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The Problem of Over-Design for Darwinism

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Abstract

The case for over-design is reviewed focusing on documented cases of normal persons that have exceptional abilities. Over-design refers to mental skills that exist at levels well-beyond that required for survival. Typical abilities and skills achieved by the human brain, such as in music, math, memory, and design, are also used as examples to illustrate the concept of over-design. Several case histories of exceptional abilities were reviewed to illustrate extreme cases of mental over-design. These cases provide strong support for a level of intelligent design that cannot be explained by Darwinism. A literature review concludes these exceptional skills remain unexplained in spite of numerous scientific studies that have explored this topic. Among those persons convinced that over-design requires an intelligent creator is the co-founder of the modern Neo-Darwinism theory of evolution, Alfred Russel Wallace.

Keywords: Over-design, brain evolution, Intelligent Design, exceptional people

Introduction

The general strength (or capacity) of most human body organs and structures is considered by many anatomists to be far beyond that which is normally required for survival (Burgess 2014). University of California Medical School Professor Jared Diamond noted that research has determined our intestinal capacity is double that required for a healthy life, our kidney system is three times as large as required, and our pancreas fully ten times the necessary size (Diamond 1994, 78). Furthermore, humans have pairs of certain organs (such as lungs and kidneys) and numerous organ back-up systems.

Over-design in the field of design can be positive or negative. In a negative sense, it means over-engineered for a given purpose that interferes with the system's function. In a positive sense, it means design beyond that which is required but which can be functional in certain situations (Burgess 2000). In this review over-design is used in a positive sense. As Coyne claims, a major

> argument for God is that the human brain has abilities far beyond anything that would be needed by our African ancestors. We can build skyscrapers, fly to the Moon, cook elaborate dishes, and make (and solve) Sudoku puzzles. Yet such abilities could not possibly have been useful during nearly all of the period when our brain evolved. How then do we explain them? To some theologians, the answer is God…the first one to raise this problem was the biologist Alfred Russel Wallace. Although a tireless and selfless promoter of evolution by natural selection (he called his book on the topic *Darwinism*), Wallace could not see how selection could produce the multifarious abilities of the human brain. (Coyne 2015, 183)

Coyne concludes: "In short, the brain seems to defy the idea that natural selection can't prepare organisms for environments they've never encountered. As a result, Wallace concluded that evolution could explain everything *but* a single organ in a single species" (Coyne 2015, 183; emphasis added). That organ was the human brain.

It is unlikely that the "survival of the fittest" mechanism would select for structures that remain unused for most of the entire population. Natural selection selects only for those structures that aid in an organism's survival, primarily as reflected in the animal's reproductive success. In Fisher's words:

> Are you the richest man in America, the most powerful woman in business, the smartest kid in the class? Nature doesn't care. When Darwin used the term "survival of the fittest" he wasn't referring to your achievements or your endowments. He was counting your children. *You may have flat feet, rotten teeth, and terrible eyesight, but if you have living children you are what nature calls "fit." You have passed your genes to the next generation, and in terms of survival you have won*. (Fisher 1982, 15; emphasis added)

Darwin asserted for this reason that traits which do not directly or indirectly contribute to a greater number of offspring, would not be selected (Burgess 2014). In the words of Genetics Professor Steve Jones, "Natural selection is no more than a machine. What it makes depends on what it has to work with and where it started. *Evolution does its job as well as it needs to, and no more*" (Jones 2000, 98; emphasis added). The fact that many human organs and structures are far larger or more developed than required for survival is a major problem for Darwinism. Two kidneys may enable a few persons to live longer due to gradual kidney loss from disease or aging, but this life extension advantage typically occurs long past reproduction age and, consequently, would not be selected.

As Ornstein concluded, "A major mystery in human evolution concerns why there is such a gigantic jump between the brains of *H. habilis* and *H. erectus* [modern humans]," adding Alfred Russel Wallace, the co-discoverer of Darwin's theory, concluded that "the human brain was over-designed…thus could not have" evolved (Ornstein 1992, 40). The case for over-design was so significant for Wallace that it led him to abandon the Darwinian theory of evolution, and embrace what is today known as Intelligent Design (Alves 2008; Wallace 1870, 343).

