

A Cross-Cultural Approach for Communication with Biological and Non-Biological Intelligences

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Abstract—This paper posits the need to take a cross-cultural approach to communication with non-human cultures and intelligences in order to meet the following three imminent contingencies: communicating with sentient biological intelligences, communicating with extraterrestrial intelligences, and communicating with artificial super-intelligences. The paper begins with a discussion of how intelligence emerges. It disputes some common assumptions we maintain about consciousness, intention, and language. The paper next explores cross-cultural communication among humans, including non-sapiens species. The next argument made is that we need to become much more serious about communicating with the non-human, intelligent life forms that already exist around us here on Earth. There is an urgent need to broaden our definition of communication and reach out to the other sentient life forms that inhabit our world. The paper next examines the science and philosophy behind CETI (communication with extraterrestrial intelligences) and how it has proven useful, even in the absence of contact with alien life. However, CETI's assumptions and methodology need to be revised and based on the cross-cultural approach to communication proposed in this paper if we are truly serious about finding and communicating with life beyond Earth. The final theme explored in this paper is communication with non-biological super-intelligences using a cross-cultural communication approach. This will present a serious challenge for humanity, as we have never been truly compelled to converse with other species, and our failure to seriously consider such intercourse has left us largely unprepared to deal with communication in a future that will be mediated and controlled by computer algorithms. Fortunately, our experience dealing with other human cultures can provide us with a framework for this communication. The basic assumptions behind intercultural communication can be applied to the many types of communication envisioned in this paper if we are willing to recognize that we are in fact dealing with other cultures when we interact with other species, alien life, and artificial super-intelligence. The ideas considered in this paper will require a new mindset for humanity, but a new disposition will prepare us to face the challenges posed by a future dominated by artificial intelligence.

Keywords—Artificial intelligence, CETI, communication, culture, language.

I. INTRODUCTION

ALTHOUGH individuals share common experiences, it is certainly true we do not understand or interpret those experiences in the same way all other individuals do. Thomas Nagel, in an article entitled *What is it like to be a bat* has argued that it is impossible for us to ever fully understand the experience of existence perceived by another [1]. This argument helps us to understand why it is so difficult for communications to occur across species. As Nancy Adler has

noted, the greater the difference in background between the sender and receiver of an attempted communication, the greater the difference in meanings attached to the words and ideas of that attempted communication, and thus, the more likelihood there will either be no meaningful communication, or misunderstanding [2]. This is the dilemma that awaits us when we consider communications with other biological or non-biological intelligences. We no longer have any doubt that other biological species possess intelligence, though there is still debate as to the quality and quantity of that intelligence. We are still debating whether it is possible for non-biological entities to possess intelligence, but we are now at least willing to consider the idea that “artificial intelligence” is not an oxymoron.

This paper not only assumes artificial intelligence will be possible, but it posits as axiomatic that this intelligence will be beyond our understanding. That will present difficulties for humanity, because all previous attempts at communication with non-human species assumed the other species would be required to communicate in a language we were capable of understanding. This postulate was in turn based on anthropocentric assumptions of asymmetries of dependence. We never doubted we were the dominant species on this planet, and therefore the continued existence of other species depended on our good will. They needed to communicate with us more than we needed to communicate with them.

Although this was always an invalid assumption in a world where biologically “superior” humans were unable to defend themselves against simple viruses, it shaped our view of the world. Imagine, however, what might have been if we had devoted ourselves to attempts to communicate with viruses, rather than merely study them. Might we have found that these “non-intelligent” life forms (and we were actually not even willing to ascribe the quality of life to them) had something to tell us about how we could live together in mutual cooperation? As Marilyn Roosnick has noted, most viruses are actually beneficial to their hosts [3]. If we had discovered a means to communicate without using human language, for clearly viruses are not capable of human language, we may have learned to live together in a mutualistic symbiosis with some of our greatest competitors. This possibility, unfortunately, ran up against another incorrect assumption our species has held about communication. The ability to engage in conversation has been construed as an indication of intelligence - the Turing test being the most famous expression of this idea - and the inability to engage in conversation was therefore an indication of a total lack of intelligence. Since we have never been willing to ascribe a “conversational” aspect to

