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Words Are Us

by John W. Oller, Jr.

Language is foundational to more than our communication. The most powerful and wonderful system in creation, it underlies the whole universe.

Just the name “Albert Einstein” brings to mind powerful images of atom bombs, the equation $E=mc^2$, and a brilliant physicist scrawling formulas on a blackboard. Yet in spite of his intellectual gifts, one thing puzzled Einstein even more than matter, time, and space. He admitted, later in life, that he could not study physics without considering “a much more difficult problem”—namely his ability to reason, or his language capacity. As he put it, he puzzled over “the problem of analyzing the nature of everyday thinking.”¹

Later, he observed that “the mental development of an individual and his way of forming concepts depend to a high degree upon language.”² In the same context, he supposed if a person had to do without the benefits of language “his mental shape . . . would be very poor.”

More recent work has proved that even the so-called “nonverbal” IQ tests absolutely require language in their instructions, administration, and scoring.³ Einstein was right. We need language for complex reasoning. Can you make sense of $E=mc^2$ without using language?

Words—A Power Beyond Description

But why did Einstein suppose that ordinary thinking is more complex than physics? If words strung together in meaningful ways can stand for other things under their scope, the string of words is at least as complex as what they represent.

Some have supposed that birds, apes, and dolphins have learned human languages, but if that were so, why have they not taken up marketing, advertising, politics, art, and the sciences? Why don't they just form some committees and get to work? It is because

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nonhuman creatures do not have the uniquely human language capacity.

The case of Balaam's donkey that complained about being beaten for avoiding a lethal threat is exceptional. Here we see that the miracle of the donkey's speech caricatured the amazing stubbornness, not of the donkey, but of humans like Balaam.

In “More than PIE”—in the previous issue of *Answers*—I promised to return to the question of the human language capacity and how we got it. Here, I want to show that the human language capacity is not only unique to humans, but that in its power to represent abstract and universal concepts, language is unique in the universe. In fact, the nature of language itself, it can be argued, reflects the underlying nature of the entire universe, from the galaxies and biosphere down to the level of quarks, or whatever else there may be. I am arguing that language is the most wonderful and powerful system that God put in His universe.

The statement “In the beginning was the Word” (John 1:1) is more than a metaphor. The writer to the Hebrews argued that the things we can see—throughout the whole universe—were framed by words we cannot see (Hebrews 11:1–3). The bodily persons, animals, and even the plants that we can see are all formed by the abstract strings of symbols that constitute their genetic basis.⁴ Even inanimate matter, according to the Bible, is held together by abstract words. In the final analysis, as the Bible teaches, and as the sciences agree more and more, words really do underlie genetics,

mathematics, and the physical world.

The Bible declares that the Creator's words alone brought forth the forces that govern invisible subatomic elements, hydrogen-powered stars, and the 3 billion nucleotides that make up the human genome. That power continues to display itself, as each of us is knit together in our mother's womb with the unique language capacity which we begin asserting even before our birth.

The study of the universe, from the simplest to the most complex elements we know of, begins and ends with the unique, specially designed language capacity that we received from our Creator. Without it, the issues we are addressing here would never have come up.

“Special Design”

Linguist Noam A. Chomsky marveled at the “special design” that enables humans to learn how to speak without apparent effort:

“Some intellectual achievements, such as language learning, fall strictly within biologically determined cognitive capacity. For these tasks, we have ‘special design,’ so that cognitive structures of great complexity and interest develop fairly rapidly and with little if any conscious effort.”⁵

Possibly the most quoted statement from “the most-quoted intellectual of modern times,”⁶ Chomsky's claim is increasingly being confirmed, as this article goes to press. The quote, if anything, has proved to be an understatement.

The human language capacity en-

ables us to reason logically, to reflect on the past and anticipate the future, to employ freedom of will, to evaluate actions, and to make judgments about good and evil. It is a capacity that is unique in the entire universe. Language enables us to make sense of concepts such as nothing and eternity. Yet when have we experienced these things? Never. So we can talk about things that we don't find in the world, and in fact, we can talk about anything in our experience or anyone else's, or merely in imagination, or even beyond imagination. Humans can do this in any one of the 6,912 documented languages of the world.⁷

Human languages don't just describe abstract things; they are abstract systems of representation and can even represent themselves and their own inner workings. We do not find languages lying around, like flowers in the desert or gems at the bottom of the ocean. Words do not connect to meaning in the way that physical objects bang into each other. Chomsky's parents did not have to name him "Noam," because we are not born with names stamped on our foreheads. Words are connected to things only by convention, and the only ones who can use words meaningfully are the folks who know the conventions. Miracles aside, to acquire a language, every human must begin life with the human language capacity already within them, and then they must be exposed to the conventional uses of their language.