Wallace wrote, "The brain of prehistoric and of savage man seems to me to prove the existence of some power, distinct from that which has guided the development of the lower animals through their ever-varying forms of being." He added his conclusion was that the brain's over-design demonstrated to him that "a superior intelligence has guided the development of man in a definite direction, and for a special purpose (Wallace 1870, 359). Thus, "he scientifically departed from Darwin over the evolution of the human brain, which Wallace could not conceive as being the product of natural selection…and thus must have been designed by a higher power" (Shermer 2013, 92). This view of Wallace was shared by many other naturalists of his day, and was the primary factor that caused a major rift between him and Darwin (Flannery 2008; Shermer 2002, 163, 208).

Evolutionists argue that the extra capacity of over-design of the kidney aids in cases of sickness or parasite infestation. This may be true in a few situations, but in most cases, overall heath, not kidney number, is far more critical in facilitating survival. The evolutionary cost of maintaining an extra kidney and other over-design luxuries cannot compensate for the gain resulting from their potential advantages in rare situations. Excess capacity would normally be selected against, but the fact is, over-design—often called "redundancy" in biology—is everywhere. Research that removes certain genes in laboratory animals has found that, due to over-design, the subjects either die young or, more commonly

> they live blithely on, although what seem [to be] essential parts of their machinery—a gene for collagen, the structural material of much of the body, or for another that passes signals around the cell—have been removed. Duplication is a useful insurance policy against the wiles of geneticists; but how and why these extra copies evolved, nobody knows. (Jones 2000, 293)

As Harvard University Professor Steven Pinker noted, the average human brain illustrates over-design. The human

> mental processes work so well we tend to be oblivious to their fantastic complexity, to the awe-inspiring design of our own mundane faculties. It is only when we look at them from the vantage point of science and try to explain their workings that we truly appreciate the nobility, the admirability, the infinite capacity of human faculties. (Pinker 2001, 179)

Because "we tend to be oblivious to their fantastic complexity," a study of those with exceptional mental abilities best illustrates the over-design concept that convinced Wallace to accept intelligent design.

Mental Over-Design

A prime example of over-design, the human brain, is an organ able to multitask, as do computers, but the brain has capabilities that far exceed those of man-made computers (Simmons 2004). For example, the human brain is able to

> store between 100 trillion and 280 quintillion bits of information in three pounds of matter. It is protected by bony armor, cushioned by fluid, and serviced by a complex network of blood vessels. Everything about it exemplifies purpose and design. Life cannot begin without a brain, and life ends in four minutes without it. (Simmons 2004, 89)

Although most brain cells consist of structural neurons and glial cells, many accessory structures are required for it to function, including the meninges, cerebrospinal fluid, and the ventricles. A brain design that allows learning new material for a length of time beyond even that of the most extreme expected human lifespan would not be selected by evolution. Rather, only the traits required for survival through the childbearing years are selected. It is well recognized that our brain gives us an enormous survival advantage for inventing, hunting, building, farming, cooking, and even communicating. The problem for evolution is that it was not until the twentieth century that any use existed for

> the phenomenal capacity of the human brain to perform such higher mathematical functions as nonlinear tensor calculus, relativistic quantum theory, and higher dimensional geometry. These abilities come at a cost: thirty-five percent of the entire blood flow in the human body services the brain. Moreover, to make room for the brain lobes that support mathematics, logic, analysis, communication, and meditation, the lobes that support some of our senses (smell and sound in particular) and of our muscles were reduced. (Ross 2004, 4)

Darwinism has always had difficulty accounting for the many documented examples of over-design, such as the fact that our brain is able to do

> higher mathematics, analysis, and meditation beyond the demands of mere survival…These three anticipatory endowments—among others—equip humanity for peak performance in a high technology environment. Humans, unlike any other species of

> life, appear to have been equipped in advance for a life far different from the one they experienced when they first appeared. Such equipping of humanity, while puzzling from a Darwinian view, points to a Creator with foresight and a special plan for the creatures. (Ross 2004, 4)

These mental traits include skills, such as becoming a gifted artist, which, if this skill was "merely the luck of the genetic lottery," one must ask why so many people have artistic talent, far more than the employment as artists can support. Thus the source of the phrase "starving artist." Simmons reasoned that the ability

