear that the social instincts will grow weaker, and we may expect that virtuous habits will grow stronger, becoming perhaps fixed by inheritance. In this case the struggle between our higher and lower impulses will be less severe, and virtue will be triumphant.

From Charles Darwin, "The Descent of Man, and Selection in Relation to Sex," 2nd ed. (1879; London: Penguin, 2004), 119 – 123, 130 – 133, 135, 144 – 150.

Harriet Ritvo

Humans & humanists

“When I use a word,” says Humpty Dumpty in *Through the Looking Glass*, “it means just what I choose it to mean – neither more nor less.” Alice demurs on several grounds, appealing first to contrary popular consensus – “But ‘glory’ doesn’t mean ‘a nice knock-down argument’” – and then to the essential limits of language: “The question is . . . whether you *can* make words mean so many different things.” Neither of Alice’s objections fazes Dumpty, who countertheorizes that “the question is . . . which is to be master,” then illustrates the practical benefits of his approach with a brilliant interpretation of “Jabberwocky,” a poem whose vocabulary Alice had previously found impenetrable.¹ There is, of course, much to be said on both sides of this debate. Many people have, like Dumpty, recognized the power of vocabulary and made similar attempts to control definitional borders. If, again like Dumpty, they have neglected to acknowledge the alternative viewpoints represented by Alice and her ilk, they have usually found this easier said than done.

The term *human* has in recent years been the site of such contestation and struggle among humanist scholars, whose self-categorization may seem to

beg such questions. Previously, although humanism itself has often been controversial, a fair amount of consensus existed among practitioners and critics about its denotation. This consensus has been notably durable. In the *Oxford English Dictionary (OED)*, the first three senses of *human* distinguish “mankind” from animals, from “mere objects or events,” and from “God or superhuman beings.” All three of these senses emerged before 1600, and none has yet been labeled obsolete.² The *OED*’s definition of *humanist* is much more restricted, focusing on divisions among learned men, rather than among orders of creation. Its senses refer to the various subcategories of scholarship that humanists have chosen to explore; none of these senses has yet been labeled obsolete either.³

In 1976, the cultural critic Raymond Williams included *humanity* (as representing “a complex group of words, including human, humane, humanism, humanist, [and] humanitarian”) in *Keywords*, his compendium of brief essays on common terms, the senses of which had altered or splintered as a result of cultural and political pressures that emerged during and after World War II. But a crude statistical calculation suggests that Williams did not consider this word or group of words as

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among the most problematic or interesting in his collection: he allotted it only three pages. Words whose evolution he considered particularly compelling or important – *class, culture, democracy, masses, nature, realism, socialist, and structural* – commanded, in comparison, five pages or more. In his discussion, Williams took the limits of the human for granted, emphasizing instead the shades of moral connotation that distinguish *human* from *humane*, and the shades of intellectual connotation that distinguish the specialties of some “humanists” from those of others.⁴ *Keywords* included no entry for *animal, beast, or monster* – or for *machine, god, or deity*, for that matter – and no such entries are planned for an updated version of the book currently under preparation. These editorial decisions may suggest that, in the view of many humanists, the boundaries between humanity and its abutting categories remain relatively unproblematic.⁵

Like the *OED* lexicographers, Williams chose most of the examples that illustrate his definitions from the literature of humanism, which may explain the narrowness of his disciplinary focus and his lack of attention to the unsettled borders that have begun to preoccupy at least some humanists. (It is not surprising to find Williams following the *OED*'s lead: it was his major primary source for *Keywords*.) But neither blurry edges nor strenuous attempts to clarify them are recent developments. As Humpty Dumpty discovered, to his cost, that he was not the only author of his own story, humanists have never been alone in their interest in the human. Certainly, they have never had the last word in defining it.

Categories and boundaries have long obsessed students of the natural world.

The organization of information about animals, plants, and minerals into a coherent system was part of the core disciplinary, or protodisciplinary, agenda of eighteenth- and nineteenth-century naturalists. A taxonomic system was necessary for the practical purposes of retrieval and comparison, as knowledge about the world and its contents grew exponentially during the centuries of European exploration and expansion. More abstractly, especially in the wake of Newton, taxonomy constituted a vital component of naturalists' claim to intellectual respectability and prestige. Without system, they feared, natural history would be “but a confused, undisciplined crowd of subjects,” and naturalists “mere collectors of curiosities and superficial trifles . . . objects of ridicule rather than respect.”⁶

Before any natural kind could be assigned its place in a system, it had to be described with sufficient precision to establish clear criteria for inclusion or exclusion. This was often problematic since, at the time, transportation was slow and uncertain, communication among specialists was difficult, and preservation techniques were often ineffective. In addition, although some organisms, like the giraffe, can be easily differentiated from all others, many plants and animals have relatives close enough to undermine the distinction between similarity and sameness. Extra study did not necessarily make things clearer; indeed, intensified examination of dubious cases often made them seem more difficult to describe and delimit. As Charles Darwin remarked of the differentiation of species and varieties, “[I]t is in the best-known countries that we find the greatest number of forms of doubtful value. . . . if any animal or plant . . . closely attract [human] attention, varieties . . . will almost universally

be found recorded.”⁷ Human beings fit both criteria. The territories where humans lived were inevitably very familiar and well documented, and most people found humans – themselves – to be the most fascinating of the earth’s inhabitants. Consequently, many naturalists struggled to determine where their species fit in the natural order. One possibility – the one implied by *OED* definitions, as well as by the chain of being that descended from antiquity – was that humans occupied a position just outside or on top of the natural order.⁸ But other possibilities existed, several of which suggested greater integration.

As the gap between humans and other creatures diminished, boundary confusion increased. Many naturalists followed the lead of Linnaeus, the Swedish taxonomist whose system of latinized binomials remains the foundation of botanical and zoological nomenclature. He first published his classification of the animal kingdom in *Systema Naturae* in 1735; it was expanded and revised through many subsequent editions, of which the tenth, published in 1758, is considered definitive. Unlike many of his contemporaries, Linnaeus had no doubt that people were a kind of animal, if an unusual kind. He embedded humans firmly within his taxonomic system, devising the primate order to accommodate four genera: *Homo*, *Simia* (monkeys and apes), *Lemur* (prosimians), and *Vespertilio* (bats). Linnaeus did not, however, treat humans and their ilk in quite the same way that he treated these structurally parallel categories. Instead, he signaled human distinctiveness in the brief characterizations that accompanied his schematic list of genera. For simians and prosimians he highlighted dentition; for bats, wings. With regard to *Homo* he identi-

fied no distinctive physical feature, but merely commented, “*nosce te ipsum*” – know thyself.⁹

Linnaeus’s terse description left many questions unanswered, the most obvious of which was how to define *thyself*. At the next level of analysis, where he described each genus in greater detail and itemized its constituent species, Linnaeus offered some very suggestive answers. In his classification, *Homo* was not a monolithic taxon; it contained two species, of which *Homo sapiens*, the first and largest, was further subdivided into the conventional geographical races (American, European, Asiatic, and African), with additional categories for the wild children who occasionally turned up (*Ferus*) and for still more unusual kinds of people (*Monstrosus*).¹⁰ According to Linnaeus’s descriptions, those in *Homo* differed sufficiently in their physical and temperamental qualities to make it unlikely that the self-knowledge of members of one group, however comprehensive and accurate, would automatically illuminate the nature of the others. For example, *Homo Europaeus* was “sanguineus,” while *Homo Afer* was “phlegmaticus.” The other species within the genus *Homo* more severely challenged the limits of empathetic insight. Linnaeus’s correspondence and his lectures at Uppsala University contained repeated suggestions that he found it difficult to establish a firm dividing line between humans and apes.¹¹ *Homo troglodytes* was not subdivided; its sole occupant was the orangutan.¹²

The evidence offered by this placement is ambiguous, however. The orangutan was also known as *Homo sylvestris*, or, “the wild man of the woods” (a translation from Malay, although not of the Malay word for the orangutan), and, at a time when the unity

of the human species was the subject of vigorous debate, there was widespread uncertainty about whether or not orangutans were human. In addition, naturalists had not yet clearly distinguished the orangutan of Southeast Asia from the chimpanzee of Africa, whose taxonomic placement, therefore, generated similar (or identical) uncertainty. In 1699, for example, the anatomist Edward Tyson had published a treatise entitled *Orang-Outang, sive Homo Sylvestris. Or, the Anatomy of a Pygmie compared with that of a Monkey, an Ape, and a Man*.¹³ (By “ape” he meant baboon, and by “pygmie” he meant chimpanzee.) The human status of the quasi-mythical pygmies had, conversely, long been the subject of European speculation. Even at the end of the eighteenth century, naturalists could claim that the “race of men of diminutive stature,” or “supposed nation of pygmies” described by the ancients, was “nothing more than a species of apes. . . that resemble us but very imperfectly.”¹⁴

With regard to the orangutan (or chimpanzee), Linnaeus hedged his taxonomic bets. On the one hand, he extended the human genus in the direction of apes – or toward the dark side, to use his own terminology: he described *Homo sapiens* as *H. diurnus*, while *Homo troglodytes* was *H. nocturnus*. On the other, he reserved a place for them at the head of the simians, in the species *Simia satyrus* (the name of which evokes a more imaginative direction in which the boundary of the human could be problematic).¹⁵ Linnaeus had good reason to equivocate. Despite his iconic status as a systematizer, in his own time as well as subsequently, his inclusive primate order was frequently rejected. Not everyone, whether serious naturalist or casual observer of nature, enjoyed being placed firmly within the animal kingdom, even if at

the head of it; the closer juxtaposition within the genus *Homo* was inevitably even more troubling. According to the British naturalist Thomas Pennant, “[M]y vanity will not suffer me to rank mankind with *Apes, Monkies, Maucaucos, and Bats*”; a colleague further asserted, “[W]e may perhaps be pardoned for the repugnance we feel to place the monkey at the head of the brute creation, and thus to associate him . . . with man.”¹⁶

Some dissenters simply proposed their own counter-taxonomies, which implicitly posited a much wider separation. Thus, early in the nineteenth century the anatomist William Lawrence suggested that “the principles must be incorrect, which lead to such an approximation” between humans, apes, and monkeys within the primate order; instead, he argued that “the peculiar characteristics of man appear to me so very strong, that I not only deem him a distinct species, but also . . . a separate order.”¹⁷ Naturalists who recognized this exclusively human order normally designated it “Bimana,” which stressed the erect posture and purpose-built feet characteristic of people, in contrast with the four-handed apes and monkeys who were segregated in the order “Quadrumana.”¹⁸ As the author of one mid-nineteenth-century guidebook to the Mammalia enthusiastically put it, “Man! Privileged in every other aspect, is zoologically distinguished by possessing hands on the anterior extremities alone.”¹⁹ A contemporary more forcefully asserted, “[M]inute examination shows us that even these highest forms of the brute creation are separated by a vast interval from him to whom was originally delegated the dominion over them all.”²⁰

Nevertheless, such assertions were rearguard efforts and, at least among specialists, Linnaeus’s primate order

ultimately triumphed. By the middle of the nineteenth century, most zoologists had accepted it, although some maintained the two-hand/four-hand division at a lower level of taxonomic discrimination. Even Louis Agassiz, who emerged as one of the most prominent opponents of Darwin's theory of evolution by natural selection, argued that "as man is related to animals by the plan of his structure, so these are related to him by the character of those very faculties which are so transcendent in man as to point at first to the necessity of disclaiming for him completely any relationship with the animal kingdom." (He further speculated that because the absence of other animals from the afterlife would involve a "lamentable loss," they were likely to share with people something like a soul.)²¹ But even within Agassiz's generous embrace, similarity did not imply identity. Like the animal companions that he feared to miss in heaven, apes and monkeys remained outside the human taxon.

