

THE GREAT IDEAS ONLINE

March'22

No.2057

A Philosophical Problem to Be Solved

Mortimer J. Adler

Published in *The Great Ideas Today* 1993, Encyclopaedia Britannica, Inc. pp . 329-332.

Mortimer J. Adler received his Ph.D. from Columbia University in New York and taught at the University of Chicago for many years. Editor of *The Great Ideas Today*, he is also chairman of the Board of Editors of Encyclopaedia Britannica, Inc., and editor in chief of the 1990 edition of *Great Books of the Western World*.

Dr. Adler is the director of the Institute for Philosophical Research, which was founded in 1952 for the study of ideas of Western thought. He is also an honorary trustee of the Aspen Institute for Humanistic Studies, where he teaches each summer.

The author of more than forty-five books, Dr. Adler has most recently completed *The Four Dimensions of Philosophy*, to be published in 1993. *A Second Look in the Rearview Mirror*, the sequel to his autobiography *Philosopher at Large* (1977), was published last year.

This short essay poses a philosophical problem that confronts us as recently as this century, in fact in the last half of this century. No author of great books in preceding centuries appears to have recognized it, although it arises in the context of views propounded in the fourth century B.C. by Aristotle and in the thirteenth century by Aquinas.

Let me begin my elucidation of the problem by stating the Aristotelian and Thomistic doctrine concerning the intellect. It asserts that the human intellect is an immaterial power of the human soul,

in contrast to all the powers of sense, imagination, and memory that are embodied in the sensitive organs, together with the human brain.

Thus, for example, the eye and brain are the organs of vision. We see with them, and one cannot see without them. The action of these organs constitutes vision. But when we think intellectually, while we cannot think without action on the part of our brains, *we do not think with them*. The action of the brain may be a necessary, but it is not a sufficient cause of our intellectual performance. Thought involves the action of an immaterial power, the intellect, although this cannot operate by itself.*

That is the Aristotelian and Thomistic view of the matter. Of course, for materialists and all those who are optimistic about artificial intelligence machines, there is only an analytic distinction, not an existential one, between mind and brain. Materialists hold that every aspect of human thinking at the highest intellectual levels is explained by neurophysiological research—if not yet, then in the future. Eventually, if no now, knowledge of the brain's structure and its electrochemical action will be able to account for such activity.

Yet those who think that all human thought will ultimately be explained in purely physical terms must face a puzzle that has emerged only as recently as the last hundred years.

It is generally recognized that human beings differ in the degree of their power to think conceptually and intellectually. Einstein, as a theoretical physicist, had that power to a much higher degree than most human beings do. What is true of Einstein is true of other great mathematicians and theoretical physicists. But when, after Einstein's death, his brain was taken out of his head and examined, it was found to be no more in its gross weight than, and also no different in structure from, the brains of ordinary human beings. Comparisons of the brains of other so-called intellectual geniuses have shown the same lack of physical distinction. Hence the anti-materialist is justified in thinking that brains alone cannot account for high intellectual performance.

Even if the activity of the brain is necessary for such performance, some added cause must be posited to account for it; and according to Aristotle and Aquinas that must be an immaterial power of the human soul—the intellect.

* For a twentieth-century statement of this doctrine, see my book *Intellect: Mind*

This power, which is present in all human beings, must be greater in some human beings than in others. While all human beings are by nature equal—none being more or less human than another, all having the same species-specific powers—some have much more intellectual power than others. How is this possible?

Genetic research has discovered that high degrees of intellectuality run in families.* Gifted children are recognized in their early years; mathematical genius in particular, which reveals itself in the very young, suggests hereditary factors, a transmission by genes.

But the genes are material causes and, as such, can act to produce only material effects. If there is hereditary genius in the intellectual sphere, the genes cannot account for it, *if* intellectual power is immaterial. By the same token, if gifted children are genetically determined, their genetically determined endowment cannot be a superior degree of a purely immaterial power, the intellect. It does not even appear, as we have seen, that they have superior brains.

Aquinas sought for an explanation of the fact that some individuals can think intellectually better than others. In the first part of the *Summa Theologica*, in Article 7 of Question 85 (*GBWW* I: 19, 459–60; II: 17, 459–60), he explicitly asked whether one person can understand the same thing better than another person can. He answered this question affirmatively by saying that some men have bodies of better disposition, and their souls have, as a result, a greater power of understanding—that is, a higher degree of intellectual power. We see, he went on, that “those who have delicate flesh are of apt mind.” This occurs in the powers of which the intellect has need in its operation. Those in which the sensitive, imaginative, and remembering powers are better disposed are also better disposed to understand.