The Genome and Language

It is no coincidence that God's creation has many systems that reflect language and its power. Consider genetics. Abstract information is dynamically stored in the human genome in a very long sequence of meaningful symbols (Figure 1). The same is

true for the genome of any organism (see "The Language of Life," p. 60). The symbols in the DNA—like the sounds, words, phrases, and higher units of language—are crucial to every living creature. Only natural human languages, however, approximate the immense complexity of DNA and the biological systems that depend on DNA's words and meanings.

All creatures are made by and of words. But unlike other creatures of this world, humans are unique in their ability to use words, whether to understand genetics or to design other systems and languages (such as sign language).

Knitting Us and the Universe Together

Nearly half a century before Chomsky began to promote the idea of the "special design" of the language capacity, Einstein was wondering about the same thing, from a different angle. He quoted Immanuel Kant, who acknowledged that "the eternal mystery of the world is its comprehensibility."⁸

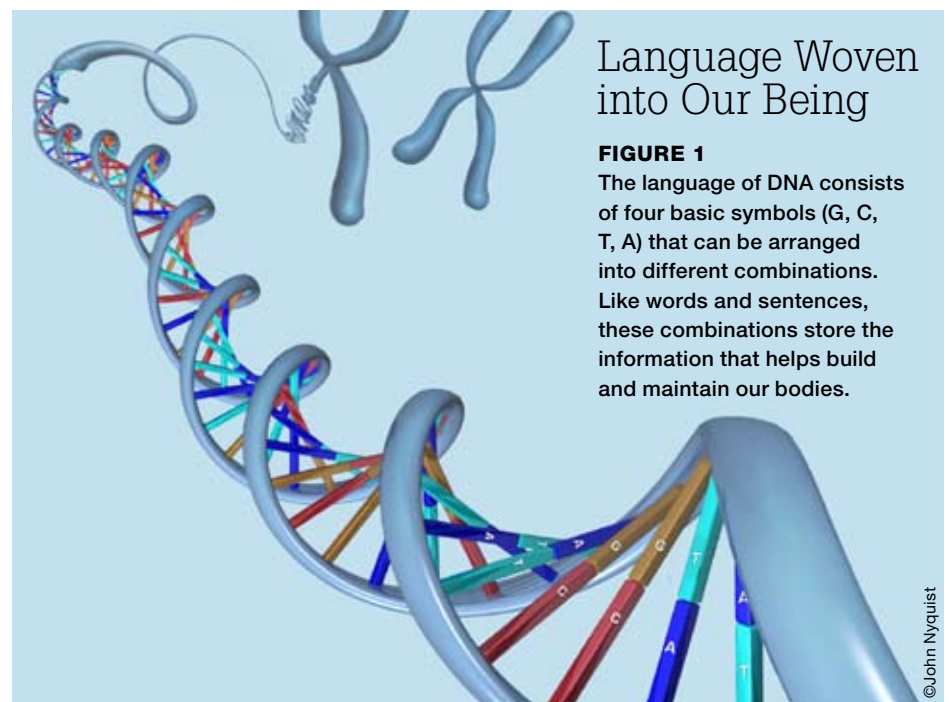
Philosophers are stumped: Why do we have the innate capacity to comprehend this world?

Charles Sanders Peirce—an American genius of logic, mathematics, chemistry, etc.—argued that we could not understand the logic of nature unless God had given us a parallel logical ability: "Unless man has a natural bent in accordance with nature's, he has no chance of understanding nature at all." Peirce saw this as the "very bedrock of logical truth" and as an argument for God.⁹

Much earlier, King David wrote that the "heavens declare the glory of God" and that "there is no speech nor language where their voice is not heard" (Psalm 19:1, 3).

The implications are staggering. The "language" of the genome is just the beginning of our discoveries about the language behind the universe. Recently, geophysicist John Baumgardner suggested that the material realm itself truly has linguistic underpinnings.

Here is his argument, as he shared it with me in his own words: "We know



Language Woven into Our Being

FIGURE 1
The language of DNA consists of four basic symbols (G, C, T, A) that can be arranged into different combinations. Like words and sentences, these combinations store the information that helps build and maintain our bodies.