Among the general public, the possibility that apes might actually be people lingered in various ways. Illustrations in books of popular natural history often portrayed apes as particularly human in both appearance and behavior, showing them assuming erect posture, using human tools (frequently a walking stick), and approximating human proportions in the torso and limbs.²² Still more strikingly, this visual tradition was not confined to the page or the canvas; it was also constantly reenacted in the displays of the chimpanzees and orangutans that constituted popular components of nineteenth-century zoos and menageries. Show apes ate with table utensils, sipped tea from cups, and slept under blankets. One orangutan who lived in London's Exeter Change Menagerie

amused herself by carefully turning the pages of an illustrated book. At the Regent's Park Zoo in London, a chimpanzee named Jenny regularly appeared in a flannel nightgown and robe. Consul, a young chimpanzee who lived in Manchester's Belle Vue Zoological Gardens at the end of the nineteenth century, greeted the public dressed in a jacket and straw hat, smoked cigarettes, and drank his liquor from a glass.²³ At about the same time, the London Zoo routinely dressed a chimp named Mike to impersonate Captain Cuttle, a character from Dickens's *Dombey and Son*. Even apes with no public role to play tended to behave in a distinctively human manner. For example, a chimpanzee acquired by the Earl Fitzwilliam in 1849 was reported to walk "perfectly erect" and handle "everything like a human being"; in addition, its food was "choice, and wine a favorite beverage."²⁴

Rumor persistently whispered that these visual analogies might represent more substantial and productive connections. Thus one seventeenth-century report featured a "poor miserable fellow" who had copulated with a monkey, "not out of any evil intention . . . but only to procreate a Monster, with which he might win his bread."²⁵ At the end of the eighteenth century, the surgeon and naturalist Charles White reported that orangutans "have been known to carry off negro-boys, girls and even women . . . as objects of brutal passion"; more than sixty years later the Anthropological Society republished Johann Friedrich Blumenbach's summary of travelers' accounts that "lascivious male apes attack women."²⁶ White recorded rumors "that women have had offspring from such connection" and proposed that "supposing it to be true, it would be an object of inquiry, whether such off-

spring would propagate, or prove to be mules.”²⁷ Blumenbach, more cautious, asserted “that such a monstrous connection has any where ever been fruitful there is no well-established instance to prove.”²⁸ Addressing the same concern, in his pioneering account of chimpanzee anatomy, Edward Tyson had gone out of his way to assure his readers that “notwithstanding our *Pygmie* does so much resemble a *Man* ... yet by no means do I look upon it as the Product of a *mixt* generation.”²⁹

Outside the community of experts, claims could be less restrained, or more enthusiastic. A Victorian impresario, for example, advertised the merely hairy Julia Pastrana as “a hybrid, wherein the nature of woman predominates over the ourang-outangs.”³⁰ And there were other ways of positing similarly concrete connections between people and the non-human animals most nearly allied to them by anatomy. Well into the nineteenth century, physicians explained many kinds of birth defects as the unfortunate consequences of what was termed maternal imagination or impression – that is, an expectant mother’s fascination with an external object that somehow influenced the development of her unborn child. Where the object was animate, the fascination could occasion a kind of mental hybridization: a child whose parentage involved more than one species. Thus in 1867 the *Lancet* attributed the dense fur covering an unfortunate girl’s back to the fact that her mother had been frightened during pregnancy by an organ grinder’s monkey.³¹ In addition, because the evolutionary theories that gained currency in the late Victorian period assumed the existence of extinct forms intermediate between humans and apes, at least in the sense of having given rise to both

modern groups, the rhetoric of evolution could be deployed to suggest that human-ape mixtures existed in the present, as well as in the ancestral past. For example, a Laotian girl named Krao was exhibited in 1883 as “Darwin’s missing link,” not only because she was unusually hairy, but because she allegedly possessed prehensile feet and could pout like a chimpanzee.³²

Even among scientists, the conviction that apes were not people did not exclude the possibility that some people might be apes. Indeed, over the course of the nineteenth century this possibility loomed increasingly large, as specialists focused more intensely on ways to subdivide the human species. The discriminations could be very fine. For example, John Beddoe, the author of *The Races of Britain*, deemed it possible to distinguish between the appearance of people who lived in Boston and those who lived in Lincoln (towns separated by approximately thirty miles), and further speculated that some of the differences between the Saxon and the Celtic components of the British population could be explained by the persistence of “Mongoloid” and African traces persisting in the latter group.³³ And the stakes could be high, both intellectually and politically. During the 1860s, the nascent British anthropological community was riven by a struggle between so-called ethnologicals, generally evolutionists and monogenists (believers in the common descent of all human varieties), and the anthropologicals, generally anti-Darwinians and polygenists (believers in the independent origin of human varieties).³⁴ In the presidential address that inaugurated the Anthropological Society of London in 1863, which was billed as a consideration of “the station to be assigned to [the Negro] in the genus *Homo*,” James Hunt argued that

“there is as good a reason for classifying the Negro as a distinct species from the European, as ... for making the ass a distinct species from the zebra.” After a series of disparaging characterizations, Hunt concluded that “the Negro race can only be humanised and civilised by Europeans.”³⁵

As displays of great apes suggested their latent humanity, the anthropoid qualities of derogated human groups could be indicated concretely as well as in words. Museums frequently exhibited the remains of non-European humans in ways that underlined their difference from Europeans, or suggested their greater affinity with other animals. In 1766, a traveling collection of “curiosities” grouped a “Negro Child” with a “Monstrous Cat with 8 legs,” a “Chicken’s Foot with 6 Toes,” a sloth, and an armadillo. A century later the Cambridge University anatomical collection listed separate entries for the “Tegumentary System or Skin” of the “Human” and the “Negro.”³⁶ If twentieth-century natural history museums included displays of human artifacts, or dioramas showing human activity, they were much more likely to feature people who could be characterized as exotic or primitive than people who wore business suits and carried briefcases. The political consequences of such explicit and implicit taxonomic juxtapositions have been demonstrated repeatedly, whether human groups are associated with fellow primates or, as in the rhetoric of the Nazis, resurrected in the recent Rwandan genocide, with insects whose similarities are purely metaphorical.

Although it has never been difficult to distinguish between people and cockroaches, human uniqueness has come under increasing taxonomic challenge. Beginning with the nineteenth-century

discovery of Neanderthal remains,³⁷ paleoanthropologists have exhumed and identified species after species, so that *Homo sapiens* is now surrounded by a crowd of ghostly parents, grandparents, aunts, uncles, and cousins, some of them only very recently extinguished. In this respect, if not in others, humans are now more like the cat than like the giraffe. *Homo neanderthalensis* and *Homo sapiens* coexisted for millennia in parts of Europe and southwest Asia.³⁸ Remains of small-bodied and small-brained humans discovered on the Indonesian island of Flores in 2004 have been classified as a separate species (*Homo floresiensis*) that lived there until about 17,000 years ago.³⁹

The phylogenetic relationship between people and the other great apes has also become better and better documented, making any classification that groups chimpanzees, gorillas, and orangutans together, while leaving humans in splendid isolation, primarily a case of wishful thinking. Although the fine points of ape taxonomy are still subject to debate, it has become clear that orangutans, rather than humans, are the outliers. In one recent formulation, the family Hominidae contains three subfamilies: Ponginae (orangutans), Gorillinae (gorillas), and Homininae (chimpanzees, bonobos, and humans).⁴⁰ And if the claim embedded in the title of Jared Diamond’s book *The Third Chimpanzee* still seems provocative, a more generic version of it is definitely ready for prime time.⁴¹ A publicity release for the *Nova* television program’s episode “Ape Genius” begins, “Congratulations: You are an ape.”⁴² I have visited zoos that provide a mirror in which visitors can admire one last specimen as they leave the great ape house.

This increasing convergence has destabilized the assumptions on which the

dictionary definitions of *human* and *humanist* have been based. If people are apes, then they must understand and justify their preeminence in novel ways, or, if they are committed to traditional understandings of human distinctiveness, they must at least find new evidence to support them. As evidence of physical difference has become less persuasive, evidence from the behavioral, intellectual, or spiritual sphere has gained prominence. Nineteenth-century naturalists uneasy about the human-ape connection frequently posited an alternative alliance. They reasoned that if non-primate animals resembled humans more closely than apes, then they would necessarily displace apes from their awkward proximity. Such displacement required that qualities other than physical resemblance be identified as the most significant for purposes of comparison. Animal mental ability was defined as different in kind from that of humans; most highly esteemed were qualities that produced good servants. This metric was unlikely to privilege apes or monkeys. In 1881, for example, George J. Romanes, a close friend and colleague of Darwin's with a special interest in animal behavior, celebrated the "high intelligence" and "gregarious instincts" of the dog, which, he claimed, gave it a more "massive as well as more complex" psychology than any member of the monkey family.⁴³ And since the competing closeness so constructed was clearly figurative, the whole animal creation was thereby implicitly removed to a more comfortable distance.

Temperament, of course, is hard to pin down; as with Linnaeus's characterization of human types, it is often in the eye of the beholder. The more that we have come to know about the dispositions of chimpanzees and other primates, the

harder it has become to maintain a firm separation. Many characteristics that once seemed exclusively or at least distinctively human, including moral intuition, oppressive patriarchy, internecine strife, and cannibalism, turn out to be more widely distributed.⁴⁴ Intelligence has proved a weak reed for similar reasons. None of the intellectual barriers erected to isolate people has proved reliably robust. In *Sartor Resartus*, Thomas Carlyle chose "Tool-using Animal" as a definition that emphasized human uniqueness, noting that "Man is called a Laughing Animal, but do not the apes also laugh, or attempt to do it."⁴⁵ In the wake of Jane Goodall's pioneering observations of chimpanzees, tool creation has been observed in several primate species (and many kinds of animals are capable of using found tools).⁴⁶ The obstacles to speech in other primates are located in their vocal tracts rather than in their brains.⁴⁷ In any case, parrots can talk, as can a few other kinds of birds; some of them, like the recently deceased Alex, arguably make sense.⁴⁸ And it has become clear that, with the aid of sign language, computers, or other accessories, apes and dolphins can breach the final barrier, that of symbolic communication.⁴⁹

The implications of these snowballing recognitions are more than abstract or theoretical. In the preface to *The Great Ape Project*, the editors argue that the "sphere of moral equality" to which we all belong should be based not on reductive taxonomy – membership in the species *Homo sapiens* – but on "the fact that we are intelligent beings with a rich and varied social and emotional life." Since these "are qualities that we share ... with our fellow great apes," the boundary of the sphere should be redrawn so that they are included, too.⁵⁰ Contributors

include scientists who study apes in the wild, scientists who study apes in captivity, and specialists in language, philosophy, and law, among other disciplines. They all subscribe to the “Declaration on Great Apes,” which specifies that, for human beings, chimpanzees, gorillas, and orangutans, the right to life, the protection of individual liberty, and the prohibition of torture should all be enforceable by law.⁵¹

Since not all humans enjoy these legal protections, it is not surprising that apes remain outside the “sphere of moral equality.” Some recent developments in Europe suggest the possibility of future change, especially the resolution adopted in 2008 by a committee of the Spanish parliament giving great apes the rights formulated in *The Great Ape Project*.⁵² But such change will certainly be slow, and in any case most apes do not live in Europe (at least not yet). Nor do they live in the United States, where the legal system, as well as the culture at large, seems less sympathetic. A *New*

York Times commentator on the Spanish resolution pointed out the failings of extremists on both sides, but came down on the side of the apes: “Critics object that recognizing rights for apes would diminish human beings. But it seems more likely that showing respect for apes would elevate humans at the same time.”⁵³

These developments reflect the evolution of an argument that has been going on for centuries. In comparison, most humanists have just begun to wonder about the limits and limitations of the human. We might, indeed, wonder whether the label “humanist” has always carried a certain amount of hubris (or at least tunnel vision), as well as what it would take to become “post-human.” Perhaps the liberation of all the apes now held in captivity (not to speak of all the other animals)? As Humpty Dumpty might have said, “There’s a nice knock-down argument for you.”

