

# OUR MIND LOOKS AT US

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## ABSTRACT

Over the years, especially since 1947 when the pilot Kenneth Arnold reported seeing nine unidentified disk-shaped aircraft flying near Mount Rainier, people have been fascinated with unidentified flying objects. Partially in response to this increasing interest, and perhaps because of a general malaise of the population wanting to escape from this planet and its problems to another and more pristine world, the Search for Extraterrestrial Intelligence (SETI) was born in 1984. Aside from the inherent problems in receiving messages by current SETI methods, there are other and more substantial issues having to do with identifying the life forms that may be encountered. Such questions exist as what constitutes intelligence, our ability to recognize it, and above all, how we can incorporate the experience in our lives. Humans are encased in their own bias, and we ask whether meeting a non-human intelligence, either one of our own creation or in interstellar space would be a way of getting outside that bias and looking at ourselves from a dispassionate point of view. Thus, our theme emerges: "Our Mind Looks at Us." An overarching consideration in all of this and one immediately relevant to the International Institute of Informatics and Systemics (IIS) is that of interdisciplinary communication. This is involved in two ways: First, there is the challenge of communication with an other intelligence. Second, is the ability to communicate among ourselves from different disciplines and viewpoints as well as being able to venture together as a whole species in addressing the first communication challenge. In this paper, a philosopher and a physicist open that discussion, hoping to pave the way for many more dialogues to come.

## SEEKING OURSELVES OUTSIDE OURSELVES IN THE VAST DOMAIN OF SPACE

Project SETI (Search for Extraterrestrial Intelligence) was born some fifty years ago on the supposition that other beings, if there were any, in outer space might try communicating with others in the universe using radio waves. Such has been the tip of a very large iceberg of humanity's curiosity about the nature of other beings in the Universe and quest to learn more about itself, to learn especially the nature of what it thinks is intelligent, a property reputedly setting apart *homo-sapiens sapiens* [1] from the rest of the animal kingdom. Socrates' lamentation 2500 years ago about the unexamined life not

worth living supports a defense of philosophy, knowing about who we are and why we are here, the engine of which is the love of wisdom. More poignantly, we seek to look into the mirror and understand what is behind that image. We ask, then, whether what we see out there is a mirror image of ourselves or something truly unique [2]. Heisenberg represents a similar school that says humans cannot escape their own bias in assessing and describing what they see. This theme is rife throughout modern science and philosophy. We are not only imbued with bias, but we have to communicate among ourselves, each attempting to understand the other through our own lenses. How does a specialist, such as a physicist, speak to a philosopher and vice versa? Each carries the bias of a discipline. We will see how these concerns translate themselves throughout our discussion. SETI, in essence, is a tapestry of problems of bias, representation, interdisciplinary communication, all imploding on ourselves, as we try to understand what we are about and why we are here.

Through the years, a branch of philosophy has arisen, the philosophy of mind, to direct our attention to answering questions that SETI hopes will be answered by contact with other worlds. What is mind and its nature, is a question that attaches directly to Rorty's concern[2]. Is not the attempt to contact other worlds an admirable one, seeking the possibilities of might be found outside our Solar System? It is not only what we might find but how we might find it. Aside from the technical issues of electromagnetic radiation dissipating long before it reaches far off domains and the fact that gravitational waves offer a more feasible means of communication ; especially if they are of high frequency, i.e., High-Frequency Gravitational Waves - HFGWs [3], there are the more formidable issues of preparing ourselves. Not only must we be able to recognize an intelligence outside that of the human species but we need to know how to manage that encounter. K-Pax , the movie, concerned consciousness from another galaxy transported to Earth in *homo-sapiens sapiens*, or human form. It is an exercise in how we might or might not recognize that an intelligent entity is not human, the question being, "how can we discern that?"

On Earth, a search for a means to create an artificial intelligence raises the content in Frank J. Tipler's *The Physics of Immortality* (1994)[4], where humanity's consciousness is transferred to devices that can outlast the life of earth and ultimately

orchestrate the fate of the universe in its end time, thus averting a heat death. That would be a feat interesting to any alien.

This, however, all begs the question of what constitutes intelligence and intelligent life, and after that whether it is something we can construct. That is, if we cannot find another intelligence with which to compare and possibly give insight on our own, then what of our creating one? Again, we must reflect on our own bias as to what is intelligent, that same bias that might interfere with relating to a non-human being. Is there really an objective meter stick by which to gauge our observations? We have to know ourselves, first, as a reference frame by which to assess whether we are having an "Encounter of the Third Kind".