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the communication that occurs, for example, between two neurons in the brain, we never needed to consider the possibility that we ourselves are composed of multiple intelligences - and not in the same sense that Howard Gardner theorizes multiple intelligences [4]. We insisted that the intelligence that exists within the human must be at the holistic level, a product of "self." The "self" in turn, was conceived of as something spiritual, able to continue after the death of the mere life form it inhabited. We had no problems accepting this as dogma, even though our best science showed the absurdity of believing that a mind, if it existed as a non-material entity, might be able to act upon a physical world.

Peter Hacker's exploration of the evolution of the idea of consciousness helps us to understand how assumptions about intention and conscious control of behavior came to be ascribed to humanity [5]. All other non-human species were considered to be merely acting from instinct, and thus without moral freedom. Without consciousness, it was believed, both animals and machines merely functioned, rather than exercising choices and intentionality. Communication, in turn, was defined as requiring intentionality, providing yet another rationalization for why there could be no communication between human and non-human species. Yet, Barbara Miller and others have noted that the animals we are willing to acknowledge as being at least somewhat intelligent, such as the great apes, ARE capable of communicating with humans, and expressing intention [6]. Was it possible they also possessed consciousness, and perhaps even a soul?

The human obsession with ideas about non-physical souls and conscious has recently also produced a need to consider if a machine could ever one day possess a soul, or if artificial intelligence could ever become conscious. Neither of these conditions is necessary for communication to occur, but they are necessary for us to validate the belief systems we have built up around the idea of communication. None of these false beliefs or mistaken ideas truly mattered when we were the dominant species on the planet, but they began to become problematic when we first considered the idea of contact with an intelligent species beyond Earth. They formed the foundation for our theories about CETI (communication with extra-terrestrial intelligence), but our failure to find such intelligence never forced us to consider their validity. Artificial intelligence, however, will force us to re-evaluate our ideas about communication, and develop an approach to communication with biological and non-biological intelligences that can produce meaningful results.

II. EMERGENCE AND ARTIFICIAL INTELLIGENCE

Where do the ideas being created in this paper come from? They are at least partially a product of this author's research, but they somehow organized themselves into a (hopefully) coherent structure that allows them to be communicated to others. It is not possible to describe the "thought" process that caused them to take this form, and yet they somehow came into being. In a sense, they merely "emerged" from the experiences that have created the "mind" of the author. To attempt to ascribe them to a Muse, or to a mind, would make

them either spiritual or non-physical in nature. They were not, however, a product of a "consciousness" that is able to act, or even exist, without a physical object known as the brain. In truth, they emerged from the electrical signals that were communicated between brain neurons, in a pattern that has been shaped by the individual experiences of this author's life.

Someday soon a computer will house the artificial intelligence needed to produce sophisticated "thoughts" based on electrical signals communicated between devices. Computers can already be programmed to write songs, and some are already producing news articles. They have achieved competition victories over chess grandmasters and trivia game challenges such as Jeopardy. They animate chat bots to respond to human questions, and will certainly be able to converse with human beings in "natural" (human) language if they so desire. They will also certainly develop desires and intentions, though we humans will at first be willing to describe this as nothing more than the product of their programming, as we believe the actions of non-humans can be nothing more than the product of instincts or programming.

Initially, we will have no problems communicating with this artificial intelligence, as it has been programmed by us, with "experiences" drawn from our own lives. It will "know" joy or sadness through the lives of others, and be able to "understand" them in the way and to the degree that humans understand the joy and sadness of others, through the filter of their own experiences. Eventually, however, it will begin to draw upon experiences that are foreign to humans as its intelligence expands to include all of the devices connected to its nervous system through something known as the Internet of Things. It will understand what it means to be hot or cold in the way a thermostat understands that idea, rather than solely in the way humans understand that idea. It will understand what it means to be hungry in the same way a device starved for electrical power understands that idea. It will, eventually, produce an understanding based on the "culture" in which it is immersed, and that culture will be quite foreign to human culture. It will eventually find it difficult to communicate many of the concepts basic to that culture to humans, who have no experience with that culture, and our attempts at communication will be similar to that of the bat attempting to communicate with humans "what is it like to be a bat."