In saying this, Aquinas did not think he was abandoning his view that, unlike the senses and the imagination, the intellect is an immaterial power of the human soul. Even though its operation may depend on such bodily powers as those of the senses and the imagination, such dependence is quite consistent with the thesis that the intellect is immaterial and cannot be reduced to the action of the brain. The brain is not the material organ of intellectual thought, as eye and brain are the physical organs of vision. There is no organ

* See *Hereditary Genius* (London: Macmillan, 1869; reprinted in 1914) by Sir Francis Galton, who was a contemporary of Charles Darwin and shared his view concerning artificial breeding in domestic animals.

of intellectual thought, nor as far as we know can such thoughts be accounted for in purely physical terms.

I can now state the problem to which at present we have no solution. *What is the cause of superior intellectual power?* If the intellect is immaterial power, that superiority cannot be genetically caused. If superior intellectual gifts are found in very young children, their ability cannot be caused by special nurturing and training—that is, by human effort. If only an immaterial cause can produce an immaterial effect, an immaterial being such as God must be the cause of the intellectual superiority of a relatively few human beings. But that does not explain how the difference comes about in the natural order of things, where it appears to lie—where its transmittal is hereditary.

The question to be answered is, *what is transmitted when we speak of superior intellectual ability?* Is this a faculty that certain people have and others do not, or is it simply a greater degree of some power that all persons share? If we believe the first, what is it that we think we have identified? It was said of Richard Feynman, the most brilliant physicist of his time, that no one could understand how he arrived at his most startling insights, that the process was beyond comprehension even by the most capable minds. Hence the characterization of him as a genius, as being ultimately mysterious, inexplicable in his ability. The challenge we offer here is to solve that mystery, to explain that capacity as being either radically distinct, implying an ultimately different species, or simply a potential that every human being has, though only a few of us ever realize it.

Readers of *The Great Ideas Today* are invited to come up with a solution, a convincing explanation of this puzzle. We will print the response of the reader whose proposal best reveals an understanding of the relevant considerations set forth in our statement of the problem. In addition, this individual will be rewarded with the gift of a set of the second edition of *Great Books of the Western World*. Responses should be mailed to *The Great Ideas Today*, 101 East Ontario Street, Suite 300, Chicago, Illinois 60611. Entries, which should be typed, should be no longer than ten double-spaced pages and must be received by January 15, 1994. In the event that no entry is serious enough to deserve the prize, none will be printed, nor will the prize be awarded. The editors' decision is final. Employees of Encyclopaedia Britannica, Inc., are not eligible.

The Mystery of the Mind

Published in *The Great Ideas Today* 1994, Encyclopaedia Britannica, Inc. pp. 260-272.

The winner of the prize offered in last year's *GIT* for the best solution to the philosophical problem posed there, which was to explain, so far as possible, the evident inheritance by certain individuals of superior intellectual capacity, without asserting that the intellect itself is a material—i.e., genetically transmittable—entity, is Robert H. Kohn, of Scotts Valley, California. In fulfillment of the editor's promise, his essay is reprinted here, and he has been sent a set of *Great Books of the Western World*.

It is no disparagement of Mr. Kohn's effort to say' that it is not entirely successful, in the editor's judgment, and that a certain mystery in the matter remains after he has said what he could say about it. The prize was awarded to him because he seemed to know best among those who submitted papers where the mystery begins, what we have to concede to it, and what (by virtue of what we know of hereditary mechanisms) we do not. That is as much as can be achieved, perhaps, at the present time, and with such knowledge as is available. It is not a solution or an answer in any final sense.

Other papers received—there were about thirty in all, of which half deserved serious consideration—illuminated partial aspects of the problem, and many of their authors showed, as he did, a gratifying familiarity with works in *GBWW*, which they used well. In any case, honorable mention should be made of Michael P. Allen, Roy P. Amatore, Dan Ferris, Alfred G. Holtum, Michael S. Talcott, and Max Weismann, and thanks are rendered to all who took the trouble to write something on the subject. Apologies are offered to readers in Australia whose copies of *GIT* arrived too late for them to meet the deadline for submissions.

Mind and Brain: The Genius of Fortune

Robert H. Kohr

Robert Kohn is senior vice president and general counsel for Borland International, Inc., a leading developer of personal computer software. Mr. Kohn has been an avid reader of the *Great Books of the Western World* since his discovery of Mortimer Adler's *How to Read a Book* in 1974.

With his father Al Kohn, then vice president of licensing for Warner Brothers Music, Mr. Kohn has written *The Art of Music Licensing* (1992), a practical guide to granting licenses and obtaining permission to use copyrighted music. Father and son frequently lecture on the subject of licensing music and other copyrighted content for use in multimedia and new media information and entertainment products.