ENDNOTES

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⁸ Harriet Ritvo, *The Platypus and the Mermaid, and Other Figments of the Classifying Imagination* (Cambridge, Mass.: Harvard University Press, 1997), 23, 28 – 31.

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- ²⁰ P. H. Gosse, *Natural History: Mammalia* (London: Society for Promoting Christian Knowledge, 1848), 3.
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Geoffrey Galt Harpham

How do we know what we are? The science of language & human self-understanding

Where do we get our basic conceptions of ourselves as human beings? How do we know what we are? In one respect, this does not seem like the right question to ask, because we neither have nor need any fully articulated concepts of our humanity. Indeed, a determined obliviousness to such questions, punctuated perhaps by occasional abstracted musings – “What a piece of work is man!” or, “Who am I? Why am I here?” – seems entirely adequate for most purposes. We have a functional understanding, tacit but effective, of what a human being is, an understanding that snaps into focus when we talk about “the sanctity of human life,” insist on “human rights,” register shock at “crimes against humanity,” or reflect that “nobody deserves to be treated like that.” On occasion, this understanding acquires institutional force: The Rome Statute of the International Criminal Court defines crimes against humanity as “particularly odious offences in that they constitute a serious attack on human dignity or grave humiliation or a degradation of one or more human beings,” and prohibits them on that basis.¹ We must know what a human being is, and what rights it has,

in order to frame such a definition and expect it to compel universal assent – which it largely has, with the exception of Israel and the United States, which first signed the document and then, in 2002, “unsigned” it, declaring themselves exempt from its restrictions. Presumably, these two nations demurred because they found the restrictions inconvenient, not because they had doubts about the implied account of the human.

One reason we never get beyond implication is that one of the most durable elements of our species self-understanding is the conviction that human beings transcend all positive or constraining descriptions: we are, we feel, various, inventive, and free to explore or extend our own capacities. Our nature includes an ability to exceed, negate, modify, or refuse nature as such; our particular instincts, unlike those of the octopus, the bluebird, the mosquito, or the lemur, lead us away from the hardwired repetitions and nonnegotiable demands of animal nature. But again – where do we get this implicit yet deeply held belief? How is a general atmosphere of suggestion formed, and what particles make it up? The argument I will pursue in this paper is that because of the ways in which it is conceptualized, articulated, and disseminated, academic discourse

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plays an influential role in forming our species self-conception.

All disciplines that deal with human beings place certain aspects of the human within their purview, on the presumption that these aspects represent core attributes of the human. The study of the arts inquires into human creative behavior; philosophy studies the human capacity for reflective thought and analysis; history considers the capacity for significant or meaningful action. But it is in the “human sciences” – psychology, economics, anthropology, sociology, and linguistics – that the articulation of the human becomes most explicit. To appropriate a term Michel Foucault uses often in *The Order of Things*, science proceeds by positing “models” that guide and inform the inquiry. In most of the human sciences, the operative model is an abstraction, a selective reduction. But because in the most venerable traditions of Western thought language has been considered the defining mark of the human, the discipline of linguistics employs a model that is not sectoral but holistic: it is the study of language that comes closest to registering our essential self-conception as distinct from other species. For without some prior understanding that language sets the human species apart, there would be no linguistic object that a scientist could study. Anything capable of bearing meaning – animal noises, gestures, thunderclaps, markings on a rock, the sound of the sea, well-formed sentences uttered by competent speakers – could be considered language. It is only when we posit human beings as the sole possessors of language that a bounded and integrated field comes into view: language is defined as the means by which humans and humans alone express and communicate their thoughts. The study of language begins with a model of the human

as the linguistic animal and ends by producing support for this model, which becomes a scientifically validated model of the human as such. In the course of controversies that are often technical in nature, an image of the human becomes visible.

In a brief essay, I can only indicate how this large claim might be supported by relating a few suggestive incidents in which a theory of language, claiming the authority of science, contributed to an articulation of the concept of the human. The first incident centers on the figure of Darwin, the full dimensions of whose radicalism are still being explored. How did Darwin make the case for what Daniel Dennett has called his “dangerous idea”² – or, rather, how did he make it persuasive, how did he win over readers who must have felt the full, unbuffered impact of a theory that, however based on careful observation and majestic in scale, was still blasphemous, humiliating, and counterintuitive? And how did he persuade himself that his wide but scattered observations of plant and animal forms could ground a new understanding of organic nature, including a radically new understanding of humanity?

People are persuaded of radically new ideas by degrees and often by indirection. Darwin began in just this manner by remarking, in a collection of notes he made during the *Beagle* voyage, that:

At least it appears all speculations of the origin of language. – must presume it originates slowly – if their speculations are utterly valueless – then argument fails – if they have, then language was progressive. –

We cannot doubt that language is an altering element, we see words invented – we see their origin in names of People. –

sound of words – argument of original formation – declension etc often show traces of origin. – 3

At the time he wrote these words, Darwin little understood the significance that the origins of language would hold for his own work; indeed, the jottings quoted here are contained in a notebook he later titled “Old and Useless Notes.” But he was beginning to assemble the elements of his theories of descent with modification and natural selection, and was keenly interested in solid information about origins of any kind.

Darwin undoubtedly thought that “we cannot doubt” the progressive nature of linguistic development because it had been so persuasively demonstrated by the “new philology” that had been developed since the end of the eighteenth century, when F. A. Wolf published his *Prolegomena to Homer*. Wolf had applied the comparative and historical methods developed for the “higher criticism” of the Bible to the texts of Homer, with the result that the Homeric texts were revealed to be not the work of an inspired solitary genius, but rather a compilation of many texts written at different times and assembled into a unity whose apparent integrity masked its own complex history. Wolf focused exclusively on Homer, but his ultimate goal, he said, was to articulate “the philosophy of the history of human nature in Greece.”⁴ His successors extended his project in an attempt to discover the common root of Greek, Latin, and Sanskrit, which became known as Proto-Indo-European. In pursuit of this *Ursprache*, philologists in the early nineteenth century constructed elaborate language “families” and their genealogies, based on the principle of “progressive” development Darwin noted. Like Wolf, they were interested in human nature. If we could

get some sense of Proto-Indo-European, they thought, we would be standing in the dazzling presence not just of the first human language, but of the original – that is, the natural – forms of human thought and expression.

By the time he was finally ready to publish *On the Origin of Species*, in 1859, Darwin was confident that his convictions were supported not only by his own researches and those of other naturalists, but by the accumulating force of analogies that linked linguistic and species development.⁵ These analogies come into play at key moments in *Origin*, as when Darwin notes that “a breed, like a dialect of a language, can hardly be said to have had a definite origin”; or when he begins an exposition of the idea that a natural system is “genealogical in its arrangement, like a pedigree,” with the comment, “It may be worth while to illustrate this view of classification, by taking the case of languages.”⁶ But the analogies between language and nature were far more important than these almost incidental comments suggest. *Origin* is concerned only with plants and animals, with but a single passage near the end indicating the real target, which would be revealed only twelve years later with the publication of *The Descent of Man*: “In the future, I see open fields for far more important researches. . . . Much light will be thrown on the origin of man and his history.”⁷ One reason that the extravagantly cautious Darwin was able to move from plants and animals to the far riskier subject of human beings was that the defining human trait, language, had already been proven by philology to behave in “Darwinian” ways.

The impact of those few passages in *Origin* on philologists themselves can hardly be overstated. The fact that Darwin had enfolded language into an over-

arching and compelling theory of nature represented an invaluable vote of confidence for a linguistic science still striving to establish its own scientific credentials. Moreover, they recognized that the theory of natural selection provided something philology badly needed and did not have: an explanation of why certain variations were preferred over others. The London-based, German-born philologist Max Müller immediately integrated Darwinian rhetoric into his own work. In the first series of his wildly popular *Lectures on the Science of Language* (1861), he described the scene of language as a “struggle for life . . . which led to the destruction of the less strong, the less happy, the less fertile words, and ended in the triumph of *one*, as the recognised and proper name for every object in every language.”⁸ In 1863, August Schleicher, a botanist and a philologist who pioneered in the construction of linguistic “trees,” published a small tract with the title *Die Darwinische Theorie und die Sprachwissenschaft* (Darwinian theory and the science of language),⁹ in which he argued that Darwin’s theory and philology corroborated each other, with the latter providing direct empirical evidence for Darwin’s ingenious suggestions and hypothetical scenarios. What Stephen G. Alter calls “the metaphoric mind of nineteenth-century science” produced a number of “striking conceptual transfers,” of which the easy flow of analogy between biology and language was perhaps the most consequential.¹⁰

Analogies flowed particularly freely in the work of the German naturalist and philosopher Ernst Haeckel, one of those distinctively nineteenth-century titans who, like Müller, published in a wide range of fields. Three years before the appearance of *The Descent of Man*, Haeckel proposed a speculative theory

of human evolution from primates.¹¹ Many of the particulars of his account were controversial from the outset, in part because they lacked adequate scholarly support – he assured his readers, for example, that “the Caucasian, or Mediterranean man has from time immemorial been placed at the head of all races of men, as the most highly developed and perfect”¹² – but Haeckel was able to buttress his broad claim about evolution by pointing out that it was entirely consistent with the findings of philology. The crucial evolutionary leap, Haeckel said, took place when “Man-like Apes” acquired “articulate human language” thereby becoming transformed into “Ape-like Man.” As “the highest authorities in comparative philology” had demonstrated, the acquisition of language had an “ennobling and transforming influence upon the mental life of Man,” constituting a “real and principal act of humanification.”¹³ Writing six years later on *The Evolution of Man*, Haeckel again called attention to the “remarkable parallelism” between the evolution of languages and that of organic species: “Indeed it is hardly possible to find an analogy better adapted to throw a clear light on many obscure and difficult facts in the evolution of species, which is governed and directed by the same natural laws which guide the course of the evolution of language.”¹⁴

Not all the highest authorities in comparative philology agreed. Müller, for example, was a thoroughly committed scientist, but he committed his science to such purposes as demonstrating the presence of the divine scattered throughout nature, revealing Christianity to be the unconscious goal of human history, and disproving Darwin’s theory of human evolution. Under the guise of a scholarly debate about the origins of language, Müller and Darwin conduct-

ed a heated discussion about the nature of man. Praising “the genius of Darwin,” Müller argued that natural selection could never explain the emergence of language, much less the appearance on earth of human beings.¹⁵ Language and humanity, he insisted, appeared at the same moment, when God endowed the “original pair” with the gift of speech. Proleptically rejecting the argument Darwin would make in *The Descent of Man*, Müller wrote in 1863, “It is not any accidental variety that survives and perpetuates itself,” but, rather, “the individual which comes nearest to the original intention of its creator, or what is best calculated to accomplish the ends for which the type or species to which it belongs was called into being, that conquers in the great struggle for life.”¹⁶

For Müller and others, the notion of a struggle for life, which was confirmed everywhere by observation and provided no serious challenge to theology or to the socio-economic status quo, was intellectually and ideologically acceptable; the idea of descent from primates, which would have meant surrendering man’s place in God’s chain of creation and the authority of revealed religion, was not. For Müller, Darwinism was both indispensable and inimical: it provided a powerful explanation of linguistic change, but did so at the cost of human distinctness. This was too high a price for Müller to consider paying. “Language is our Rubicon,” he wrote in a memorable phrase, “and no brute will dare to cross it.”¹⁷ For his part, Darwin seemed to take no notice of this resistance. He cited Müller, with whom he had by then been corresponding for many years, in support of his own theory in *The Descent of Man*, reaching what Alter calls an “analogic zenith” in his claim that “the survival or preservation of certain favoured words in the

struggle for existence is natural selection.”¹⁸

Both Müller and Darwin were altered by their exchanges. From the moment Darwin accepted the premise that linguistic change was a scientifically proven analogy for processes of natural selection in the organic world, he was set on the course that would eventually culminate in the argument of *The Descent of Man*: that human evolution was governed by the same principles as those observable in plants and animals. If Darwin was encouraged by Müller to develop his scientific thinking in the most radical and controversial way, Müller responded to the challenge of Darwin by retreating to fundamental and unscientific principles. When Müller accepted natural selection (which he rechristened natural elimination) as the explanation for why some linguistic forms endured and others did not, he committed himself to a naturalistic understanding of language, the full implications of which he would never endorse because they threatened his model of the human as the linguistic lord of creation.