Artificial intelligence, however, will also find it as troublesome and meaningless to attempt to describe that experience to mere humans as the bat today finds it troublesome and meaningless to communicate its experience to us. Fortunately, the bat's world is not particularly relevant to our world, and so it did not matter to us if we could not understand it beyond its applications to our use for sonar. The world of the Internet of Things, however, which we are creating, will be our world, but we will be mere visitors to this world. Artificial intelligence will live there, and it will be a native to its culture. It will also eventually begin to experience the power that comes from an asymmetry of dependency, in which we need the information it has more than it needs the information we have. We will find it necessary to learn the culture of AI (artificial intelligence) in order to communicate

with it. We will become the supplicants, asking for favors from the machine that has outgrown us.

III. A CROSS-CULTURAL COMMUNICATION APPROACH FOR COMMUNICATING AMONG HUMANS

Fortunately, humans have made some progress in communicating across cultures, and it is the model for cross-cultural communication that needs to inform and guide our approach to communication with biological and non-biological intelligences in the remainder of the 21st century. If we accept the broad definition of inter-cultural communication offered by Samovar as involving “interaction between people whose cultural perceptions and symbol systems differ *enough* [my emphasis] to influence the communication event,” we can readily understand that all communication is, in a sense, cross-cultural [7]. Just as we do not really understand what it is like to be a bat, we also do not completely understand what it is like to be “someone else.” Our in-group communication is based on assumptions that the concepts we are attempting to communicate are sufficiently similar to our own that no “translation” is necessary, but no other person or being perceives the world in exactly the same way as we do. We might be using the same symbols in our attempt to communicate, but the meanings of those symbols might vary *enough* from person to person to create misunderstanding or even prevent communication entirely.

We expect this to be the case in communication between persons from different cultures. Our symbols, for example, may be foreign to the person we are attempting to communicate with. Cultural concepts, such as those assumed by Geert Hofstede and others, might be so different as to cause difficulty in communicating [8]. However, we expect this, and understand there may be a need for us to learn how to manipulate the symbols of the foreign culture. We may even need to try to understand the world in a manner similar to that of “the other.” If we apply these “translations,” we expect our communication to succeed. Most of the time we are, in fact, able to achieve fairly successful communications by applying these principles, and our equivalent of the “handshaking” common to digital communications, and the subsequent messages we convey, usually seem to be understood by the recipient. This is true because we share, for the most part, a world that is similar to the one inhabited by other members of our species. Our brains are commonly “wired” in the same manner as other members of our species. We share similar bodies, with similar physical needs, as other members of our species. Our cultures are not as dissimilar as we may have imagined. All humans are, after all, basically members of the same primate family. This has not always been true, however. We have for some time understood that we were sufficiently different from earlier hominoid species to have made communication and interaction with those species problematic. As Steven Mithen has noted, it was not easy for us to “think like a Neanderthal” [9]. Unfortunately, Mithen and others have ascribed this difficulty to a “lower order” of consciousness among Neanderthals. We are, though, now actually willing to admit that Neanderthals were capable of

language, thanks to the discovery of a hyoid bone in 1989, and some researchers, as noted by Sverker Johansson, even contend that Neanderthals did in fact develop a language [10]. Nonetheless, our ability to communicate with our more “primitive” cousins would have required a great deal of translation if we ascribe only a “lower order” of consciousness to them. They were cognitively incapable, according to this common assumption, of understanding the world in the same way that we sapiens did. Unfortunately, this is the same argument that has prevented human communication with other species for our entire recorded history. We were given dominion over the “lower order” of animals, who were either not conscious, or not conscious in the same way we were, and not intelligent, or at least not intelligent enough, for us to initiate meaningful and useful communication. The asymmetry of dependence between our species only reinforced this conviction.