Prior to his association with Borland, Mr. Kohn was legal counsel for Candle Corporation, a leading developer of software for IBM mainframe computers, and for Ashton-Tate Corporation, a publisher of personal computer software. He is a graduate of Loyola Law School, Los Angeles, and has been a member of the California Bar since 1981. Born in New York City in 1957, Mr. Kohn now resides with his family in Pebble Beach, California.

Jesus, according to the Bible,¹ tells his followers a parable about a man who, before embarking on a long journey, called together his three servants and entrusted them with the greater part of his wealth. To the first servant, he gave five talents² of gold, to the second, two talents, and to the third, one talent. Upon his return several years later, he called upon his servants to deliver up the wealth which he had left to them. The first servant reported that he had made productive use of the five talents entrusted to him and thereupon returned ten talents to his master, who was so delighted with this good and faithful servant, he rewarded him. The second servant made a similar report and returned not only his original two talents, but an additional two which he had earned during his master's absence. The man was as delighted with this servant as he was with the first, and the second servant was similarly rewarded. The third

¹ Matt. 25: 14—30.

² According to Dr. Samuel Johnson's *Dictionary*, "1. A talent signified so much weight or a sum of money, the value differing according to the differing ages and countries. . . . 2. Faculty, power, gift of nature. A metaphor borrowed from the talents mentioned in the holy writ." Samuel Johnson, LL.D, *A Dictionary of the English Language*, 8th Edition (London: J. Johnson, 1799).

servant reported that, because he had dug a hole in the ground and hid the one talent entrusted to him, he was only able to offer back to his master his one original talent. This report angered the man, who took the one talent from the servant, gave it to the first servant, and cast the slothful servant out of doors, where, according to Matthew, there was much gnashing of teeth.

The *Parable of the Talents* is intended to warn even those with the meanest ability to use to the best advantage their God-given or natural “talents.” We do commonly observe that some people appear to exercise more or less talent than others, and these differing degrees of talent among individuals vary from field to field—for example, some have a higher degree of talent in artistic creation, others in their power to solve problems in mathematics. Why is this so? Are these talents, as the parable may suggest, God-given, or is there some material explanation for varying degrees of artistic and intellectual abilities?

Our inquiry builds upon the *moderate immaterialistic* view of the relationship between the mind and body, a view articulated by Mortimer J. Adler in his book, *Intellect*,³ and which may be summarized as follows: *The brain is a necessary, but not a sufficient condition of conceptual thought*. In other words, some immaterial substance (e.g., human soul, spirit, or intellect) is required for conceptual thought, but conceptual thought *depends upon* the operation of the material brain, without which we could not think conceptually.⁴ Upon that, it is submitted that the difference in degree among humans in intellectual talent—a difference, when evident in one extreme, we call *gifted talent* or *genius*—has its basis in the *dependence* of conceptual thought upon the structure and operation of the material brain. Specifically, an intellectual talent springs from physical conditions in the brain that are disposed toward the exercise of that talent—the better those conditions, the better the talent is likely to be. The causes of these bodily dispositions are, paradoxically, both material and, in a sense, divine.

This inquiry will begin with a brief review of the ancient concept of the mind or soul of living things, including their rational and nonrational powers, followed by a brief discussion of the human

³ See Mortimer J. Adler, *Intellect: Mind over Matter* (New York: Macmillan Publishing Co., 1990), pp. 41—53.

⁴ The concept of *thinking conceptually* encompasses all the rational powers described below.

potentialities, acquired habits and bodily dispositions that influence human behavior. Recent neuroscientific evidence is shown to be entirely consistent with the thinking of ancient and Middle Age philosophy. Finally, this essay concludes with some final thoughts on an important question raised by the consequences of the conclusion reached.

The mind—its nonrational and rational powers

Every living thing, believed Aristotle, possesses a soul and each soul has various kinds of powers.⁵ Those animals that possess nutritive, sensitive, appetitive, imaginative, and “rememorative” powers use those powers to think *perceptually*—that is, using their senses they perceive real objects in the world, such as prey or predators, and by combining these senses with their other powers they are able to recognize similarities between a real object and a stored image remembered—a process which has been called *perceptual abstraction*.⁶ To this perceptual abstraction the animal applies its appetitive powers to determine whether it should be attracted to the object or whether the object is to be avoided, and to act accordingly. The nature of an animal’s appetitive power determines its behavior toward objects it perceives. Lower forms of animals, such as ants, bees, and other insects, have appetitive powers that are completely determined by *instinct*, an innate, preprogrammed pattern of behavior. Higher animals combine instinct with an ability to learn from experience. In both the lower and higher animals, “thinking” occurs merely on the perceptual level, using only the nutritive, sensitive, appetitive, imaginative, and rememorative powers, what the ancient Greeks would call the *non*