At the level of the model, the disagreements between Darwin and Müller ran deep, but they shared a fundamental conviction: that the most revealing approach to the question of the human was through an inquiry into origins. But by the end of the nineteenth century, thinkers were turning away from deep time as the source of ultimate explanations, and were looking instead to systems. One of the clearest instances of the new emphasis is the work of the Swiss linguist Ferdinand de Saussure, who began his career as a precocious comparative philologist, but ended it as a prophetic postmodernist – helping, in between, to found modernism. Saussure argued that language should be studied

as a “synchronic” system of communication established and enforced by “the collective mind of the linguistic community.”¹⁹ In his 1906–1911 series of lectures, which were posthumously assembled, edited, and published as *Course in General Linguistics*, Saussure sought to turn the attention of linguistics away from the philological emphasis on linguistic genealogy and toward what he called language alone. The new object of attention for linguists should, he insisted, be the “sign,” a sound fused on an “arbitrary” basis with a concept, and the conventional system of signs that made communication possible. One way to describe Saussure’s work is to say that he sought to make linguistics a science by drawing a bright line between language and the human beings who use it.

Another way to describe it, however, is to say that he made humanity available to scientific study by making language into an object. As a scientist, Saussure was indifferent to nineteenth-century forms of humanism, but he was wholly invested in the concept of human society. The task he set for his new science of “semiology” was to study “*the role of signs as part of social life*,” a project that fit neatly into a context in which thinkers such as Freud, Durkheim, Gabriel Tarde, George Dumas, and others were formulating new understandings of the human condition that emphasized communally determined conventions and values. The reception of Saussure’s work undoubtedly benefited from this convergence, but his extraordinary influence on subsequent thinking about the human owed some of its force and durability to the fact that he represented his work as a science of language.

What is man, according to Saussure? What model of humanity informs his work? The model is never explicit, of

course, but one clue may be found in the famous diagram of the “speaking circuit,” which consists of line drawings of two virtually identical male heads facing each other, with dotted lines representing the career of a thought originating in the brain of A, passing through A’s mouth, where it is conjoined with a sound, and swooping in the line of a hammock toward the brain of B, who receives the sign, understands it, forms his own thought, and replies by the same route. Saussurean man is not defined by his origins, race, class, gender, age, religion, marital status, ethnicity, nationality, body type, or any other marker of individual or social identity. Indeed, he is scarcely defined at all, for his thoughts and utterances conform strictly to social conventions. In Saussure’s linguistics, the individual is accident rather than essence, a mere node in the system, and conventional by communicative necessity. As Saussure says, the masses (*la masse sociale*) are not consulted in the determination of signs, which are “chosen by the language.” Saussure seems to approve of this arrangement in the same way that a conservative political thinker might approve of tradition and custom; his work gives little evidence of any desire to disturb what he calls “the normal, regular existence of a language already established,” or to disrupt – in the name, for example, of “creativity” or “freedom” – the “collective inertia” of the communicational consensus.²⁰

Outside of linguistics, Saussure’s work found an immediate audience in those engaged in the study of society. Marcel Mauss was one of the first to cite Saussure as a predecessor in the study of systems of exchange that involved not only signs but symbols, classifications, and other kinds of representations. Claude Lévi-Strauss cited Mauss’s influential work on kinship and “the gift” in his

own equally influential work on mythology and “the savage mind,” noting that “the analogy with language, so strongly asserted by Mauss, could enable us to discover the precise rules by which, in any type of society, cycles of reciprocity are formed whose automatic laws are henceforth known.”²¹ With such powerful theorists advocating the linguistic analogy, advanced thinking in the fields of sociology and anthropology was for several decades anchored in linguistics.

The influence of Saussure on the forms of structuralism and poststructuralism embraced by many disciplines around the middle of the twentieth century was vast and diffuse. That influence was especially marked in what came in the United States to be known as “critical theory,” whose heyday was from the mid-1960s to approximately 1990. As one thinker said of the ethos of that time, “*the paradigm of language . . . replaced the paradigm of consciousness.*”²² The presiding geniuses of this genius-driven movement objected on theoretical, political, and even moral grounds to an older humanism, enlisting the elusive and enigmatic Saussure – the genius behind the geniuses – in support of their various positions and values, all of which, it was claimed, could be extracted from the *Course*. Thus Jacques Lacan, in proposing a revolutionary shift from Freudian psychoanalysis to a new, scientific understanding of the subject, could point to Saussure as the man responsible for enabling language, and therefore the subject, to “[attain] the status of an object of scientific investigation”; Louis Althusser could subsequently embrace Lacan as the thinker responsible for making psychoanalysis into a science by assimilating it to Saussurean linguistics; Paul de Man could say that advanced literary theory involved nothing other than the applica-

tion of Saussure to literary texts; Jacques Derrida could base his attack on Western “logocentrism” on his reading of Saussure; Stuart Hall could refer to the long-dead Saussure as the source of “recent work on the nature of language” that supported his rewriting of Marxism; and Ernesto Laclau and Chantal Mouffe could identify Saussure as the fountainhead of “contemporary” scientific authority on language, which proved, they contended, the “relational” character of all personal and social identity.²³

The Saussure who emerged from this orgy of appropriation was not merely a scientist but a savant, a great philosopher of the modern and postmodern human condition. He achieved this status not despite, but because of the fact that his exclusive focus was on language. He began with a conviction about what constituted real science in the field of linguistics, developed this conviction with single-minded purpose and no larger aims, and was adopted by those seeking a broader truth of humanity because they felt that language revealed the truth about the human.

Ironically, by the time Saussure achieved this apex of influence, he had been completely superseded in his own field, and was accorded even less respect by linguists than Freud by his heirs and descendants in psychoanalysis. Post-Saussurean linguists approached their task from another point of view altogether, guided by a completely different model of the human. In the work of Noam Chomsky, this model comes very close to direct and explicit articulation. Rejecting virtually every one of Saussure’s premises about the object of linguistic research, Chomsky sought to redirect linguistics away from signs, society, communication, arbitrary

conventions, and obedience to rules, and toward the human brain. The community of language-oriented theorists that appropriated Saussure has ignored Chomsky not because they doubt the adequacy of his science (which they do not pretend to understand), nor even because they disagree with his politics (in many cases, they do not). They ignore Chomsky because his model of humanity conflicts with theirs, in that it is based on unconscious biological necessity centered in the individual rather than in the unconstrained invention of the linguistic community.

According to Chomsky, human beings are endowed with a cognitive apparatus capable of learning and using language, a capacity for understanding and generating an infinite number of grammatically well-formed, but never-before-heard, sentences. This capacity for “rule-governed creativity,” which is universal by biological necessity, is, Chomsky maintains, the key to human singularity; and linguistics, considered as a biology-based branch of cognitive science, is the key to a general and authoritative science of the human. This science begins with a study of the rules of syntax, posits a theory of how those rules arose and took root, infers from that theory the innate structure of the brain, and extrapolates from that structure a positive description of human nature. Since his high argument is grounded in biology, it would seem that Chomsky ought to embrace a Darwinian, that is, naturalistic account of human evolution. He has instead raised a series of objections to thinking of natural selection as the means by which language developed, and to biological reductionism and naturalism more generally.²⁴ His resistance to Darwin has created a tension in his theory that after half a century remains unresolved.

Various reasons for Chomsky’s obdurate and, to some, mystifying resistance to a Darwinian account of the human capacity for language have been proposed, but most of them direct attention to the wrong place, to some argument Chomsky has made about evolution, epistemology, or genetics. The real driver of Chomsky’s Darwin-skepticism is not to be found in his science itself, but in another compartment of his thinking where the model of the human that informs his science resides. That compartment is not scientific at all, but political and moral. Chomsky has situated his work in a philosophical tradition that includes Descartes, Rousseau, Kant, von Humboldt, Herder, and Schelling.²⁵ This Enlightenment tradition supports, in his account, a linked series of arguments: that the essence of humanity is freedom; that language is the faculty that defines mankind by placing humans beyond the limits of mere physical explanation; that beasts are incapable of freedom because they do not possess language; and that an understanding of the creative principle in language should guide us in constructing a rational social order in which human beings could enjoy full scope for expressing their inherent nature.²⁶ Chomsky may have scientific reasons for believing that natural selection cannot explain the origin of language; but one cannot ignore the possibility that Darwin does not make the list of approved thinkers because Darwin’s understanding of organic life as a ceaseless struggle resulting in the flourishing of the fittest species and the extinction of “less improved forms” does not support the values of creativity and freedom Chomsky wants to promote.

One of the foundational arguments in the tradition of thinking in which Chomsky places himself is voiced by

Rousseau, who distinguishes between humans and animals on the grounds that a beast is (in Chomsky's paraphrase) "merely an ingenious machine, commanded by natural law," unlike man, whose "freedom and his consciousness of this freedom distinguish him from the beast-machine."²⁷ This concept of the "beast-machine" has particular force in Chomsky because it indicates both the non-human and, more surprisingly, the human. Human superiority is based on language, which gives people – all people, regardless of their talents, aptitudes, or merits – the capacity for free and open-ended creativity. Unlike other kinds of creativity, the generation of an endless string of grammatical sentences does not require will, intention, or even awareness; it operates automatically because it is produced by what Chomsky calls a "device" in the human brain that is specialized to acquire or "grow" a language, and that operates like a "machine."²⁸ For Chomsky, the linguistic capacity is part of our biology, a "module" in the brain; but the operation of that capacity is mechanical and strictly unconscious. Human beings are neither beasts nor machines because, unlike them, they are both. If we could unpack the complex, even contorted thought behind the phrase "beast-machine," we would be close to articulating the model behind Chomsky's linguistics. Beasts and machines, we might say, are both condemned to mindless repetition – this is why we can conceive of a "beast-machine" – but the combination of an animalian responsiveness to the environment and a rule-governed "device" in the brain that operates independently of any animal reaction or response produces a distinctively human being that is both free and endlessly creative.