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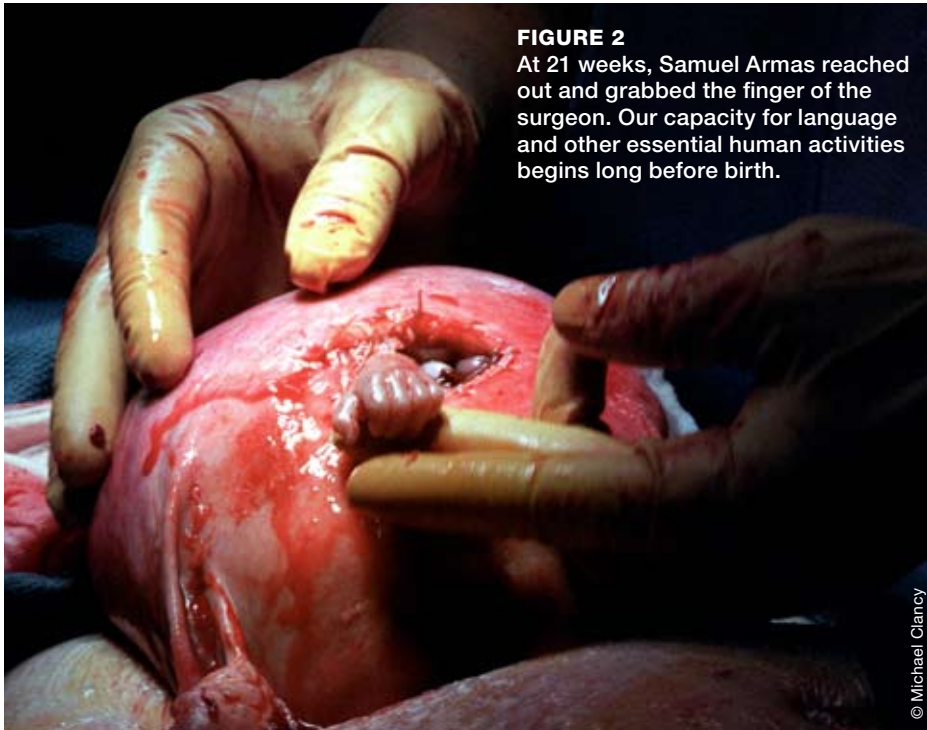


FIGURE 2
At 21 weeks, Samuel Armas reached out and grabbed the finger of the surgeon. Our capacity for language and other essential human activities begins long before birth.

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FIGURE 3
Even before birth, babies are able to produce a social smile—communicating.

Dr. Stuart Campbell and Create Health Clinic

that mathematics is a language in the full sense of the word, as linguists understand it. Mathematical laws describe how the physical world behaves. So this strongly suggests that that language (mathematics) underpins the material world.”¹⁰

This “special design” extends to humans, as well. So when and how does it begin to show up in us, through our speech and language?

Did you know that you were already keenly interested in language before you were born? Did you know that human babies can take steps, rub their eyes, suck the thumb, and scratch an itch by just 12 weeks after conception? Advances in 4D ultrasound and research on human development have pushed many social and linguistic milestones back into the womb.¹¹ Did you know that you were able to produce a social smile well before you were born? (Figure 3)

At the 12th week of gestation, the baby is so small that it would fit in the palm of your hand and mom cannot tell its movements from her own digestion of foods and liquids. By 21 weeks—a little more than halfway through the pregnancy—the baby’s entire hand is about the size of an adult’s fingernail. At this stage in development Samuel Armas in 1999 reached out and grasped the finger of the surgeon who repaired his spina bifida (Figure 2). Four frames of the little hand were shot by Michael Clancy, commissioned to document

the surgery at Vanderbilt Medical. Samuel was the youngest baby ever to undergo such a repair.

At age 3½, Samuel went with his parents and Clancy to testify in Congress. When Senator Sam Brownback of Kansas asked Samuel if he knew who that baby was, he said, “Samuel.” When Brownback asked if he knew what was happening, Samuel said they were fixing his “boo boo.”¹²

Did you know that human babies can recognize their mother’s voices well before birth? They can also recognize voices of adults that talked to mom during her pregnancy. Immediately after birth human babies will move their hands and feet in rhythm to the speech of any adult they can hear talking,¹³ and they will be able to engage in conversation with an adult through voluntary cooing.¹⁴ After a few minutes seeing and hearing mom speak, the newborn will pair mother’s voice and face,¹⁵ and within the first two weeks can distinguish mother’s language from a foreign language.¹⁶

Word Power

According to Genesis, God spoke and it was so. Secular philosophers scoffed at this idea as superstitious.¹⁷ But linguistics, genetics, and physics show us that every aspect of our world depends on words. Jesus said that what believers license by our words on earth is authorized in heaven, and what we deny here is forbidden there (Matthew 16:19). In fact, it is probably impossible to overestimate the power of words. Without language capacity we could have no freedom of will. It comes down, then, to this: Why are we so special, and what shall we do with our uniquely human language capacity? Is there anything better than to praise the God who gave us this capacity? ■