⁵ See, generally, Aristotle, *On the Soul* (GBWW I: 8, 631-68; II: 7, 631-68) For example, Aristotle believed that plants have souls, the powers of which may be summarized as follows: the *nutritive* (i.e., the power to take in nutrition and grow), the *sensitive* (i.e., the power to use certain senses, such as touch, to perceive real objects in the world) and the *appetitive* (i.e., the power to desire, which compels them to seek nourishment, such as by facing the sun and sprouting roots in the direction of water). The souls of higher forms of life have those powers, plus some additional powers. Some animals, in addition to the sensitive power of touch shared by plants, possess the sensitive powers of sight, hearing, smell, and taste. Many animals which possess these additional senses also possess higher powers, such as the *imaginative* (i.e., the power to grasp images in the mind without the physical presence of image) and the *rememorative* (i.e., the power to store and recall images). The foregoing description of the nonrational powers, and that of the rational powers set forth in the text, are intended to differ in name only from the descriptions set forth in Adler’s *Intellect*, merely for the purpose of simplifying the discussion.

⁶ Adler, *Intellect*, pp. 34, 36, 57—60.

rational powers of the soul.

The souls of *human* animals, by contrast, consist of all of the foregoing *nonrational* powers, powers which are shared by many other animals, plus the *rational* powers, which only human souls possess. The rational, or higher, powers of the soul comprise the *cognitive* (i.e., the power of knowing or opining about real objects—things that are variable, such as things perceived by the senses), the *calculative* (i.e., the power to reason or to make inferences), and the *conceptive* (i.e., the power to understand intelligible objects—things that are invariable, such as forms and ideas). These rational powers are used, together with our animalistic nonrational powers, to perform distinctly *human* thinking. The possession of these rational powers of the mind—which provides us with the ability to think *conceptually*, rather than just *perceptually*—is what distinguishes man from all other animals.

Potentiality

Perceptual experiences influence the appetitive behavior of all animals, but the appetitive behavior of all animals is not governed the same way. Although a nonhuman animal's appetitive power is governed by its instinct, the appetitive power of the *human* animal is governed by its rational powers. Humans have no instinct—no innate, preprogrammed patterns of behavior—to instruct the individual how to act. Instead, humans are endowed with what we call a *free will*, the potential to allow our rational powers to govern our appetitive desires, so that, even in the absence of a preprogrammed instinct to tell us what is really good for us, our reason may prompt a desire to perform those actions that are really good for us, including those actions which involve no physical pleasure to attract us or those for which we suffer some pain or discomfort.

The natural powers, or potentialities, of the human mind are the same in every human being, under all cultural conditions, at all times, and at all places.⁷ Potentiality is like a tablet on which there is nothing actually written.⁸ Thus, the *potential* to use our rational powers for our own good is something all humans have and have to the same degree—that is, every person is born with the same potential to use his or her cognitive, calculative, and conceptive powers. Nevertheless, there is a difference between *possessing*

⁷ Ibid., p. 136.

⁸ Aristotle, *On the Soul* (GBWW I: 8, 661-62; II: 7, 661-62).

something and *using* it—as in the difference between *having the power* to think rationally and *actually exercising* the power. Accordingly, the degree to which a person’s “talent” in the exercise of his or her rational powers varies from the talents of others derives not from our innately endowed, natural potentials, which all humans possess on an equal basis, but from something that affects each individual’s *exercise* of his or her human potential. Thus, genius does not result from our equal powers or potentialities for rational thought—our immaterial, clean slate—but from something else.

Acquired habits

As noted, we use our rational powers to help govern the exercise of our appetitive powers—that is, we use our reason to govern our desires.⁹ The proper governing of our desires is aided by the development of *virtues*, or good habits (and impeded by the development of *vices*, or bad habits). Habits are dispositions of our appetitive powers and are formed by the repetition of particular acts. Being formed by actions taken after we are alive, habits are not natural powers, but products of nurturing, and are influenced by such things as cultural conditions and the individual’s social environment. Thus, a person may certainly acquire a “talent” through an acquired habit, such as taking piano lessons or practicing one’s math drills.

It does not escape common observation, however, that certain individuals, though they may be the product of the same environment as others, such as a gifted child and his or her normal siblings, just seem better disposed than others to perform certain actions. Thus, mathematical, artistic, or other genius discovered in the very young cannot be explained solely by cultural conditions, social environment, or other factors that contribute to the development of good habits. In other words, genius does *not* appear to be an acquired habit.