> to paint a water scene, sing an aria, win a debate, or test a complex hypothesis cannot easily be attributed to survival of the fittest. The human race has gone beyond competition for mere survival. If one were to assume that gifts came about by a genetic accident, then one would have to explain how millions, if not billions, of extremely compatible neurological changes simultaneously came about in the brain and spinal cord. (Simmons 2004, 249)

A major problem with Darwin's theory is that it cannot even begin to explain the many phenomenal mental gifts that most all humans possess, such as

> laughing, singing, dancing, reading, playing, understanding, complex thinking, offering sympathy, and simply smiling. Experts on evolution rarely tackle these qualities because they can't explain them [by Darwinism]. Is Albert Einstein a product of natural selection, or is he merely a product of many genetic mutations? Or Mark Twain? Or Gandhi? Or Shakespeare? Or Mother Teresa? What about "idiot savants" who can play thousands of songs on the piano without a lesson? Evolutionary theories do not explain these special skills. (Simmons 2004, 40)

Mental over-design includes those who have exceptional abilities in math, music, and other exclusively human endeavors (Treffert 1989). Wallace concluded that "Natural selection can only fashion a feature for immediate use. The brain is vastly overdesigned for what it accomplished in primitive society; thus, natural selection could not have built it" (quoted in Gould 1980, 55). Part of Wallace's reasoning, which required a whole chapter in his 1870 book, was that a

> brain slightly larger than that of the gorilla would…have sufficed for the limited mental development of the savage; and we must therefore admit, that the large brain he actually possesses could never have been solely developed by…evolution, whose essence is, that they lead to a degree of organization exactly proportionate to the wants of each species, never beyond those wants….Natural selection could only have endowed savage man with a brain a little superior to that of an ape, whereas he actually possesses one very little inferior to that of a philosopher. (Wallace 1870, 343, 356)

Wallace also concluded that over-design in humans, such as human language ability, self-awareness, and the ability to imagine the future, are all very convincing evidence of the creation of humans by God (Eberle 2007, 78). This was one of the central reasons that converted him from an atheist to a Christian.

Memorizing and Calculating Savants

Many specific examples of profoundly mentally gifted persons document over-design. Truman Henry Safford was a *lightning calculator* child prodigy born in 1936 in Royalton, Vermont. At the young age of ten, when asked by an examiner to square 365,365,365,365,365,365 in his head, Safford calculated the answer in seconds. Safford published his first almanac when he was nine—and many editions of his award-winning almanac were sold out.

Safford graduated with honors from Harvard at the age of 18 after only two years of study (Rose 1988, 17–18). Because he could remember the positions of all the stars listed in the Nautical Almanac, Safford was able to discover several new nebulae (Rose 1988, 18). Although, like Isaac Newton, he was described as a "sickly nervous child," he lived to age 65 (Smith 1983, 237).

Yet another example is the ability to rapidly identify prime numbers, square roots, and other similar number feats (Happé and Vital 2009, 1369). Calculating savants have phenomenal memorizing and calculating abilities that do not relate to survival (Smith 1983). *Calendar calculators* can determine the day of the week for any date in history as well as any future date. Typical is one 20 year old calculator, who, when asked questions, such as what day of the week June 14, 1808, fell on, correctly answered—Tuesday, accurately compensating for the 1808 leap year.

Another skill is "*instantaneous counting*" where, for example, hundreds of matchsticks are dropped on a table and the counter can relate the correct number as soon as they hit the table (Snyder 2006, 837). Safford, the case noted above, could sweep his visual view across a long fence. In seconds he counted every fence post as far as can be seen with the unaided eye—sometimes totaling in the hundreds.

Further examples of over-design include *trivia memorizers*. Typical is the research of Columbia University's Harold Ellis Jones who extensively studied one trivia memorizer. To illustrate the abilities of his subject, Jones reported that the subject had successfully put to memory the following information:

1. The population of every town and city in the United States larger than 5,000 persons.
2. The county seats of all counties in the United States and the populations of about 1,800 foreign cities.
3. The distances of all cities in this country from New York city and also the distance from each city or town to the largest city in its state.
4. The dates and essential facts connected with over 2,000 important inventions and discoveries. (Treffert 1989, 73–74)

Neurobiologist Dr. James McGraugh studied six cases of autobiographical remembering, the ability to remember in detail almost every day of one's life since childhood (Price 2008). An example that illustrates this type of over-design is Kim Peek who has memorized over 7,600 books as well as every area code, highway, zip code and television station in the U.S. (Treffert and Wallace 2002, 76).