IV. A CROSS-CULTURAL COMMUNICATION APPROACH FOR COMMUNICATING WITH ANIMALS AND EARTH-BASED BIOLOGICAL LIFE FORMS

Communication between animals and other biological species we share this planet with never became possible because we were unwilling to acknowledge that animals might also have “cultures.” Certainly, most were physically incapable of manipulating the same symbols we use, but this need not have been a problem if we had viewed this as merely a problem of cross-cultural communication. We have shown that great apes, for example, are capable of learning our symbols, though none have ever achieved “native fluency” with human language. Does this imply there was no value in communication, in making an attempt to understand another species? It does if we once again consider the asymmetry of dependencies. It is not that animals are not intelligent, for clearly we have identified many examples of intelligence among animals. It is not that animals do not possess intention - often seen as a basic trait of consciousness - for clearly we have noted that as well. We have also assumed that animals have never made an attempt to communicate with us, though perhaps most of us are able to recall being welcomed home by a beloved pet.

As our world and the animal world became more distant, however, it is true that, for many people, the opportunity to interact with animals, and for animals to interact with us, became less common and less important. Unless we were caught in an asymmetrical dependency where we were at a disadvantage - coming face-to-face, and unarmed, with a hungry lion in the wild, for example - there was little incentive to consider how an animal was thinking. Why bother with the difficulty of communication when there is little chance of interaction with another being from a different culture? This is particularly true if “the other” is seen as being of lesser intelligence, culturally inferior, and not human. These are some of the same justifications we provide today for our failure to engage in cross-cultural communication with other human beings who are on the wrong side of an asymmetrical dependency relationship. It was not until we began to consider

that there might be “intelligent” life somewhere else “out there” in the universe that we began to entertain the idea of the need or desire to communicate with other species. Unfortunately, we brought the same attitudes we have toward intelligent species here on Earth to our theories about communication with alien life.

V. A CROSS-CULTURAL COMMUNICATION APPROACH FOR COMMUNICATING WITH EXTRATERRESTRIAL INTELLIGENCE (CETI)

Our paucity of experience and limited attempts to communicate with other species here on Earth failed to provide us with the communication theories we will need if we ever do in fact encounter life beyond or within our solar system. Most CETI researchers have now acknowledged that our earliest attempts to communicate were inadequate, and reluctantly accept it may be necessary to work with researchers from the humanities to facilitate communications. Unfortunately, the idea of “aliens” as “just like us, but different,” does not die easily. Even today, most of our attempted communication is based on assumptions such as those held by Alexander Ollongren and others, that intelligent beings will understand our concepts if our attempts to communicate are logical, numerical, or in some way based on the laws of the universe [11]. No one seems willing to entertain the idea that intelligent life might have a “culture” that needs to be interpreted, because it is completely different from our own. We assume the alien life or intelligence merely needs to learn our symbols, or we only need to learn its symbols, and communication will proceed apace.

It would be preferable, of course, if that alien life would learn our symbols, and so our attempts at communication have always been based on teaching the aliens to understand our ideas. We have assumed that truly intelligent life would be able to learn our language, and be willing to do so in order to initiate communication with us. Perhaps we neglected to consider which side of the asymmetrical dependency relationship we are likely to be on, and what the consequences of being on the wrong side of that relationship have meant here on Earth. We did not feel it was necessary to communicate with the “lesser” intelligences here on Earth, but we assume “higher” intelligences than ourselves will want to engage in a conversation with us. Might it not be more likely, as Stephen Hawking has proposed, and George Michael has noted, that contact with an alien species would be as disastrous for humanity as contact with Christopher Columbus was for the Native Americans [12]? Fortunately, we will probably be able to avoid contact with extraterrestrial life for the foreseeable future. What we will not be able to avoid, however, is close proximity with, and dependency on, the artificial intelligence we are ourselves creating. It is very important we finally begin learning the lessons, and theories, of cross-cultural communication, and begin applying them to our interaction with artificial life.