Bodily dispositions

Genetic research has discovered that genius runs in families. Genes are physical causes. Thus, leaving aside acquired habits which may be employed to develop one’s talents, the degrees to which the exercise of human talents vary from individual to individual appear

⁹ Our desires are governed properly when we act upon *right desires*. See Mortimer J. Adler, *Desires, Right and Wrong* (New York: Macmillan Publishing Co., 1991).

to be physically, or materially, caused. If genius is materially determined, then it is not a product of the immaterial, natural powers of man. This is not to say that the exercise of genius is based in purely material operations: Genius involves the exercise of the immaterial powers of the mind; what is materially caused is the varying *degrees* to which individuals have the ability to exercise such immaterial powers.

Thus, there appears to be something *material* that underlies the virtuous exercise of human potential—some physical structure in our body, perhaps genetically determined, that is particularly conducive to the development of good habits or the exercise of what we call genius or gifted talent. Is this not what Aquinas suggested in his examination of the question, “*Whether one person can understand one and the same thing better than another can?*”¹⁰ Experience shows, says Aquinas, that some understand more deeply than others, and in the following sentence, he suggests why this is so:

“[B]ecause some men have bodies of better disposition, their souls have a greater power of understanding.”

Thus, the cause of superior intellectual talent appears to involve something else besides *natural powers*, or potentialities shared equally by all men, on the one hand, and *acquired habits*, the dispositions to act that we acquire by performing certain actions repeatedly, on the other. What’s new here are dispositions that are neither natural nor acquired—dispositions that are in-born but *material* and which vary from individual to individual. We will call these, after Aquinas’s suggestion, *bodily dispositions*.

Neuroscientific evidence

In pondering this material source of genius, it is useful to briefly review recent developments in neuroscience. Neuroscientists have been busily researching “the neural basis of mental phenomena.”¹¹ These scientists estimate that a three to four pound human brain contains 100 billion nerve cells, called *neurons*, and believe that mental events can be correlated with patterns of nerve impulses in the brain. By studying how these neurons work, how they communicate with one another, how they are organized into local or distributed networks, and how the connections between neurons

¹⁰ Aquinas, *Summa Theologica* (GBWW I: 19, 459-60; II: 17, 459-60).

¹¹ Gerald D. Fischbach, “Mind and Brain,” 267 *Scientific American* (September 1992), p. 48.

change with experience, these scientists believe that they can unlock the key to the “grand synthesis of mental life.”

By research conducted through the observation of abnormalities in human sensory perception, combined with new tissue-staining techniques and the advent of the positron emission tomographer (i.e., a device which can measure increases in regional cerebral blood flow when people perform specific tasks), scientists have begun to discover that discrete areas of the brain specialize in certain sensory functions and work in parallel to accomplish particular tasks, such as vision. For example, the evidence suggests that the movement, color, and shape of an oncoming tennis ball are each processed in a different area of the brain. How this “parallel processing” works remains a mystery, but it is hoped that further research into the structure and composition of the brain will uncover some answers.

This research has already revealed a great diversity in the kinds of neurons found in the brain, including differences in their shape, molecular structure, and chemical composition. Some neurons have short axons, or tentacular arms, designed to communicate with neighboring neurons and others have long axons that project to other regions. At birth, the brain is only one-fourth of adult size. The brain grows in size because its neurons grow in size and the number of axons and extent of their connections increase. The development of neural connections within the brain as it grows can be compared with the process of stringing telephone lines between homes and between cities.¹² This massive “wiring” project is largely genetically determined, but genes seem to go only as far as sending the axons to the right “town.” The hookups of axons to the right “addresses” is aided by molecular clues in the neurons, which can be influenced by external factors such as chemicals, hormones, and sensory stimulation. Thus, the specificity of synaptic connections that comes about during development of the brain is influenced not only by genetic factors, but also by a variety of other internal and external factors occurring during the growth of the brain while in the womb and during early childhood.

Brain structure and talent

Behavioral research is also beginning to reveal differences between individuals that cannot be explained by environmental or cultural factors. For example, recent evidence suggests that men and wom-

¹² Carla J. Shatz, “The Developing Brain,” 267 *Scientific American* (September 1992), pp. 62-63.

en differ in the way in which they solve perceptual problems: men tend to perform better than women on certain spatial tasks, and women tend to be better than men at rapidly identifying matching items.¹³ Scientists are beginning to attribute these differences to the influence of sex hormones on the “wiring” or organization of the brain during its early stages of growth.