Many similar types of *prodigious memory* savants exist (Adler 2008). MRI studies have found autobiographical remembering subjects have a larger than normal caudate nucleus (Packard, Cahill, and McGaugh 1994; Packard and McGaugh 1996). Memory is important in savants, but other skills are also involved. Ockelford, et al. (2006, 3), found in music savants "*absolute pitch*," the ability to recognize, and very accurately reproduce, sounds in isolation.

Many more examples of exceptional skills exist, such as Michael Grost—whose I.Q. scored so high that existing tests could not measure it. He began attending Michigan State University at age nine—ranked at the top of his class in most of his studies, and was told that he was ready for graduate school soon after he had completed his first year (Grost 1970).

The Case of William James Sidis

One of the most well-known examples of a savant was William James Sidis (1898–1944). Regarded as one of the most *intellectually gifted* persons in modern times, his IQ was estimated from 250 to over 300. He could read *The New York Times* at 18 months, Latin at age two. As an adult he spoke over 40 languages. It is claimed that he could learn a new language in a few days—a feat requiring learning about 5,000 words plus basic grammar. Many other cases exist in which persons had *enormous language abilities* such as fluently mastering 60 or more languages (Erard 2012). Examples include Italian Cardinal Giuseppe Mezzofanti, who was able to read, write and speak 72 languages fluently, or the German, Emil Krebs, who fluently spoke 68 languages.

At age five, Sidis had worked out a formula to name the day of the week for any date in history (Wallace 1986). Sidis entered Harvard at age 11, graduated *cum laude* at age 16, then breezed through Harvard's law school. Soon thereafter he became a professor at Rice University. His father, Harvard Professor Dr. Boris Sidis, theorized that geniuses are not so much born as made and set out to document his theory on his son. He succeeded far beyond his expectations (Wallace 1986). No doubt, in Sidis's case his innate abilities helped greatly.

Another similar case was Edith Stern, who entered Michigan State University (MSU) at age 12, graduated at 14, and started teaching at MSU at 15. At 18 she received her Ph.D. in mathematics. Edith's father, Aaron Stern, also believed that genius is not primarily born but nurtured, and Edith was the result of his project to document his theory (Stern 1971).

Although many savants have a prodigious memory in specific areas that is "very deep, but exceedingly narrow," many others have extraordinary abilities in many mental areas, not just math or memory skills, but also art, music, poetry, and even playing complex games such as chess or cards (Barlow 1969; Treffert 2009). One Canadian trivia memorizer, Robert Gagno, later became a pinball wizard who ranked number one in Canada and number 18 in the world. Pinball is a game where a player attempts to score points by manipulating the movement of handles. The handles move one or more metal balls on a playfield inside a glass-covered case. He explains this feat by memorizing patterns, movements, and, in short, has total recall of where the ball is going to move to when struck based on its past behavior. His MRI was totally normal except that he processed visual stimuli very differently than most people (Koentges 2016).

Cases also exist of extraordinary development of the special senses, including taste, hearing, vision, and even smell. One *vision savant* could see minute slivers of broken glass that were invisible to an ordinary person (Tredgold 1929, 294). An example of hyper development of the tactile sense was a boy who could split an entire page from an old book into two perfect sheets as if peeling a postage stamp from an envelope (Tredgold 1929, 294).

Art and music are both skills that are highly dependent on brain development. No shortage of persons gifted in music, art, and drawing exist. Some persons have the ability to reproduce a scene in paint with close to photographic detail and quality. Others have the ability to create a world using oil paint that captivates viewers in ways that reality cannot.