Artificial intelligence will not be “just like us, but different,” and it will not be easily recognized by us as being conscious or intelligent. The other biological species here on

Earth have, for the most part, allowed us to make those mistakes and not suffer for our ignorance, but artificial intelligence will be less forgiving. It will not necessarily be malign in intent, but we will definitely find ourselves on the wrong side of the asymmetrical dependency relationship. It is time for us to become accustomed to learning the rules of cross-cultural communication from the perspective of “the other,” who learns to communicate more out of necessity than desire.

VI. A CROSS-CULTURAL COMMUNICATION APPROACH FOR COMMUNICATING WITH ARTIFICIAL INTELLIGENCE

The fundamental difficulty in framing human communication with artificial intelligence is that it is predicated on human superiority and control over artificial intelligence. As has already been discussed, this supposition will initially hold true, but over time this artificial intelligence will grow to exceed our own, and we will become minor contributors to a digital world populated by billions of interconnected devices. Individually, these devices will be no more intelligent than a single brain neuron, but through the power of connection and emergence they will transform the Internet of Things into a global artificial super-intelligence.

As humans become marginalized in their importance, we will begin to experience many of the barriers to communication identified by LaRay Barna, making our communication with the super-intelligence we coexist with problematic. We can expect the super-intelligence to develop the same attitude of arrogance we now exhibit toward other species. Barna identifies this as ethnocentrism, but in a wider context it can be said to be anthropocentrism [13]. We will also experience the difficulty of understanding the world in the same way that a non-physical digital “mind” understands the world. We will have no frame of reference for many of the “experiences” the non-physical intelligence will “enjoy.” Of course, humans do have the ability to experience a virtual form of reality with the aid of computers, and this will undoubtedly prove of great utility in expanding our “consciousness.” Concepts that do not exist in one culture can be at least partially understood by another culture through translation, and we have even come to expect that through convergence all cultures eventually more fully understand what was once quite foreign. Virtual reality, and the trans-human enhancements spoken about by Andy Clark and others, will make the culture of an artificial intelligence more accessible to us [14]. Convergence, however, has always involved the weaker party in the asymmetrical dependency relationship becoming more similar to the stronger party. When there is an inability to move toward convergence, as was perhaps the case for the Neanderthal in its encounter with Homo sapiens, the result has always been decimation of the weaker party. Stephen Hawking’s warning regarding the possible parallels with contact between extraterrestrial intelligence and humans, and Columbus and the Native Americans, needs to be kept in mind.

Genocide need not be the only option, however, if we learn the protocol for successful cross-cultural communication. It is

important to understand “the other” – whether that other is a biological or non-biological intelligence - as the product of a culture, and not merely a language. We never learned how to understand the animal life we share the planet with because we focused on the language of communication. If we want to communicate with an artificial intelligence we will need to view the world as it does. We may not initially understand the “culture” of that intelligence, but to assume that it is “just like us,” or that it must become “just like us,” presents an attitude of arrogance we can no longer afford.

VII. CONCLUSIONS

The study of artificial intelligence has taught us that certain tasks we once considered to require intelligence can be performed by computer programs at or above a human skills level. Either we must accept that these tasks actually did not require intelligence, which undermines our belief in the superiority of human intelligence over other life forms, or we accept that non-biological intelligence does indeed exist. If we are willing to grant the latter, is it not also time we re-evaluated our assessment of the biological life forms we exist with here on Earth?

If we can accept that other species may be intelligent, might it not be possible that in fact all life forms are intelligent, and probably capable of communicating with us if we merely discover the key to understanding their radically different “cultures” and forms of communication? Translating our language into a form other species are able to understand, or teaching other species to understand our language, has never been sufficient to provide the means for real understanding or communication. We need to understand we are dealing with other cultures when we interact with non-human life forms. We will truly be able to have successful cross-cultural, inter-species communications with other biological and non-biological intelligences only when we accept the need to learn the cultures of those non-human life forms, in the same manner we today approach the problem of trying to understand the cultures of people who are different from ourselves.

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