If factors such as genetic makeup, chemical balance, sex hormones, and sensory stimulation influence how the brain develops its specific structure, and if that structure plays a role in determining patterns of ability or talent in individuals, then was not Aquinas correct in his view that the souls of some men have a greater power of understanding, because of their “bodies of better disposition”? The evidence does seem to suggest that the structure and composition of the brain influences how well an individual is able to perform certain tasks, and this seems quite consistent with Aquinas’s view of the matter as stated in the *Summa Theologica*:

[O]ne may understand the same thing better than someone else, through having a greater power of understanding, just as a man may see a thing better with his bodily sight, whose power is greater, and whose sight is more perfect.¹⁴

Thus, it appears some may have a greater power of understanding than others by reason of a better disposition of the body. For, example, actors, and those who are said to have “photographic memories,” would seem to have brains disposed to the exercise of their rememorative powers, or potential to memorize, and recall on demand, lines of text, images, or other information. Of course, excellence in intellectual activities, such as art, acting, and calculating, can be created purely through the development of good habits, but no doubt, one who has the gift of bodily disposition toward a certain kind of intellectual activity would tend to out-perform those whose bodies are not similarly disposed toward that kind of activity.

Relationship between bodily dispositions and rational powers

¹³ Doreen Kimura, “Sex Differences and the Brain,” 267 *Scientific American* (September 1992), p. 119.

¹⁴ Aquinas, *Summa Theologica* (GBWW I: 19, 460; II: 17, 460). See also, Aristotle, *On the Soul*, (GBWW I: 8, 642; II: 7, 642). If an eye were an animal, its soul would be vision. Thus, just as vision is better with the better formed eye, the powers of the soul are better with a better formed brain.

Thus far, it has been suggested, if not reasonably established, that material conditions in the body affect our exercise of human potentialities. A key problem that must be addressed is whether material conditions in the body which affect intellectual thought do so by directly affecting our rational powers. For example, would a mathematical genius have a brain disposed to the superior exercise of his rational power of calculative thought, or do his superior calculative powers arise from conditions in the brain disposed to the exercise of some combination of nonrational powers, such as imaginative and rememorative? In other words, do material conditions in the body better dispose the mind for nutritive, sensitive, imaginative, and rememorative (nonrational) powers, which, being better disposed, aid the operation of the rational powers, or do material conditions in the body better dispose the rational powers directly?

Aquinas appears to have suggested that material conditions directly improve the exercise of *both* the nonrational and rational powers when he said that the effect of bodily dispositions applies to the intellect “in two ways”: “First, as regards the *intellect itself* ... [and] [s]econdly, this occurs in regard to the *lower powers* of which the intellect has need in its operation.” [emphasis mine] Moreover, he says, “The intellect is that which most pertains to form in man.”¹⁵ What if neurological research suggested that even the understanding of form depends upon the material attributes of the brain? Consider the following passage:

Blindsight patients are people who “see” but do not “understand.” Because they are unaware of what they have seen, they have not acquired any knowledge. . . . [One such] patient has an extensive prestriate lesion [i.e., affecting the visual association cortex] from a stroke that has generally spared area V1 [i.e., the primary visual cortex]. He can reproduce a sketch of St. Paul’s Cathedral with greater skill than many normal people, although it takes him a great deal of time to do so. Yet this patient has no comprehension of what he has drawn. Because his V1 system is largely intact, he can identify the local elements of form, such as angles and simple shapes, and accurately copy the lines he sees and understands. The prestriate lesion, however, prevents him from integrating the lines into a complex whole and recognizing it as a building.¹⁶

¹⁵ Aquinas, *Summa Theologica* (GBWW I: 19, 459-60; II: 17, 459-60).

¹⁶ Semir Zeki, “The Visual Image in Mind and Brain,” 267 *Scientific American* (September 1992), p. 74.

It would appear that the patient's rational power of cognitive thought (i.e., the power of understanding real objects, things that are variable, such as things perceived by the senses) has been adversely affected by a material condition of the patient's brain. Of course, it could be said that this proves nothing—that a closer examination of the facts would reveal that merely perception, not rational understanding of invariable forms, is impeded by the patient's physical condition, in which case the answer may need await further neurological research.