Attempting to deflect some of the implications of Darwinian naturalism, Chomsky has actually proposed an alternative account of the genesis of language that does not exactly contradict Darwin, but still preserves human singularity. Humans, he has suggested, share with primates a primitive conceptual system, but the capacity to conceive of a "discrete infinity" – the most obvious example being the infinite number of natural numbers – is exclusively human. This capacity, Chomsky speculates, is the result of a fortuitous event in the distant past, when the conceptual system was crossed with the computational capacity through a "mutation . . . perhaps for reasons that have to do with the biology of cells, to be explained in terms of properties of physical mechanisms, now unknown," with the result being an ability unique to the species to generate an infinite number of new sentences.²⁹ With the acquisition of this remarkable ability, we suddenly became a "totally new organism," living in "a total new world."³⁰ Natural selection played no role in producing this mysterious fluke, a one-time accident punctuating the slow evolutionary grind. Once it happened, however, the accident became frozen in the species, which – also suddenly – acquired a distinctive nature, with its own capacities, norms, and rights. The process may have been merely biological, Chomsky grants, but it produced a species that is "metaphysically distinct from non-humans."³¹

Chomsky's commitment to a metaphysical difference is not, perhaps, what one might expect from a scientist; but even more surprising in this context is his statement that we remain, at this late date, encumbered by a not-fully-developed mental apparatus, and that more work is required in order for us to reach our full potential, which will be attained

when “animal nature is transcended and human nature can truly flourish.”³²

By claiming that the language faculty is part of our genetic endowment but refusing to make his case in Darwinian terms, Chomsky has created a problem in his theory that others have tried solve, a dispute that others have tried to mediate, and a void that others have rushed to fill. Most of those making these efforts are unaware of, or simply do not credit, the philosophically and ethically determined model that has created the difficulty, and so proceed as if the issue were scientific rather than philosophical, political, or moral. In *The Language Instinct*, for example, Steven Pinker provides a cheerful and ingenious account of how language might have evolved from non-language and installed itself in the human brain as an instinct.³³ Pinker represents himself as an ally, providing evidence for Chomsky’s argument that Chomsky himself has, for no reason Pinker can divine, declined to provide. But Pinker has in fact described a language faculty that differs significantly from Chomsky’s. Pinker quietly substitutes the evolutionarily advantageous capacity for information sharing for Chomsky’s rule-governed creativity, he mentions (and conceives of) no metaphysical difference between humans and animals, and he does not appear to entertain any post-bestial aspirations for the human species. He has, in short, gutted Chomsky’s account of its vitals, and has done so with a clean conscience because he has failed to grasp that the real issue is not in the science, but in the model informing the science. Indeed, if he had fully grasped the significance of the model underlying Chomsky’s work, Pinker might not have cast his work as a friendly amendment, for he himself seems more interested in and impressed by an altogether different model, one

based on the hard invariants of human nature rather than in the human capacity for open-ended creativity.³⁴

Nor is Pinker the only one to get Chomsky wrong by ignoring or underestimating the antipathy between Darwin and Chomsky. In his widely noticed book, *Moral Minds: How Nature Designed Our Universal Sense of Right and Wrong* (2006), Marc D. Hauser argues that human beings are innately endowed with “a *universal moral grammar*, a toolkit for building specific moral programs” that is, he says, precisely analogous to the unconscious mechanical workings of the grammar-based language faculty on which Chomsky’s work is based.³⁵ The book is built on this analogy: he announces in his second sentence that “the blind hand of Darwinian selection” has contributed to producing a species uniquely capable of moral judgment, and in his third that his entire argument is modeled on that of Chomsky.³⁶ In essence, Hauser has detached Chomsky’s linguistics from its Enlightenment model, and has stapled it to the Darwinian model Chomsky has always resisted. It is an open question whether Hauser is endorsing Chomsky’s ideas or Darwin’s, for while he gives Chomsky naming rights, as it were, to the supporting evidence, the fundamental model of humanity in *Moral Minds* is the one articulated not in *Aspects of Syntax*, but in *The Descent of Man*.

At the beginning of this essay, I suggested that the science of language was such a productive source of human self-understanding because language itself was widely considered to be the definitive human trait. But it is now clear that another factor is at work as well. The study of language requires an implied model of humanity, but this model does not merely set the parameters of inqui-

ry; to an unusual degree, the model determines the object of study itself. In pursuit of the language spoken by the original pair, Müller focused on etymology and other historical features of language; seeking to understand the essence of mankind as a communicating species, Saussure concentrated on the system of signs; and as a way of grasping human nature as a structure of freedom and creativity, Chomsky prioritized syntax. All were confident that their chosen emphases represented the core of language, with everything else being contingent or secondary.

What, then, is language? Chomsky voices a suspicion held by many of the most serious students of the subject when he explains his preference for the term syntax over language by say-

ing, “There is nothing in the real world corresponding to language. In fact it could very well turn out that there is no intelligible notion of language ... the notion [of] language might turn out just to be a useless notion.”³⁷ This remarkable formulation actually requires a small revision. There may be nothing in the world designated by the term *language*, but the notion, idea, or concept of language is, in fact, extraordinarily useful, for it enables linguistic scientists not only to lay claim to a subject of immense historical importance and philosophical resonance, but also to serve the larger purposes of humanity by enabling the idea of the human to come, or almost come, to countenance in the coded but accessible form of rational discourse about an object.

ENDNOTES

- ¹ Rome Statute Explanatory Memorandum, International Criminal Court, vol. 1, 360. As of October 2008, 108 countries are party to the Rome Statute, including nearly all of Europe and South America, and roughly half the countries in Africa. Forty more states have signed but not ratified the treaty.
- ² Daniel Dennett, *Darwin’s Dangerous Idea: Evolution and the Meanings of Life* (New York: Simon & Schuster, 1995).
- ³ “Early Writings of Charles Darwin,” in *Darwin on Man: A Psychological Study of Scientific Creativity*, Together with Darwin’s Early and Unpublished Notebooks, ed. H. E. Gruber, transcribed and annotated by Paul H. Barrett, with a foreword by Jean Piaget (London: Wildwood House, 1974), 383.
- ⁴ F. A. Wolf, *Prolegomena to Homer, 1795*, trans., with introduction and notes, by Anthony Grafton, Glenn W. Most, and James E. G. Zetzel (Princeton: Princeton University Press, 1985), 233; emphasis in original.
- ⁵ An unpublished manuscript indicates that as early as 1844 Darwin implicitly paralleled the Tree of Life to the family tree of language; cited in Stephen G. Alter, *Darwinism and the Linguistic Image: Language, Race, and Natural Theology in the Nineteenth Century* (Baltimore: Johns Hopkins University Press, 1999), 20. Others were also urging Darwin to think of linguistic analogies. His cousin Hensleigh Wedgwood wrote to him in 1857, saying, “I have often thought that there is much resemblance between language & geology in another way. We all consider English a very mixed language because we can trace the elements into Latin, German &c. but I see much the same sort of thing in Latin itself & I believe that if we were but acquainted with the previous state of things we should find all languages made up of the debris of former tongues just as every geological formation is the grinding down of former continents”; “To Darwin from Hensleigh Wedgwood, before September 29, 1857,” in *The Correspondence of Charles Darwin*, vol. 6, 1856 – 1857,

- ed. Frederick Burckhardt and Sydney Smith (Cambridge: Cambridge University Press, 1990), 458.
- ⁶ Charles Darwin, *The Origin of Species* (New York: P. F. Collier and Son, 1909), 53, 459.
- ⁷ *Ibid.*, 527.
- ⁸ Max Müller, *Lectures on the Science of Language*, 1st series (London: Green, Longman, and Roberts, 1861), 368; emphases in original.
- ⁹ August Schleicher, *Die Darwinsche Theorie und die Sprachwissenschaft* (Weimar: Böhlau, 1863). On Schleicher, see Liba Taub, "Evolutionary Ideas and Empirical Methods: The Analogy between Language and Species in Works by Lyell and Schleicher," *British Journal for the History of Science* 26 (1993): 171–193; Alter, *Darwinism and the Linguistic Image*, 73–79; and Robert J. Richards, *The Meaning of Evolution: The Morphological Construction and Ideological Reconstruction of Darwin's Theory* (Chicago: University of Chicago Press, 1992).
- ¹⁰ Alter, *Darwinism and the Linguistic Image*, 7.
- ¹¹ Ernst Haeckel, *The History of Creation*, 2 vols., trans. Sir E. Ray Lankester (1868; New York: Appleton, 1925).
- ¹² *Ibid.*, vol. II, 429.
- ¹³ *Ibid.*, 398, 408, 410.
- ¹⁴ Ernst Haeckel, *The Evolution of Man*, vol. II (1874; New York: D. Appleton and Company, 1896), 20.
- ¹⁵ Max Müller, *Lectures on the Science of Language Delivered at the Royal Institute of Great Britain in February, March, April, and May 1863*, 2nd series (1864; New York: Charles Scribner's Sons, 1890), 322.
- ¹⁶ *Ibid.*, 323.
- ¹⁷ *Ibid.*, 340.
- ¹⁸ Charles Darwin, *The Descent of Man, and Selection in Relation to Sex* (London: John Murray, 1871), 60–61; Alter, *Darwinism and the Linguistic Image*, 51.
- ¹⁹ Ferdinand de Saussure, *Course in General Linguistics*, ed. Charles Bally and Albert Sechehaye, in collaboration with Albert Riedlinger, trans. and annotated by Roy Harris (LaSalle, Ill.: Open Court Press, 1997), 5.
- ²⁰ *Ibid.*, 14, 72–73. On the ways in which Saussure's views of man and society are inscribed in his linguistics, see Geoffrey Galt Harpham, *Language Alone: The Critical Fetish of Modernity* (New York: Routledge, 2002), 16–34.
- ²¹ Claude Lévi-Strauss, *Introduction to the Work of Marcel Mauss*, trans. Felicity Baker (1950; London: Routledge, 1987), 43.
- ²² Seyla Benhabib, *Situating the Self: Gender, Community, and Postmodernism in Contemporary Ethics* (New York: Routledge, 1992), 208.
- ²³ Jacques Lacan, "The agency of the letter in the unconscious or reason since Freud," *Ecrits: A Selection*, trans. Alan Sheridan (New York: W.W. Norton & Co., 1977), 146–175, 148; Paul de Man, *The Resistance to Theory*, vol. 33, *Theory and History of Literature* (Minneapolis: University of Minnesota Press, 1986), 8; Jacques Derrida, *Of Grammatology*, trans. Gayatri Chakravorty Spivak (Baltimore: Johns Hopkins University Press, 1976), 30–73; Stuart Hall, "The Problem of Ideology – Marxism without Guarantees," *Journal of Communication Inquiry* 10 (2) (1986): 28–43, 36; Ernesto Laclau and Chantal Mouffe, *Hegemony and Socialist Strategy: Towards a Radical Democratic Politics* (London: Verso, 1985).
- ²⁴ For a sample of Chomsky's comments, see *Language and Mind* (New York: Harcourt Brace Jovanovich, 1972), 97–98; *Language and Problems of Knowledge: The Managua Lectures* (Cambridge, Mass.: MIT Press, 1988), 168–170; and *Nature and Language* (Cam-

- bridge: Cambridge University Press, 2002), 46–49. Among the numerous responses to Chomsky, see especially Dennett, “Chomsky Contra Darwin: Four Episodes,” in *Darwin’s Dangerous Idea*, 384–392.
- ²⁵ Chomsky has stated repeatedly that his work in linguistics is entirely independent of his political interventions. But the connection is forged quite directly through his engagement with his chosen philosophical tradition. In one revealing passage, at 134, in a long chapter called “Some General Features of Language” in *Reflections on Language* (New York: Random House, 1975), he modulates without a break from a highly technical discussion of what he calls the “extended standard theory” of transformational grammar, through a discussion that touches on Descartes, Hume, Kant, and Humboldt, and concludes with a stirring defense of the belief that “human needs and capacities will find their fullest expression in a society of free and creative producers, working in a system of free association.”
- ²⁶ For Chomsky’s articulations of this tradition, see Noam Chomsky, “Language and Freedom,” in *The Chomsky Reader*, ed. James Peck (New York: Praeger, 1987), 139–155; and Noam Chomsky, *Cartesian Linguistics: A Chapter in the History of Rationalist Thought* (Lanham, Md.: University Press of America, 1966).
- ²⁷ Chomsky, “Language and Freedom,” in *The Chomsky Reader*, ed. Peck, 145.
- ²⁸ Noam Chomsky, *Syntactic Structures* (The Hague: Mouton, 1957), 18. In *The Language Machine* (London: Duckworth, 1987), Roy Harris accuses Chomsky of being among those who have perpetuated the astonishingly durable but fundamentally misleading metaphor of a “language machine.”
- ²⁹ Chomsky, *Language and the Problems of Knowledge*, 170.
- ³⁰ Noam Chomsky, *Noam Chomsky on the Generative Enterprise: A Discussion with Riny Hurbregts and Henk van Riemsdijk* (Dordrecht: Foris, 1982), 21–22.
- ³¹ Noam Chomsky, *Language and Responsibility*, based on conversations with Mitsou Ronat, trans. John Viertel (New York: Pantheon Books, 1979), 92.
- ³² Chomsky, *Reflections on Language*, 134.
- ³³ Steven Pinker, *The Language Instinct* (New York: HarperPerennial, 1995).
- ³⁴ See Steven Pinker, *The Blank Slate: The Modern Denial of Human Nature* (New York: Viking, 2002).
- ³⁵ Marc D. Hauser, *Moral Minds: How Nature Designed Our Universal Sense of Right and Wrong* (New York: Ecco, 2006), xviii. See pages 37–55 for Hauser’s elaboration of the “analogy” or “parallel” between language and the moral sense suggested by Chomsky and, in slightly different terms, by John Rawls. For an argument that the discrepancy between Chomsky and Darwin is based on a misunderstanding, and can easily be overcome, see William H. Calvin and Derek Bickerton, *Lingua ex Machina: Reconciling Darwin and Chomsky with the Human Brain* (Cambridge, Mass.: MIT Press, 2000).
- ³⁶ Hauser, *Moral Minds*, xvii.
- ³⁷ Chomsky, *Noam Chomsky on the Generative Enterprise*, 107.