NOTES

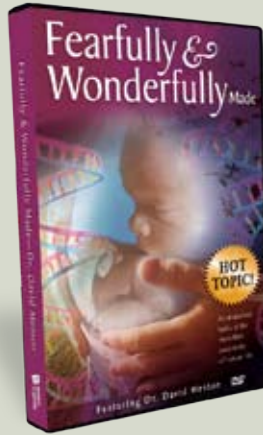
- ¹ A. Einstein, "Physics and Reality," *Out of My Later Years* (Secaucus, New Jersey: Citadel Press, 1956), p. 59.
- ² *Ibid.*, p. 112.
- ³ J. W. Oller, Jr., K. Kim, and Y. Choe, "Can Instructions to Nonverbal IQ Tests Be Given in Pantomime? Additional Applications of a General Theory of Signs," *Semiotica* 133 no. 1 (2001), 15-44.
- ⁴ It has been proven logically that true representations of the narrative type, such as are found in the Bible, form the only foundation for measurement in the sciences. See J. W. Oller, Jr., and L. Chen, "Episodic Organization in Discourse and Valid Measurement in the Sciences," *Journal of Quantitative Linguistics* 14 (2007): 127-144. Similarly, related proofs show why languages and genes cannot be built up by random events. See J. W. Oller, Jr., "Languages and Genes: Can They Be Built up Through Random Change and Natural Selection?" *Psychology and Theology* 30 (2002): 26-40. Also, true uses of language in ordinary experience provide the only basis for language acquisition. See J. W. Oller, Jr., "Common Ground Between Form and Content: The Pragmatic Solution to the Bootstrapping Problem," *Modern Language Journal* 89 (2005) 92-114.
- ⁵ N. A. Chomsky, *Reflections on Language* (New York: Pantheon, 1975), p. 27.
- ⁶ G. Shadroui, "Dissecting Chomsky," <http://www.intellectual-conservative.com/2004/09/06/dissecting-chomsky-and-anti-americanism/>.
- ⁷ R. G. Gordon, Jr., ed., *Ethnologue: Languages of the World*, 15th ed. (Dallas, Texas: SIL International, 2005). Also see www.ethnologue.com.
- ⁸ Einstein, p. 61.
- ⁹ Charles Hartshorne and Paul Weiss, eds., *Collected Papers of Charles Sanders Peirce: Volume VI* (Cambridge, Massachusetts: Harvard University, 1935), p. 325.
- ¹⁰ J. Baumgardner, "Language, Complexity, and Design," in J. Seckbach and R. Gordon, eds., *God, Science and Intelligent Design* (Singapore: World Scientific, forthcoming).
- ¹¹ For instance, watch a human infant perform all these acts and more in real time video from <http://news.bbc.co.uk/1/hi/health/3846525.stm> (retrieved January 29, 2008). Thanks are owed to Dr. Stuart Campbell of the Create Health Clinic in London for the video and the still picture of the baby smiling in the womb.
- ¹² See <http://www.nationalreview.com/comment/solen-ni200309301002.asp>.
- ¹³ W. S. Condon and L. W. Sander, "Synchrony Demonstrated Between Movements of the Neonate and Adult Speech," *Child Development* 45 (1974): 456-462.
- ¹⁴ All this and much more is fully documented in J. W. Oller, Jr., S. D. Oller, and L. Badon, *Milestones: Normal Speech and Language Development* (San Diego: Plural Publishing, 2006).
- ¹⁵ F. Z. Sai, "The Role of the Mother's Voice in Developing Mother's Face Preference: Evidence for Intermodal Perception at Birth," *Infant and Child Development* 14 no. 1 (2005): 1-29.
- ¹⁶ A. Vouloumanos, and J. F. Werker, "Tuned to the Signal: The Privileged Status of Speech for Young Infants," *Developmental Science* 7 no. 3 (2004): 270-276.
- ¹⁷ For instance, see B. Russell, *Human Knowledge: Its Scope and Limits* (New York: Simon and Schuster, 1948).



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IN GOD'S IMAGE



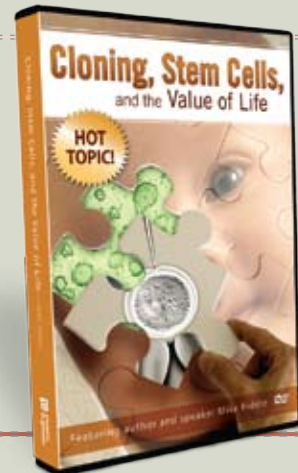
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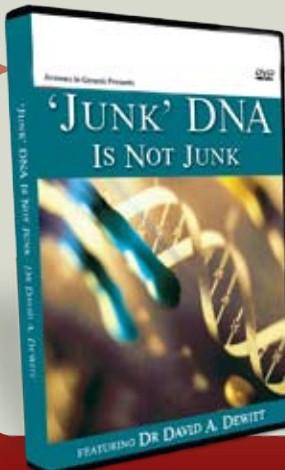
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