Athletic Talent

Of the many other examples of extraordinary gifts include athletes who exhibit a vast array of very

accurate, rapid moves when playing sports requiring a high level of brain development, especially in the cerebellum. Survival of the fittest ideology may be able to explain the ability to escape enemies, or the skills needed to obtain food and shelter, but all of the skills discussed above are well beyond the level required for survival. As professor Niall Shanks admitted, evolution could have not equipped us to achieve tasks, such as visualizing "four-dimensional objects in four-dimensional space-time" such as is required to fly an airplane at the speed of sound (Shanks 2004, 194). Yet, humans can do this and much more. Ross explained the problem of over-design as follows:

> Human beings seem vastly "over-endowed" for hunter-gatherer or agrarian existence. For tens of thousands of years humanity carried intellectual capacities that offered no discernible advantage. From a Darwinian perspective, such capacities would be unlikely to arise and, even if they had randomly emerged, they would likely have been eliminated or minimized by natural selection. (Ross 2004, 4)

He notes that these capacities can easily be explained from an intelligent design perspective. Only today in our complex technological society do they

> serve the highly specialized needs of a technological society, benefiting the life quality and longevity of all humanity. The dexterity of the human hand certainly gave the human race an early survival advantage. Humans could craft more elegant tools and weapons than other bipedal primate species. However, the ability to type faster than a hundred words per minute seems to have offered no particular survival advantage until the twentieth century. Likewise, the remarkable ability to play a Liszt piano concerto had no utility until the invention of the piano. (Ross 2004, 4)

Research on Persons with Abnormally Small Brains

One of the best evidences of over-design in the brain comes from research on persons born with abnormally small brains who do fairly well in society. Lewin reports the case of a student with an abnormally small cerebral cortex, yet had an IQ of 126. Instead of the "normal 4.5 centimeter thickness between the ventricles and the cortical surface," this subject had a much "thinner" mantle layer —exactly how much thinner is not certain due to the limits of the x-ray technology used then (Lewin 1980, 1232).

One study involved over 600 scans on hydrocephalic patients whose fluid-filled ventricles took up between 70 to 90% of their intracranial space. Fewer than 10% of the total cases consisted of ventricle expansion filling 95% of the cranium, and, while these patients were severely disabled, half of them had IQ's above 100, "This group provides some of the most dramatic examples of apparently normal function against all odds" (Lewin 1980, 1232).

Further work on larger samples has modified his conclusions, but it is clear that, until a certain point is reached, cortical tissue loss does not directly correlate with function loss. It is now believed that brain plasticity is often more important than size alone (Bufill and Carbonell 2004). Even many persons with certain other major brain size abnormalities often show "no significant cognitive deterioration" (Devlin et al. 2003).

In another example, hemispherectomy (removal of one half of the brain cortex) patients, who are in their teens or younger and have no other disease condition often grow up to be fairly normal in most areas, including intellectually. In a follow-up study of one 5½ year old boy who had a total left hemispherectomy to control seizures, Smith and Sugar found that he developed superior language and intellectual abilities.

After removal of the left hemisphere, including "the classical language zone," the right hemisphere and other intact residual structures provided the necessary brain structures for the development of normal, or even above-average, adult language and intellectual capacities (Smith and Sugar 1975, 813). A follow-up study of eight cerebral hemispherectomy patients 3 to 16 years old (mean age, 10 years) found a marked reduction in both seizure frequency and in behavior improvement, with little change in intellect or hemiplegia, paralysis of one side of the body (Verity et al. 1982).

Another follow-up study of hemispherectomies found only moderate changes in cognitive performance in most of the subjects studied (Pulsifer et al. 2004). A limitation of all of these studies is that testing is not a perfect method to detect ability loss in patients who lost a major part of their cerebellum tissue. Nonetheless, the current research indicates that, given our limits of evaluating mental function losses, major tissue loss can be compensated.

Darwinists Fail to Explain Over-Design

Many Darwinists attempt to explain mental over-design by arguing that the evolution of human consciousness had a major downside—a conscious mind is aware of death, sickness, and the cruelties existing in life—and music and art helps one cope with these universal events. If this claim is true, it would appear that human consciousness would be adversely selected long before the complex skills needed to produce art and music developed to overcome the adverse results of consciousness. It would also seem that a far simpler way to cope with the survival disadvantage that a conscious mind produces would

be selection for the ability to effectively accept the human condition (Heaton and Wallace 2004). Actually, as World War II and numerous Holocaust studies have documented, many (but not all) humans eventually adjust somewhat to the suffering that results from active military combat, or dictatorial regimes.