### THE SEARCH FOR INTELLIGENCE ON EARTH

Intelligence resides in the brain, a more sophisticated rendering being the concept of "consciousness". We say that an animal is intelligent by comparing what it can do with human abilities. We observe animals communicating and extrapolate what we think are elements in a language. There is what we take to be a signal and a corresponding response. If we think such a cause and effect relationship exists, then we say there has been communication. However, we often still have difficulty in ascertaining in what form this takes. For example, we may say that the animals "sense" when danger is approaching. Does this mean that they have another sense outside of our identification of the conventional five basic ones: sight, aural, olfactory, tactile, taste? Could there be another? We should not be fearful of the hypothesis that there may exist a paranormal "sense."

In 1994, the first *Towards a Science of Consciousness* was born [5], but it doesn't appear as though we are any closer to answers than then. There has not emerged any agreement on what it is, and the scientists wishing to take a safer route defer to "mental states", or more definitively, "brain activity", that which can be measured by scanning equipment, such as positron emission tomography (PET) or functional magnetic resonance imaging (fMRI)[6]. Cognitive neuroscience offers prospects in this direction [7]. Again, what we may possess and call "intelligence" may be merely a containment of a phenomenon in a fishbowl or bottle in which we are placed and see ourselves, a world unto itself and seen only by us.

Philosophers caught in this self-referential problem have sought how to get outside that bottle, escaping human bias. It may be that it will take an external entity to come to us and somehow convey that it is indeed independent. And not a product of our own minds. Cognitive researchers, such as Tim Mawson at St Peter's College, Oxford, ask their students how they know that they are not in someone's program, such as portrayed by the Matrix dramas [8].

As somewhat of a sidebar, we couple the problem of representation, itself. Plato, 2500 years ago in the *Republic*, wrote in his analogy of the cave, where people chained in a forward looking position see shadows on a wall caused by a fire behind them shining past cut-outs on poles being paraded by people walking in front of the fire. These shadows are what people normally see in everyday life, representations of reality. When the people are led outside into the bright sunlight, they see reality. The deeper problem is that there is a phenomenon,

but the means of representing is perforce imperfect. How can one convey the essence of each particle of something to another? Even a photograph doesn't capture the full nature of something. Communication, then, coupled with bias, is not the only barrier to understanding, but so is representation. By what do we do all this, and we consider our minds, themselves. What are they? If we knew what they were, could we begin to overcome these issues of bias, communication, and representation by engineering a mind?

### ON CONSTRUCTING A CONSCIOUSNESS, OR MIND

Would we have any better understanding of alien intelligence if we could construct something having it on Earth? Rene Descartes argued that mind and brain are different, where the former is something abstract and unseen, and the latter is a physical entity containing the former. This so-called "mind-body" distinction has been refuted on numerous occasions, and we now see that both are inexorably intertwined, as illustrated by cognitive neuroscience. The question remains, though, how by constructing a physical entity, let's say through nanotechnology, would that device acquire the ability to think. Precisely what are ideas? From where do they come?

What if we could construct a device atom for atom, matching our construction with a working human brain, in essence, an artificial clone? Assuming we could "activate", enabling what would be comparable to synapses, would this device assume a consciousness? In other words, would the very bare structure, itself be sufficient to contain a consciousness? Then, we connect sensors to it, so it can gather external data. Would it act as an "antenna" to somehow connect with other worlds? We ask this question, as it harkens back to Descartes' dualism of mind separate from body, whatever the device reports to us as mind and the device, itself, as body. If the device somehow were able to act on its own in reporting to us immediately after being constructed, this would suggest that structure is sufficient for mind. If not, then, we ask, precisely what are ideas, thoughts, and ultimately what we heuristically refer to as "mind"?

Cloning might at first present a solution to creating a mind, but one has to consider immediately that the genetic composition of the species might carry the "bias gene". Besides, if studies of twins is any indication, siblings, while very similar in behavior, also have their differences, each developing their own personality [9]. However, it would be interesting to see how consciousness and bias can take those divergent paths from a common set of genetic material. One method for providing substance to this might be to have two persons cloned from the same person at the same time and place and under the same conditions look into the mirror and report what they see, their impression, and so forth. Another attempt to develop a mind artificially is with the Blue Brain, IBM, and Reiken projects [10], but, here, again, we are faced with the bias being imparted to that brain. Assuming that we could create a device that could act as a functioning brain.