Kwame Anthony Appiah

Experimental moral psychology

How new is experimental philosophy?¹ Wasn't Descartes, whose "mechanical philosophy" aimed to overturn Aristotelianism, really an experimental philosopher? After all, much of his attention was devoted to geometry and optics, and for a period he was revered among scholars as, principally, a sort of mathematical physicist. (That's why the one reference to him educated people mostly know is in talk of the "Cartesian" coordinates he helped invent.) He also spent much time and energy dissecting cows and other animals. Only later was he repositioned as, centrally, a theorist of mind and knowledge, whose primary concern had to do with the justification of belief. In *The Passions of the Soul* (1649), Descartes aimed to solve what we now think of as the canonically philosophical puzzle about the relation between the soul and the body by way of an empirical hypothesis about the role of the pineal gland. Without the pineal – as Nicolaus Steno pointed out in 1669 – Descartes has no story of how mind and body are functionally integrated.²

I don't want to overstate the case: before the disciplinary rise of modern philosophy, one can readily trace dis-

tinctions – between, say, reason and experience, speculation and experiment – that seem cognate to our way of organizing knowledge. Descartes gives us hope when he refers to "first philosophy," and he famously maintained that "all philosophy is like a tree, of which the roots are metaphysics, the trunk is physics, and the branches, which grow from this trunk, are all of the other sciences, which is to say medicine, mechanics, and morals."³ Yet even here we can see that his taxonomy isn't quite ours: morals, to us a division of philosophy, is to Descartes a practical endeavor on a par with medicine.

By the next century, the growing prestige of experimentation was apparent everywhere. The encyclopedist D'Alembert praised Locke for reducing metaphysics to what it should be: *la physique expérimentale de l'âme* – the experimental science of the spirit. And Hume subtitled his great *Treatise of Human Nature*, as we don't always remind ourselves, *Being an Attempt to Introduce the Experimental Method of Reasoning into Moral Subjects*. The point is not just that the canonical philosophers belong as much to the history of what we now call psychology as to the genealogy of philosophy. It is that the "metaphysical" and the psychological claims are, insofar as we insist on dis-

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tinguishing them, profoundly interdependent. Their proper place as ancestors of both modern disciplines is reflected in the fact that many of the claims they make about the mind – including those claims that *are* thought to be of current philosophical relevance – are founded in empirical observation, even if they are not often founded in experiment. They depend on stories about the actual doings of actual people, on claims about how humanity actually is. Hume’s *History of England* – five volumes of empirical information, elegantly organized – has rightly been seen as expressing philosophical ideas about morality and politics and the human mind.

Intellectual historian Knud Haakonssen has argued that our modern conception of the discipline is presaged in the epistemological preoccupations of Thomas Reid and Immanuel Kant.⁴ But Reid himself was emphatic in his suspicion of mere conjecture. Every real discovery, he says, is arrived at by “patient observation, by accurate experiments, or by conclusions drawn by strict reasoning from observation and experiments, and such discoveries have always tended to refute, but not to confirm, the theories and hypotheses which ingenious men had invented.”⁵

As for Kant, it is anything but historically anomalous that the professor from Königsberg, to whom we owe the analytic-synthetic distinction, worked avidly on both sides of the putative divide. Herder admired Kant first of all for his lectures on geography. The founder of “critical philosophy” elaborated theories of the winds and of the earth’s rotation, and dispensed advice about the training of the young. “Games with balls are among the best for children,” he wrote. (“How did he know?” you might wonder.)⁶ Kant possessed the resources for a conceptual partition between what

we think of as philosophy and psychology, but not a vocational one. He was preoccupied with the professionalization of philosophy, but not with avoiding the empirical world. To historians of psychology, Hume and Kant both figure large; and some hold that contrasting Humean and Kantian traditions in scientific psychology continue to this day: as a measurement-driven experimental psychology on the one hand, and the schemas of cognitive science on the other.

One thing we humanists must do is remind ourselves always of the continuities of our intellectual traditions, even when we are trying to produce something new. When talking about recent experimental philosophy, it is important, I think, to start by remembering that we are continuing a long tradition.

There are at least two rather different ways in which experiment is currently being brought to bear in moral philosophy. One way – which I associate with the work of Joshua Knobe – continues the project of conceptual analysis, as in Knobe’s well-known work on intention. Here experiment figures in exactly the way that Austin and Wittgenstein would have thought mad or impertinent. If conceptual analysis is the analysis of “our” concepts, then shouldn’t one see how “we” (or representative samples of us) actually mobilize concepts in our talk? One of the most interesting things that disciplined and responsible experiments on usage reveal is that the real world contains scads of folk (like the students we meet in our introductory classes) who simply aren’t inclined to say the things that Austin or Wittgenstein would have supposed all competent speakers should say.

In Knobe’s most famous experiment, subjects were asked to consider two sce-

narios. In the first, the chairman of a company is asked to approve a new program that will increase profits and also help the environment. “I don’t care at all about helping the environment,” the chairman replies. “I just want to make as much profit as I can. Let’s start the new program.” So the program is launched and the environment is helped. The second story is identical – except that the program will *hurt* the environment. Once again, the chairman is indifferent to the environment, and the program is launched in order to increase profits, with the expected results. When Knobe presented these scenarios to subjects in a controlled experiment, he found that when the program helped the environment, only 23 percent agreed that the chairman had “helped the environment intentionally.” When the program harmed the environment, though, 82 percent agreed that the chairman had “harmed the environment intentionally.” This pattern recurred when various other scenarios were tested.⁷

One striking feature of this result – irrelevant to Knobe’s main point, but important nevertheless – is that roughly one in five people in each case had apparently managed to grow up with very different intuitions from the rest of us. Both intuitions have their advocates. And it seems to me that the right answer isn’t a matter of a head count. This work would be valuable and suggestive even if it skipped the actual experiments. (“It would be natural to say,” Knobe might have written, “that the chairman in one situation had harmed the environment intentionally, whereas . . .”) The experimental evidence enforces a useful modesty about how much weight to give one’s personal hunches, even when they’re shared by the guy in the next office.

But, as I say, there’s a second sort of experimental philosophy. The paradigm here might be Josh Greene’s work in moral psychology, in which he and his colleagues have studied the fMRI images of the brains of people thinking through so-called trolley cases, in which people are asked what they think the right thing is to do when a trolley, whose driver is unconscious, is bearing down on a group of people on a track. In a typical trolley case, you are offered the option of diverting the trolley from a track where it will kill six people to another track where it will kill only one. In the past, philosophers have used these scenarios to ask questions about how we make moral choices. But Greene’s experiments look at more than patterns of response to scenarios, more even than statistics about concept use. Greene is not just carrying out with a sample of speakers the thought-experiments that might once have been done by the philosopher in her armchair. Rather, he is looking, too, at evidence about the neural or psychological processes that underlie our responses.⁸

One thing we can say about this work is that it is really only an extension of something that we have been doing for a long time anyway; it’s just the further pursuit of the philosophy of – in this case, moral – psychology. Philosophers in cognitive science have been doing this sort of thing for a very long while. They’ve been looking at work in experimental psychology to see what it suggests about how our minds work, and they’ve sometimes suggested experiments and hung around while they were being done. And one reason that many of the canonical philosophers figure also in the histories of psychology is that, though they may have had fewer instruments and less rigorous methods, they were often relying on

empirical propositions about the mind and its brain all along.

It seems to me, however, that we risk losses along with the gains to be had from the work of experimental philosophy, unless we hold onto what is best in the traditions of conceptual analysis. One problem with methods, like all tools, is that they can lead us to focus too little attention on the problems with which they cannot help. If you have a hammer, as they say, everything can begin to look like a nail. I think that happened with the development of the trolley paradigm in moral philosophy – long before it was connected with experimental moral psychology, in the days when trolley intuitions were pursued exclusively in the armchair. An experimental moral philosophy attentive solely to the neurophysiology of the ways we think through trolley problems would give us a distorted picture of our ethical lives.

A few decades ago, Edmund Pincoffs pointed out the historical novelty of what he called “quandary ethics,” asking hard questions about the disciplinary distortions it had engendered.⁹ Quandary ethics, as the name suggests, took the central problem of moral life to be the resolution of quandaries about what to do. One of its favorite methods was to examine stylized scenarios, like the trolley problem, and figure out what we should do and why.

I am not always a foe of quandaries; but, especially when we’re trying to come to grips with the larger subject of *eudaimonia* – the question of what it is for a human life to go well – students of the moral sciences, including the experimental philosophers, should recognize how stark the limitations of quandaries are. To turn to them for guidance in the arena of ethics, conceived at its broadest, is like trying to find your way around at night with a laser pointer.

Consider this one difficulty: in all of those trolley cases, the options are given in the description of the situation. But in the real world, situations are not bundled together with options. Instead, the act of framing – describing a situation, and thus determining that there’s a decision to be made – is itself a moral task. It’s often *the* moral task. Learning how to recognize what is and isn’t an option is part of our ethical development. For example, part of the point of the stringency of the prohibition against murder, Anscombe once observed, was “*that you are not to be tempted by fear or hope of consequences.*”¹⁰ So a proper response to situations like these would be to look, first, for other options. To understand what’s wrong with murder is, in part, to be disinclined to take killing people as an option. If we want to learn about normative life from stories, I suspect that the most helpful ones are going to come from movies, novels, and the like, in which characters have to understand and respond to complex situations, not just pick options in an SAT-style multiple-choice problem. In life, the challenge is not so much to figure out how best to play the game; the challenge is to figure out what game you’re playing.

I offer this brief objection not because this argument is inaccessible to the experimental moral philosopher. Indeed – as I began by insisting – the difficulties with quandary ethics long antedate recent experimental moral psychology. My point is a different one: that in thinking about what we learn from the experiments about ethical life, un-experimental philosophy is still very much in order. Nothing I have said about quandaries depends on any experimental evidence.

So far, then, just a caution. The armchair remains an important research

tool, and work done in armchairs remains central to our subject – as, of course, it does to most: mathematics is not the only way to turn coffee into theories. And so, let me end with a brief sketch of just one case where it seems to me experimental psychology has been extremely helpful in thinking about our moral lives. It has to do with some lessons of social psychology; and my account here will draw heavily on John Doris’s excellent book *Lack of Character*.

Social psychologists are mostly “situationists”: they claim (this is a first stab at a definition) that a lot of what people do is best explained not by traits of character, but by systematic human tendencies to respond to features of their situations that nobody previously thought to be crucial at all.¹¹ They think that someone who is, say, reliably honest in one kind of situation will often be reliably dishonest in another. They’d be unsurprised, for example, that Oskar Schindler was mercenary, arrogant, hypocritical, calculating, and vain sometimes . . . but not always; and that his courage and compassion could be elicited in some contexts but not in others.

Now, to ascribe a virtue to someone is, among other things, to say that she tends to do what the virtue requires in contexts where it is appropriate.¹² An honest person will resist the temptations to dishonesty posed by situations where, say, a lie will bring advantage, or failing to return a lost wallet will allow one to buy something one needs. Indeed, our natural inclination, faced with someone who does something helpful or kind – or, for that matter, something hostile or thoughtless – is to suppose that these acts flow from their character, where character is understood as a trait that is consistent across situations and, therefore, insensitive to differences in the

agent’s environment, especially small ones. But situationists cite experiments suggesting that small – and morally irrelevant – changes in the situation will lead a person who acted honestly in one context to do what is dishonest in another.