Others argue that abilities, such as musical talent, are not directly related to survival, but rather evolved because they facilitated social bonding and, therefore, indirectly aided in survival. Parsimony postulates that selection would favor social bonding itself, and not for a highly indirect means of achieving this goal, such as selecting for the ability to produce certain sound sets that we call music—and also selection for the mental ability to value those sounds that most people can make beyond those requiring significant talent.

If selection explained music and art talent, it would also select for a greater ability to enjoy the more common musical ability levels instead of the rare skills needed to produce a Mozart or Bach music-level quality. The fact that many animals can also be taught human skills, such as chimps can learn mechanical typing skills, also does not argue against the over-design thesis, but rather for the view that some animals also exhibit evidence of over-design.

Other Problems in Explaining Savants

Darwin supporters assume that over-design is a result of mutations selected by natural selection, but this mechanism does not explain savants reviewed in this paper. The ability to mentally square 34,178,258 in a few seconds is not a skill that would facilitate survival in Africa where humans are believed to have evolved (Smith 1983). These skills are also so far above the norm that, if they conferred a clear survival advantage, they would be far more common. Biology Professor Stanley Rice concluded: "High levels of intelligence evolved in the few species that do have it as a result of special circumstances that are still not understood" (Rice 2007, 209).

Some evolutionists admit that, when attempting to explain the physiological cause of a savant's skill, "most evolutionary reasoning remains at that qualitative, gee-whiz level and hasn't progressed since Darwin's day" (Shanks 2004, 78). In other words, over-design is currently unexplainable from a Darwinist worldview and, as noted above, actually contradicts Darwinism. In an extensive review of the published literature, I have yet to locate even a remotely plausible explanation for mental over-design within the framework of mutations and natural selection. Most academic studies avoid the topic (for an example see Obler and Fein 1988).

The researchers in this field have consistently concluded that we have very little understanding of how these exceptional memory feats are achieved (Bryant 1989; Bufill and Carbonell 2004; Price 2008; Snyder 2001; Treffert 1989). When savants are asked how they achieve their mental feats, the common answer is "I don't know," which could be because their mental powers operate so rapidly that the process they use escapes their consciousness awareness (Barlow 1969, 242). They are aware of the task or problem they are asked to complete and the solution—but what goes on in between these two events eluded their consciousness.

The view that these people achieve their skills through normal practice has largely been rejected. Savant skills often appear to emerge spontaneously and do not significantly improve with time (Snyder 2001, 251). Another problem is both intellectually normal persons and mentally handicapped persons can possess these skills. One finding that may be significant is that savant skills are two to four times more common in males than females, indicating hormonal or even genetic influences may be involved (Howlin et al. 2009, 1359).

Professor Treffert argues that an exceptional memory explains only part of their ability. Some have exceptional math logic skills, others have special reasoning skills, yet others possess exceptional music or color perception skills. In a review of the literature, Treffert concluded that, although much speculation exists, the origin of savants, nor the existence of their exceptional mental abilities, has not been explained by scientific research (Treffert 1988, 563). The same conclusion is still true today. He agrees that both genes and the environment are influential, but beyond this little is known.

One common explanation for savant skills is *eidetic imagery*, meaning they retain dates, numbers, and words as visual images (Lafontaine 1974, 105). For example, *license plate memorizers* record a mental picture of the physical plate, and *calendar calculators* a visual image of a perpetual calendar. The problem with this theory, if it is true, is that their ability to accurately retain millions of visual images must be explained. This solution does not explain their eidetic memory ability, but only raises the question of the source of another rare ability, *eidetic memory*.

As a meeting of professional researchers concluded, Savant "Syndrome stands as a landmark of our own inability to explain" how the brain works (Treffert 1988, 563). Stanford educated vision specialist Cathleen Lewis wrote that those persons with these skills simply cannot be scientifically explained (Lewis 2008, 234).

Neurophysiologist Snyder, using repetitive transcranial magnetic stimulation (TMS) in an

area of the brain felt to affect savant skills, found that when normal people increased certain savant-like numerosity skills (in this case rapid counting of a large number of objects), this area of the brain increased in activity. The difference was significant at the .01 alpha level (Snyder et al. 2006). Similar studies have found the same results for art savants (Tucker 2012, 20).