An interesting synthesis of computation is with organic computers, a mixture of organic molecules and artificial substances, like crystals. Such might draw upon a "memory bath" to create organic crystals for acquiring needed processing and storage space, in effect allowing for a theoretically unlimited sized brain, once the ability of predicting crystal

structure is perfected [11]. Such a device can be conceived as a truly living entity.

In all of these approaches to creating a mind we must clear our minds of unwarranted assumptions about the structure of a consciousness or intelligent life form. Coupled with this is the extension of that consciousness (how much space-time it occupies, as in the Oriental view of the universe, itself being conscious), the mechanism or device that comprises it, and its mean time to failure or lifetime (as a consciousness may have the duration of the universe, or even past). We should not rule out non-carbon based entities. In fact consciousness or intelligence might exist within stars or within any structure, even dark matter in the Universe. Since we have knowledge of somewhat less than five percent of the Universe (and that is being ambitious), such a line of reasoning would not bear fruit. Instead it is only reasonable to commence with our self view of our minds, our terrestrial intelligence and hypothesize our evolution. Such a study might provide insight into other intelligent creatures. It should be kept in mind that this course of study is egotistical at worse and biased at best. We should not assume that our intelligent mechanisms are proper models for evolution. They may be only anomalies destined to extinction. So survivable extrasolar existence or living intelligent and consciousness may be quite different from an extrapolation of humankind.

There is a body of literature on “transhumanism” that discusses replacement of human body parts with artificial ones. We need not even implant microelectronic chips into our brains. Artificial neurons could be fabricated to comprise artificial neural networks as discussed by Anne Condon (Department of Computer Science, *University of British Columbia*)[12], thereby creating an elementary cyborg. The question is asked, “at what point, if any, is a transition of consciousness from 'natural' to artificial? It would seem that that both change in conformity with each other, but there is that last step where the entity becomes totally artificial. We ask, then, how much of the human consciousness the artificial one retains? We also, as a consequence, what, then, would we do if this entity then started to tell us how we should behave and think? Would it be capricious? In this “cyborg” approach to examining consciousness, we ask if there are collections of conditions that could be the minimal basis of what may be regarded as degrees of consciousness or life. Arguably, the most frequently used Glasgow Coma Scale could serve as an example. While we can vary the environment to observe how those conditions for each are changed, there is to us a “crossover” point when a self-sustaining or even an adaptive entity no longer can maintain its integrity. These are the mechanics of constructing a device which we surmise might contain thought. But what of thought, itself?

### **SOME THOUGHTS ABOUT THOUGHT – AN EXERCISE IN RECURSION**

For the extreme Cartesian reductionist exercise – the search for what constitutes an idea – subdividing down to Planck area – if our universe is all there is, does this contain whatever it is that is the basis of an idea? What IS an idea, anyway? In a more complex form, what is consciousness, or, for that matter, intelligence? If we are to construct a device or structure with intelligence, shouldn't we know what makes up an idea if we are going to impart ideas to a device or structure? Dennett's

memes [13] don't seem to be a satisfactory answer, as they appear simply and in the ultimate analysis another word for “idea”. What about the generation of thought, itself? We briefly discuss the idea of “self-organization”, or autopoiesis. From Wikipedia:

*Autopoiesis* (from [Greek](#) *αὐτο-* (*auto-*), meaning "self", and *ποίησις* (*poiesis*), meaning "creation, production") literally means "self-creation" and expresses a fundamental [dialectic](#) among [structure](#), [mechanism](#) and [function](#). The term was introduced in 1972 by Chilean biologists [Humberto Maturana](#) and [Francisco Varela](#):

An autopoietic machine is a machine organized (defined as a unity) as a network of processes of production (transformation and destruction) of components which: (i) through their interactions and transformations continuously regenerate and realize the network of processes (relations) that produced them; and (ii) constitute it (the machine) as a concrete unity in space in which they (the components) exist by specifying the topological domain of its realization as such a network.

[...] the space defined by an autopoietic system is self-contained and cannot be described by using dimensions that define another space. When we refer to our interactions with a concrete autopoietic system, however, we project this system on the space of our manipulations and make a description of this projection [14].

From nothing, nothing comes, and as Parmenides said, and bootstrapping doesn't seem to offer a very satisfying explanation of the origin of consciousness. Too, we are aware of the general problem of closed systems. Godel demonstrated that systems are not complete. Hume, Mill, and Russell struggled with the Problem of Induction, i.e., on what bases do we create what we think are closed, or deductive, systems, in which each element can be defined in terms of one or more of the others within it? We cannot treat our mind as such a deductive system, or autopoietic in any sense. “Out there” is the source of its essence.