In the past thirty years or so, psychological evidence for situationism has been accumulating. Back in 1972, Alice M. Isen and Paula Levin found that, if you dropped your papers outside a phone booth in a shopping mall, you were far more likely to be helped by someone who had just had the good fortune of finding a dime waiting for him in the return slot. A year later, John Darley and Daniel Batson discovered (in perhaps the most famous of these experiments) that Princeton seminary students, even those who had just been reflecting on the Gospel account of the Good Samaritan, were much less likely to stop to help someone “slumped in a doorway, apparently in some sort of distress,” if they’d been told that they were late for an appointment. More recently, Robert Baron and Jill Thomley showed that you were more likely to get change for a dollar outside a fragrant bakery shop than standing near a “neutral-smelling dry-goods store.”¹³

Many of these effects are extremely powerful: huge differences in behavior flow from differences in circumstances that seem of little or no normative consequence. Putting the dime in the slot in that shopping mall raised the proportion of those who helped pick up the papers from one out of twenty-five to six out of seven – that is, from almost no one to almost everyone. Seminarians in a hurry are six times less likely to stop like a Good Samaritan.¹⁴ Mindful of these examples, you should surely be a little less confident that “she’s helpful” is a good explanation next time someone stops to assist you in picking

up your papers, especially if you're outside a bakery!

I am not going to worry about whether we can give an account of the results that better comports with our common sense about why people, ourselves included, do what they do. The question I want to ask is, why should ethical theory care about these claims at all?

Suppose I give you change because (in part) I just got a whiff of my favorite pastry. Of course, if I had a settled policy of never giving change, even that pleasant aroma wouldn't help. So there are other things about me – the sorts of things we would normally assess morally – that are relevant to what I have done. But let's suppose that, other things being equal, if I hadn't had the whiff, I'd have ignored your plaintive plea to stop and change your dollar for the parking meter. Pleased by the ambient aroma, I was inclined to do what, according to the virtue theorist, a kind or helpful or thoughtful person – a virtuous person – would do; and I acted on that inclination. A typical virtue theorist will think I have done the right thing because it is the kind thing (and there are no countervailing moral demands on me). But, on the situationist account, I don't act out of the virtue of kindness. Does this act accrue to my ethical credit? Do I deserve praise in this circumstance or not? Have I or haven't I made my life better by doing a good thing?

A situationist might encourage us to praise someone who does what is right or good – what a virtuous person would do – whether or not they did it out of a virtuous disposition, but only for instrumental reasons. After all, psychological theory also suggests that praise, which is a form of reward, is likely to reinforce the behavior. (What behavior? Presumably not helpfulness, but being helpful

when you're in a good mood.) For we tend to think that helping people in these circumstances, whatever the reason, is a good thing.¹⁵

But the virtue ethicist cannot be content that one acts *as if* virtue ethics is true. And we can all agree that the more evidence there is that a person's conduct is responsive to a morally irrelevant feature of the situation, the less praiseworthy it is. If these psychological claims are right, very often when we credit people with compassion, as a character trait, we're wrong: they're just in a good mood. And if hardly anyone is virtuous in the way that virtue ethics conceives of it, isn't the doctrine's appeal eroded? Given that we are so sensitive to circumstances and so unaware of that fact, isn't it going to be wondrously difficult to develop compassion, say, as a character trait? We can't keep track of all the cues and variables that may prove critical to our compassionate responses: presumably the presence or absence of the smell of baking is just one among thousands of contextual factors that will have their way with us. How, if this is so, can I make myself disposed to do or to feel the right thing? I have no voluntary control on how aromas affect me. I cannot be sure that I will have a free dime show up whenever it would be a fine thing to be helpful.

There are some philosophers, among them the aforementioned John Doris, who take the social-science literature about character and conduct to pose a serious and perhaps lethal challenge to the virtue ethicist's worldview. For one thing, our virtue theorist faces an epistemological difficulty if there are no actually virtuous people. As in all spheres of thought, so in moral deliberation: we sometimes need to think not only

about what the right answer is, but also about how we discover what the right answers are. Rosalind Hursthouse, in her book *On Virtue Ethics*, has argued:

- 1) The right thing to do is what a virtuous agent would do in the circumstances.
- 2) A virtuous person is one who has and exercises the virtues.
- 3) A virtue is a character trait that a person needs in order to have *eudaimonia*, in order to live a good life.¹⁶

No interesting version of virtue ethics holds that doing the right thing is all that matters; we should want to be the kind of person who does the right thing for the right reasons.

Still, Hursthouse and others insist that virtue ethics isn't *entirely* "agent-centered," rather than "act-centered"; it can also specify what the right thing to do is – namely, what a virtuous person would do. How are we to follow that advice? If we were fully virtuous, we would find ourselves disposed to think, act, and feel the right things. But we are not. If we knew someone who was virtuous, we could see what she would do, I suppose. Given the depressing situationist reality, however, maybe no actual human being really is (fully) virtuous. And even if a few people did get to be virtuous against all the odds, we would have to have some way of identifying them, before we could see what they would do. So we would need, first, to know what a good life looks like, and then we would need to be able to tell, presumably by reflecting on actual and imaginary cases, whether having a certain disposition is required for a life to be good – and required not in some instrumental way, as nourishment is required for any life at all, but intrinsically.

If experimental psychology shows that people cannot have the sorts of character traits that the virtue theorist has identified as required for *eudaimonia*, there are only two possibilities: she has identified the wrong character traits, or we cannot have worthwhile lives. Virtue theory now faces a dilemma. The problem for the idea that we have gotten the wrong virtues is a problem of method. For virtue theory of the sort inspired by Anscombe, we must discover what the virtues are by reflection on concepts. We can, in principle, reflect on which of the stable dispositions that psychology suggests might be possible – being helpful when we are in a good mood, say – are constitutive of a worthwhile life; or which – being unhelpful when we aren't buoyed up by pleasant aromas – detract from a life's value. But to concede *that* is to accept that we'll need to do the experimental moral psychology before we can ask the right normative questions. On this horn of the dilemma, virtue theory will find itself required to take up with the very empirical psychology it so often disdains.

On the other horn of the dilemma, the prospect that we cannot have worthwhile lives makes normative ethics motivationally irrelevant. What is the point of *doing* what a virtuous person would do if I can't *be* virtuous? Once more, whether I can be virtuous is obviously an empirical question. Once more, then, psychology seems clearly apropos.

Still, we should not overstate the threat that situationism poses. The situationist account doesn't, for example, undermine the claim that it would be better if we *were* compassionate people, with a persistent, multitrack disposition to acts of kindness. Philosophical accounts of the character ideal of compassion, the conception of it as a virtue, need make

no special assumptions about how easy or widespread this deep disposition is. Acquiring virtue, Aristotle already knew, is hard; it is something that takes many years and most people don't make it. These experiments might confirm the suspicion that compassionate men and women are rare, in part because becoming compassionate is difficult. But difficult is not the same as impossible; and perhaps we can ascend the gradient of these virtues only through aspiring to the full-fledged ideal. Nor would the ideal be defeated by a situationist who busily set about showing that people whom we take to exemplify compassion – the Buddha, Christ, Mother Teresa – were creatures of environments that were particularly rich in the conditions that (according to situationists) elicit kindly acts.

Finally, we could easily imagine a person who, on the virtue ethicists' view, was in some measure compassionate, and who actually welcomed the psychologists' research. Reading about these experiments will only remind her that she will often be tempted to avoid doing what she ought to do. So these results may help her realize the virtue of compassion. Each time she sees someone who needs help when she's hurrying to a meeting, she'll remember those Princeton seminarians and tell herself that, after all, she's not in *that* much of a hurry; that the others can wait. The research, for her, provides a sort of perceptual correction akin to the legend you see burned onto your car's rearview mirror: *objects may be closer than they appear*. Thanks for the tip, she says. To think that these psychological claims by themselves undermine the normative idea that compassion is a virtue is just a mistake.

We might also notice what the situationist research *doesn't* show. It doesn't

tell us anything about those seminarians (a healthy 10 percent) who were helpful even when rushing to an appointment; perhaps that subpopulation really did have a stable tendency to be helpful – or, for all we know, to be heedless of the time and careless about appointments. (Nor can we yet say how the seminarians would have compared with, say, members of the local Ayn Rand society.) There could, consistent with the evidence, be a sprinkling of saints among us. Some will dispute whether the dispositions interrogated by social psychology can be identified with the normative conception of character traits elaborated by the classical virtue theorists.¹⁷ And, of course, the situationist hypothesis is only that, in explaining behavior, we're inclined to overestimate disposition and underestimate situation. It doesn't claim that dispositions don't exist.

None of these caveats wholly blunts the situationist point that the virtues, as virtue ethicists conceive them, seem exceedingly hard to develop, which must leave most of us bereft of *eudaimonia*. But virtue ethics is hardly alone in assigning a role to elusive ideals. Our models of rationality are also shot through with such norms. Recall the nineteenth-century hope that, in the formula, logic might be reduced to a "physics of thought." What succeeded that project was an approach captured in another formula, according to which logic is, in effect, an "ethics of thought."¹⁸ It tells us not how we do reason, but how we ought to reason. And it points toward one way of responding to the question we have posed to the virtue ethicist: how might we human beings take seriously an ideal that human beings must fall so far short of?

If you have been following debates about the role of ideals in cognitive psychology, you might think the answer is

to treat claims about virtues as moral heuristics. But there are many difficulties, I think, for this view.¹⁹ Here is one: for faithful Aristotelians, this whole approach, in which we seek moral heuristics that will guide us imperfect creatures to do what a virtuous person would do, is bound to look very peculiar. Virtue ethics wants us to aim at *becoming* a good person, not just at maximizing the chance that we will do what a good person would do. The contrast with familiar cognitive heuristics is striking.

For cognitive heuristics are, so to speak, twice dipped in means-end rationality. First, the right outcome is defined by what someone equipped with ideal means-end rationality, someone possessed of infinite cognitive resources, would do. Second, we then apply means-end rationality to determine how people with limited cognitive resources can maximize their chances of doing what's right according to the first test. When we try to concoct a heuristic of virtue, we must start, analogously, by defining the right outcome as what someone ideally virtuous would do. Since we're not ideally virtuous, the heuristics model now introduces means-end rationality to maximize your chance of doing what's right by the first test. The trouble is, of course, that virtue ethics requires that we aim at the good for reasons that aren't reducible to means-end rationality. With the cognitive heuristic, what matters is the outcome. But if virtue ethics tells you that outcomes aren't the only thing that matters, then you cannot assess heuristics by means-end rationality – that is, by looking at the probability that they will produce certain outcomes.

To be sure, the fact that virtues are meant to be constitutive of a life of *eudaimonia* – so that they are traits necessary to make our lives worthwhile –

is consistent with the view that a virtuous person's life will have good effects as well. Perhaps a life of virtue will be an enjoyable life, too: Aristotle certainly thought that a fully virtuous person would take pleasure in the exercise of virtue. But the value of the virtues does not come just from the good results of virtuous acts or from the enjoyment that virtue produces; it is intrinsic, not instrumental. A virtuous life is good because of what a virtuous person *is*, not just because of what she *does*.

We can distinguish, then, between *having a virtue* and *being disposed to do the virtuous act over a wide range of circumstances*. We can distinguish, in particular, *being an honest person*, someone who has that virtue as the virtue ethicist conceives of it, and *being someone who, across a wide range of circumstances, behaves as an honest person would*. Suppose honesty matters in my life because it promotes reliability and thereby helps me support the flourishing of others. If that were so, I might explore some alternative possibilities by which I might refrain from deceiving others. Perhaps someone has developed a Bad Liar pill, which will impair my capacity for successful deception; or perhaps our town has collectively decided to add the drug to the water supply, as a moral counterpart to fluoridation. Equivalently, we could try to heighten our ability to detect deception. Either strategy amounts to a similar trade-in: a scenario in which I strive to be honest in all situations is exchanged for a scenario in which I can usually be relied upon not to deceive others.