TMS uses two magnets to create a pulsating electric field that generates an electric current in the brain. When placed on the skull, this non-evasive technique can be positioned to stimulate a specific part of the brain. The TMS system measures brain and nervous system functions that rely on electrical impulses, and creates new impulses that interfere with the brain's activity. By stimulating specific parts of the brain, the researchers speculate that they have been able to rewire the brain by this technique. Morrell (2000) and Moffat (2005) found similar results with TMS. Along this line, Smith concluded that brain damage could not create a talent, rather the talent must always have been latent. It is

> more likely that brain damage eliminates some of the competition. If this is so,…this talent, for biological reasons, could never have been accessed (or only very imperfectly accessed) were it not for the trauma. This is conceivable, but a view I would adopt only in the face of a lot of evidence. The second possibility, to which I subscribe, is that environment can channel interest in the same manner as biological damage. (Smith 1988, 30)

In short, 30 years of research has concluded that little is understood about how savant skills develop—nor do we understand the environmental or physiological precursors of savant skills (Hermelin 2001, 168). Some skills are clearly innate, such as absolute pitch in music savants, but clear explanations of the origin of these skills eludes researchers.

Design Explanation for Over-Design and Savant Syndrome

Design theorists conclude that, in designing humans, the Creator was concerned about much more than mere survival. This is obvious in the existence of many human skills that do not appear to affect survival, such as high-level mathematical or musical skills (Bergman and DePue 1986). Humans were designed with mental capacities to deal with a world that was far more complex than that which existed when humans were first created. We were created with an ability to deal with the challenges existing in both the world of Adam and Eve, and in the future as well. Thus, humans can do calculus, fly an airplane designed to travel at speeds twice that of sound, read, write and speak 72 languages fluently, and play the many complex musical instruments available today, ranging from the piano, the guitar, and the flute with consummate skill. Evolutionists admit defeat in explaining how humans achieve these feats. MIT Professor of Neuroscience, Sebastian Seung wrote:

> Studying an object as complex as the brain may seem almost futile. The brain's billions of neurons resemble trees of many species and come in many fantastic shapes. Only the most determined explorers can hope to capture a glimpse of this forest's interior, and even they see little, and see it poorly. It's no wonder that the brain remains an enigma. My audience was curious about brains that malfunction or excel, but even the humdrum lacks explanation. Every day we recall the past, perceive the present, and imagine the future. How do our brains accomplish these feats? It's safe to say that nobody really knows. (Seung 2012, xi)

Summary

Some argue that the idea of humans not using their full mental abilities is a myth, but the fact is, few of us achieve the mental feats similar to those cases reviewed above. The finding that certain persons can achieve the mental and learning level of those discussed above indicates that many more persons could also achieve at this level. These cases also illustrate that humans have abilities to engage in activities that go far beyond and outside the requirements needed for survival (Clark 2001). Understanding how individuals can improve or enhance their perceptual functioning could allow more persons to develop savant skills (Baron-Cohen et al. 2009; Mottron, Dawson, and Soulières 2009).

The research indicates that most average person's potentially could develop some savant skills (Mottron, Dawson, and Soulières 2009; Snyder 2006). As Dembski concluded, "evolutionary process unguided by intelligence cannot adequately account for the remarkable intellectual and moral qualities exhibited among humans" (Dembski 2004, 1). Hawking added that

> scientists still cannot satisfactorily explain why…so much human activity operates at a subliminal level. The spiritual sophistication of musical, artistic, politic, and scientific creativity far exceeds that of any primitive function programmed into the brain as a basic survival mechanism. (Hawking 2004, 200)

The incredible abilities of the brain argues that "the brain seems overdesigned, a feature that could not come about by evolution" (Wade 1994, 283). Dembski also postulated that cases, such as William Sidis, are strong evidence that, in contrast to Darwin's conclusions, "the difference between humans and other animals is radical and represents a difference in kind and not merely a difference in degree" as Darwin claimed (Dembski 2004, 2). The fact of brain over-design "raises a fundamental problem

for evolutionary theory. There is no reason why an evolved mind should have a capacity far beyond what most of us utilize" in our daily life (Dembski 2004, 4). The fact is, Darwinism cannot explain the "enormous discrepancy between what is needed to survive, and the intellectual ability we've actually got" (Hahn and Wiker 2008, 59).

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