Nevertheless, assuming that neuroscientific research has proven, or will soon prove, that our rational powers are directly affected by material conditions, does this suggest we must alter our assumption of the moderate immaterialistic view of the relationship between the mind and the brain? No. Intellect is only *potentially* the object of thought.¹⁷ As Aristotle pointed out, potentiality is like that of the tablet on which there is nothing actually written.¹⁸ In his work, *On the Soul*, the philosopher says,

It was a good idea to call the soul the 'place of the forms,' though (1) this description holds only of the intellective soul, and (2) even this is the forms only *potentially, not actually*.¹⁹ (emphasis mine)

We thus return to the important difference between possessing something and using it—between possessing our rational powers, which are merely potentialities, and the actual *exercise* of those powers. It is the *exercise* of our rational powers, not the mere *possession* of them, which depends upon the material brain as a necessary condition, and, as noted above, it is the actual exercise of our rational powers, not the mere possession of them potentially, which influences the degree to which an individual's talents vary from those of others. Nevertheless, because the immaterial potentiality—the empty tablet—remains a necessary condition of intellectual thought, a scientific finding that the recognition of forms, or any act of rational thinking, is influenced by the material condition of the brain is not inconsistent with the view that the possession of the necessary means of rational thought is purely immaterial. Accordingly, even if neuroscientific research successfully proves that our rational powers are directly affected by material conditions, the

¹⁷ Aristotle, *On the Soul* (GBWW I: 8, 661-62; II: 7, 661-62).

¹⁸ Ibid.

¹⁹ Aristotle, *On the Soul* (GBWW I: 8, 661; II: 7, 661).

moderate immaterialistic view of the relationship between the mind and the brain stands unaffected.

The cause of superior intellectual power

The *material* cause²⁰ of a superior intellectual power (i.e., that out of which the superior power is made) is, as we have said, a physical structure of the body or brain well disposed to the exercise of that power. The exercise of intellectual power exhibits itself in a variety of talents and the particular talent is dependent on the particular structural and chemical composition of the brain.²¹ The *formal cause* of superior intellectual power (i.e., that into which the power is made) is, of course, the product of the *exercise* of the power—the particular display of genius—in whatever form the variety of human genius may take. The *efficient* cause of superior intellectual power (i.e., that by which the power is made) is, as noted, a confluence of nature and art: the internal genetic makeup of the individual and external material factors (some of which are man-made) that influence the structure, chemical composition, and operation of the brain during its early development. Yet, there appears to be an additional factor influencing the degree of intellectual talent in an individual, and that is chance, or Fortune. As noted, parents who have certain gene structures may combine to produce offspring with brains conducive to genius. The environment into which one is born is, or certainly appears to be, entirely determined by fortuity. Moreover, neuroscientists may well find that Fortune—a goddess they may prefer to call *randomness*—may even play a considerable role in the development of the brain, as the wiring of a billion neurons guided by “molecular clues”—like the development of a crystal into one of a seemingly infinite variety of structures—would appear to leave to chance a material role to play in the development of genius.

But is the notion that chance plays a role in superior intellectual power a reasonable one? “There is no incompatibility whatsoever,” says Adler, “between the presence of chance, randomness, and contingency in the cosmos and God’s creation of it (and presuma-

²⁰ Aristotle’s doctrine of the “four causes”—material, formal, efficient and final—may be found in Aristotle, *Metaphysics* (see, for example, Book I, chaps. 3—10) (*GBWW* I: 8, 501-11; II: 7, 501—11).

²¹ The disposition of some bodies toward the exercise of artistic talent and others toward talent in mathematics may be likened to the structure and composition of computer semiconductor chips: some chips are structured specifically for enhanced graphical capabilities, some for rapid numerical calculations.

bly, gift to man of conceptual thought).”²²] The structure of all human brains is substantially similar, but as the film director Cecil B. DeMille once said, “God is in the details.”

Final thoughts

Not every human develops the material bodily conditions that are well disposed to the exercise of human genius. However, if these conditions are material, as suggested, it would appear that man does have the capacity to create or modify those conditions, through genetic and pharmaceutical research. If neuroscience succeeds in understanding the structural and chemical composition of the brain and discovering techniques to artificially enhance the conditions that underlie human genius, then we will be forced to make a prescriptive judgment about whether we *should* use this knowledge to engineer genius in coming generations—the development of what marketers might call *designer kids*.

In considering that question, we would need look no further than to the *final cause* (*i.e.*, the purpose) of superior intellectual power. Whether we determine that final cause to be the discovery of truth, the performance of virtuous acts, or just plain contemplation, it is clear that the improvement of our intellectual capabilities, essential to all three of these pursuits, would serve the end of intellectual power. Would we not be justified in improving human contemplation itself, what Aristotle called the highest form of activity, an activity which is appreciated for its own sake?²³ As noted at the outset, the *Parable of the Talents* warns even those with the meanest ability to use to the best advantage their natural talents. If, therefore, through scientific inquiry we can find a way to improve our bodily dispositions to improve our powers of conceptual thought, it appears, from sources both reasonable and divine, that we should do so. But prudently.