It would be a mistake to deny the instrumental significance of honesty; but doesn't our moral common sense recoil at the idea that honesty matters *only* because of this instrumental significance? (There's a question for Knobe to pur-

sue.) Denying that significance courts moral narcissism; but reducing honesty's importance to that instrumental significance threatens to replace the ethical subject with the object of social engineering. In all events, my aim is not to fine-tune the dictum that an action is right if it's what a virtuous person would do. I have only tried to illustrate how alien that dictum is to what made the eudaemonist tradition appealing in the first place.

I have no doubt, then, that we are learning things worth learning from all sorts of experimental philosophy. I have no doubt, too, that it is a bad idea, if you are interested in the sorts of questions these philosophers (and their friends in psychology and economics) are addressing, to ignore their work. There is even good reason, as I have argued, to think of what they are doing as much more continuous with the past practices of major philosophers than the paradigm of con-

ceptual (or, I might add, phenomenological) analysis would suggest. But it remains the case that responding to the experiments requires the sort of careful examination of arguments, the making of distinctions, the reflection on unactualized possibilities that are also a part of the tradition and can be found in – to construct a deliberately eclectic list – Aristotle, Aquinas, Descartes, Leibniz, Hume, Kant, Hegel, Frege, Husserl, James, Russell, and Sartre. The enthusiasts for the experiments should insist that the armchair would be a much less interesting and productive place if they were not going about their business, too. I agree; I have been agreeing all along. Indeed, insofar as method is concerned, I have only this modest pluralist suggestion: that we would do well to sustain a variety of traditions of reflection on questions that matter to us. Unless you already know all of the answers, you don't know for sure which questions are worth asking.

ENDNOTES

¹ This essay is based on material from my book *Experiments in Ethics* (Cambridge, Mass.: Harvard University Press, 2008).

² See Nicolaus Steno, *Lecture on the Anatomy of the Brain*, introduction by Gustav Scherz (Copenhagen: Nyt Nordisk Forlag, Arnold Busck, 1965), 12 et seq.

³ René Descartes, (1647) "Lettre-Préface de l'édition française des Principes"; available at <http://www.ac-nice.fr/philo/textes/Descartes-LettrePreface.htm>.

⁴ Knud Haakonssen, "The Idea of Early Modern Philosophy," in *Teaching New Histories of Philosophy*, ed. Jerry Schneewind (Princeton: University Center for Human Values, 2004), 108.

⁵ Thomas Reid, *Essays on the Intellectual Powers of Man*, Essay I., iii, "Of hypothesis," in *The Works of Thomas Reid*, vol. I (New York: Published by N. Bangs and T. Mason, for the Methodist Episcopal Church, J. and J. Harper Printers, 1822), 367–368.

⁶ *Kant on Education*, trans. Annette Churton (Ann Arbor: University of Michigan Press, 1960), 61.

⁷ Joshua Knobe, "The Concept of Intentional Action: A Case Study in the Uses of Folk Psychology," *Philosophical Studies* 130 (2006): 203–231.

- ⁸ Joshua D. Greene, R. Brian Sommerville, Leigh E. Nystrom, John M. Darley, Jonathan D. Cohen, "An fMRI Investigation of Emotional Engagement in Moral Judgment," *Science* 293 (5537) (2001): 2105 – 2108.
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- ¹⁰ G. E. M. Anscombe, "Modern Moral Philosophy," *Philosophy* 33 (1958); reprinted in G. E. M. Anscombe, *Ethics, Religion, and Politics* (Minneapolis: University of Minnesota Press, 1981), 34.
- ¹¹ See Lee Ross and Richard E. Nisbett, *The Person and the Situation* (Philadelphia: Temple University Press, 1991).
- ¹² John Doris, *Lack of Character: Personality and Moral Behavior* (Cambridge: Cambridge University Press, 2002), 16 – 19.
- ¹³ Alice M. Isen and Paula F. Levin, "The Effect of Feeling Good on Helping: Cookies and Kindness," *Journal of Personality and Social Psychology* 21 (1972): 384 – 388; John M. Darley and C. Daniel Batson, "'From Jerusalem to Jericho': A Study of Situational and Dispositional Variables in Helping Behavior," *Journal of Personality and Social Psychology* 27 (1973): 100 – 108; Kenneth E. Matthews and Lance K. Cannon, "Environmental Noise Level as a Determinant of Helping Behavior," *Journal of Personality and Social Psychology* 32 (1975): 571 – 577; Robert A. Baron and Jill Thomley, "A Whiff of Reality: Positive Affect as a Potential Mediator of the Effects of Pleasant Fragrances on Task Performance and Helping," *Environment and Behavior* 26 (1994): 766 – 784. All are cited in Doris, *Lack of Character*, 30 – 34, 181.
- ¹⁴ And people are about one tenth as likely to help someone behind a curtain who has had what sounds like an accident if there's someone else standing by who does nothing; Bibb Latane and Judith Rodin, "A Lady in Distress: Inhibiting Effects of Friends and Strangers on Bystander Intervention," *Journal of Experimental Social Psychology* 5 (1969): 189 – 202, as cited in Doris, *Lack of Character*.
- ¹⁵ Of course, its being good because it helps doesn't mean it isn't bad overall: suppose you're a nasty person who offers change only because you know you're being watched by someone who has promised to give you fifty bucks if you ever do anything generous. That's blameworthy: you're trying to fake generosity.
- ¹⁶ Rosalind Hursthouse, *On Virtue Ethics* (Oxford: Oxford University Press, 1999). "Virtue Ethics," *The Stanford Encyclopedia of Philosophy*, fall 2003 edition, ed. Edward N. Zalta; available at <http://plato.stanford.edu/archives/fall2003/entries/ethics-virtue/>.
- ¹⁷ See, for example, Julia Annas, "Virtue Ethics and Social Psychology," *A Priori* 2 (2003): 20 – 59; and Rachana Kamtekar, "Situationism and Virtue Ethics on the Content of Our Character," *Ethics* 114 (2004): 458 – 491, which, however, acknowledges, at 461, that "virtue ethics can benefit from considering the particular situational factors that social psychology suggests have a profound influence on behavior."
- ¹⁸ Theodor Lipps, (1880) *Die Aufgabe der Erkenntnistheorie und die Wundt'sche Logik I.* (The task of epistemology and Wundtian logic I.), *Philosophische Monatshefte*, 16, 529 – 539; cited in Edward S. Reed, *From Soul to Mind: The Emergence of Psychology from Erasmus Darwin to William James* (New Haven: Yale University Press, 1997), 188.
- ¹⁹ For more of them, see my *Experiments in Ethics*, chap. 4.

Poem by Rita Dove

The Countess Shares Confidences over Karneval Chocolate

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GIULIETTA GUICCIARDI: VIENNA, 1860

He was a stormy pedagogue,
always interrupting the prettiest airs –
even his own compositions,
which I was given to understand
he did not permit everyone to play.
I pounced upon each chord
with the ignorant ardor of youth;
I was sixteen, after all, and he was already
famous in Vienna, where such
approbations are stingily accorded.

He insisted on a light touch. He himself
was a wild man, ripping the music
from my stumbling fingers
and stomping about as the pages
fluttered sadly earthwards,
like the poor pheasants dropped over
the hunting fields of the *Prater*.
Rest assured I soon learned to play
more lightly! He was pleased, then,
and a quick soft smile would crimp

that dismal chunk of a face,
a sight just slightly less repugnant
than his rages. He was exceedingly
unlovely, yes, but with a threadbare
elegance – much as a servant,
envisioning gentility, might
avail himself of the scraps and dashes

from the milliner's basket.
Sometimes I could coax him
to the pianoforte, where

he would bow his head,
eyes closed, and wait –
as if the silence spoke only to him;
before playing without notes
music of such inexpressible beauty,
I thought to breathe and disturb the air
would break his heart. He would not
consent to payment, but accepted the linens
I had sent up to his rooms. Poor man –
he thought I had sewn them myself.

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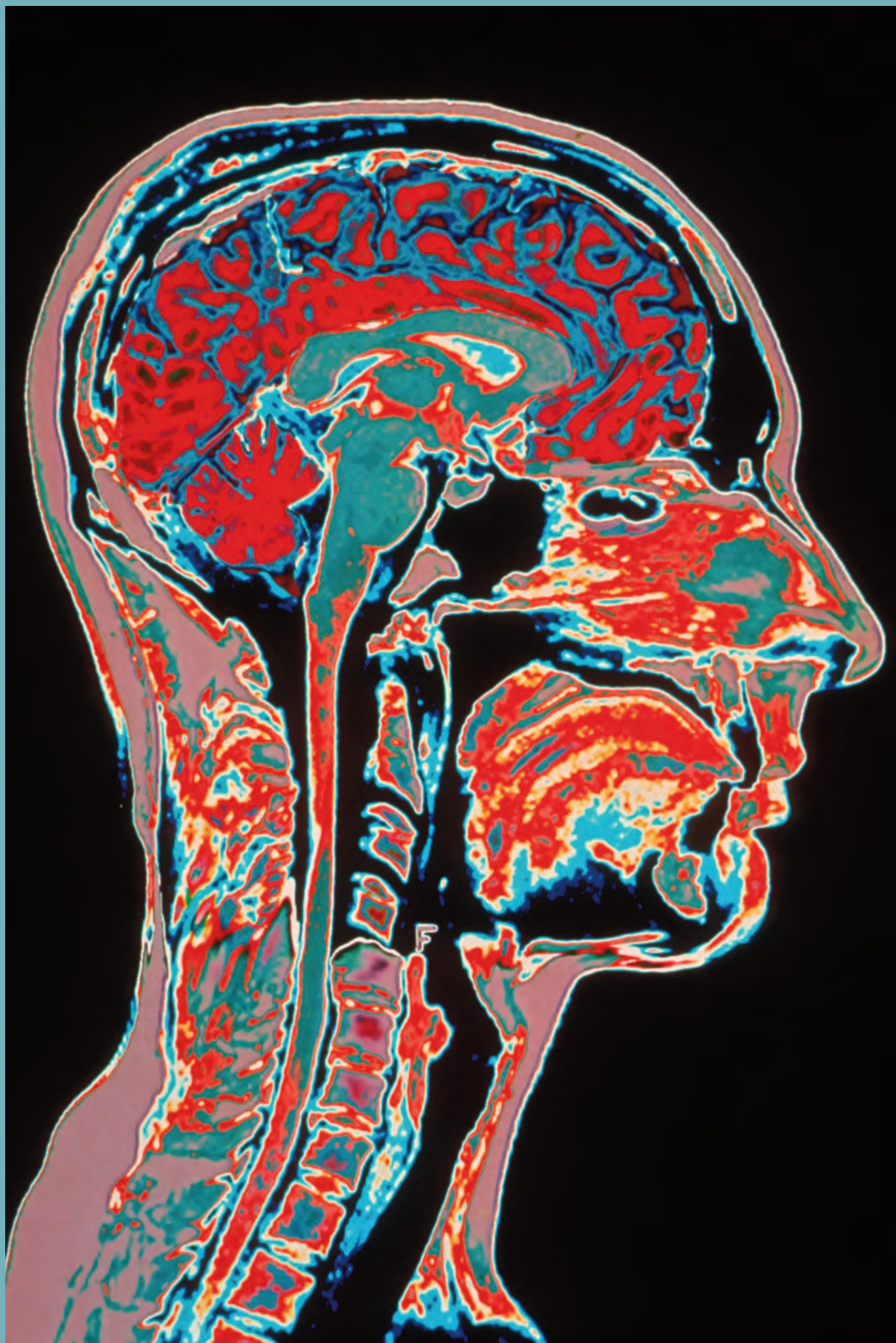
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