“What is a man,
If his chief good and market of his time
Be but to sleep and feed? a beast, no more.
Sure, he that made us with such large discourse,
Looking before and after, gave us not
That capability and god-like reason

²² Adler, “Natural Theology, Chance, and God” (*GIT* 1992, 298-99).

²³ Aristotle, *Ethics* (*GBWW* I: 9, 430-32; II: 8, 430-32).

To fust in us unused.”

Shakespeare, *Hamlet*
(*GBWW* I: 27, 59; II: 25, 59)

Archivist’s Note: Dr. Adler believed that the winning entry was that of Max Weismann but felt that because of their close association that choosing Max’s response would show favoritism. Max’s essay was listed as one of the runner-ups. Here for the first time is the true winner’s response.

OF THE CAUSE OF SUPERIOR INTELLECTUAL ABILITY

By Max Weismann
(In the Manner of St. Thomas)

We must now consider, that if all human beings have the same species-specific powers, how is it possible that some have much more intellectual power than others? Under this heading, there will be one point of inquiry: (1) Whether superior intellectual abilities are due to hereditary, genetic transmission or by some other cause?

We proceed to the First Article: It would seem that all humans share equally in their species-specific intellectual powers, varying in degree only, not kind. The capacities of these powers must be genetically determined to account for cases of gifted children.

Objection 1. Aquinas says that while the intellect is incorporeal, it has a dependence on the corporeal organ’s powers for its operations, and that some men have bodies of a better disposition, and their souls, therefore, have a greater power of understanding. This view seems to give consequence to factors that admit of genetic transmittal.

Obj. 2. Further, philosophers, geneticists, and neurophysiologists say that even if the intellect is an immaterial power, it is so dependent on the quality of the corporeal organs for its operations that it is in effect reducible to those organs.

Obj. 3. Further, others say any supernumerary faculty would extend beyond the species-specific powers of human beings inferring a different species, thereby, nullifying the character of the issue.

Obj. 4. Further, whether the intellect is a corporeal or incorporeal power, it would seem that the known laws of deviation from the average (probability) would provide a sufficient answer to the question.

Obj. 5. Genetic research such as Sir Francis Galton's purports high degrees of intellectuality running in families. This clearly suggests genetic transmission by genes.

On the contrary, The best philosophical analysis and empirical data to date coupled with our common experience indicates that the intellect is an immaterial power of the human mind, and therefore, cannot have a material cause. There is NO evidence to the contrary.

I answer that, Holding the position of moderate immaterialism, I grant that the intellect is existentially inseparable from the body, yet remains analytically distinct. As has been stated, the brain is only a necessary, but not a sufficient condition for conceptual thought. This leads to the conclusion that as an immaterial power, its cause cannot be material and must be caused by an immaterial being such as God. In Christian theology this is called the Divine Gift of the power of understanding. This is a power that all humans possess.


Reply Obj. 1. It seems that the corporeal powers of sense-perception, imagination, and memory of a higher magnitude would most likely be an aid as the intellect-support organ. This does not alter the contention that intellectual acts/processes cannot be explained by or reduced to sensory operations.

Reply Obj. 2. See answer above.

Reply Obj. 3. A human being as an entity is not a wholly intelligible object.

Reply Obj. 4. Our knowledge of the laws of probability is ultimately uncertain, and confined to the realm of the measurable. They may be utilitarian in the domain of purely, genetically-transmitted aspects of the physical world. Animal and plant breeding are prime examples of its application. It does not and cannot apply to the immaterial sphere.

Reply Obj. 5. Sir Galton's research may in fact indicate hereditary factors in the performances of oarsmen and wrestlers whose lineages he studied carefully. However, his criteria of "eminence" in the intellectual realm sorely lacks persuasion in those areas of his investigation. For example, he devotes considerable mention to eminent judges and the proliferation of their progeny in that field. Yet, at the very conclusion of that chapter, he says of eldest sons

not succeeding well because, “. . . social influences are, on the whole, against their entering, or against their succeeding at the law.” This smacks of the time worn egregious error of mistaking nurture for nature or vice versa. 

THE GREAT IDEAS ONLINE

is published weekly for its members by the

CENTER FOR THE STUDY OF THE GREAT IDEAS

Founded in 1990 by Mortimer J. Adler & Max Weismann

Elaine Weismann, Publisher and President

Roberta Friedman, Research Assistant

312-943-1076 312-280-1011 (cell)

A not-for-profit (501)(c)(3) educational organization.

Donations are tax deductible as the law allows.