Eschewing autopoiesis does not mean doing the same for innate structures. As Levi-Strauss and Noam Chomsky indicated, there are deep structures in human information processing. Humans can't seem to escape patterns, as evidenced by the statistician's table of random numbers. Part of the structure of ideas is found in first and second order logics and with the prioritization of operators representing the relationships of variables to each other. Presently, in a parenthesis-free expression, the ordering priority used in grouping expressions is on an arbitrarily basis. If this were based, let's say, on cognitive complexity, as in the ability of a human to understand the meaning of each operator as applied to an exercise within a time limit, how might this affect how a logical problem is expressed and subsequently computed? Or might such limitations be circumvented by parallel computing logic systems? So, while a system may not be self-organizing, it may contain innateness, but that innateness comes from the source of the system we are examining.

### **ETHICAL CONSIDERATIONS IN THE SEARCH FOR MIND**

As with any other issue in scientific development, we ask about the ethical implications of creating a mind. A “solution” may

have been reached, but what kind? In philosophy, ethicists try to apply logic the ethical problems, but one imparts the bias of the logical rules created. It is like using the conclusions you want to show for constructing the argument leading to those conclusions, in effect creating a tautology. Before arriving at such an exercise, we ask about the nature of ethics.

Ethics, in its most fundamental form, concerns how people should behave. Ethics addresses the value system, the ethos, what should be the guiding light. Morals, as somewhat of a sidebar, are the codification into particular forms of behavior. Ethics has its final say in whether humans will survive as a species, and the longevity of a species indicates the ethical system it has. While we don't refer to it as such, all organisms have an ethics, even in the most primitive of senses, a will to survive, and, more important, an interrelationship between each other, as well as elements in their environment. Ethical systems, or modes ' of behavior are built into the 'intelligence' – however primitive. Our consideration of ethics focuses on the foundations of it, ethos, or what motivates humanity. We ask how humanity would present itself to aliens, that is, to some form of extrasolar intelligence.

We have been pondering classic problems of philosophy for millennia, and we seem to be no closer to resolution, if the wars, poverty, ethical systems, treatment of the environment, destructive competition, a value system predicated on the ego, overpopulation, and style of political-economic governance are used as evidence (as examples). We have a number of permutations of possible outcomes, but it may take the complexity of modeling massive thermodynamic systems, such as those in weather to even begin to understand possible outcomes. Right now, in the year 2012, discerning just the basics is a science still in its infancy. We think we know the desired outcomes, but this, itself may be flawed, the solution requiring a different intelligence than we now possess. That "intelligence" may have to evolve, and this may require a greater complexity than residing in the human brain's structure, mechanism or device. At this juncture, we seem to gauge a solution by looking at the effect of what exists, now. For example, suburbia is seen as an ideal outcome of resolving poverty, but we now know that such urban sprawl may have long-term deleterious consequences for the environment. Perhaps modeling the projection of a nascent system using the required complex system for analysis may have foretold that there would have to be a different solution. Perhaps such an analysis may lead to the mean time to failure or: death of our earthen or solar life form. In conjunction, we may ask whether aliens could save us from ourselves. Here, we ask whether this is not one reason why many see what they want to see in the form of a craft coming from afar to save them and, most probably, a basis of "religion."

So, do we continue to develop these devices? One route is to consider Hegel's dictum that reason must work itself out in history. Species seem to have an Achilles heel, some inherent trait that contributes to their extinction. With humans, it may be insufficient intelligence, but, perhaps more important, intelligence coupled with an ethics that preserves the species. *Homo-sapiens sapiens* may have that mean time to failure built into their evolutionary processes, and, again, we think of innateness in the system as mentioned above. The development of atomic energy heralded an age where there hung over the planet the specter of relatively instant global annihilation, and while that threat seems to have lessened, we still are beset by widespread destruction from rogue nations and terrorist groups

bent on furthering their ideologies, including religions. Other problems seem to elude solution requiring global cooperation, and it may be part of that innateness not form together in unity to recognize and solve those problems. Again, understanding our ethos is key. Ethos is the core of bias, and we ask if it is possible that eliminating this bias may be removing the barrier to solving those problems. This is coupled, of course, with an independent generation of an intelligent device –with no human intervention. If one looks to a device created by humans, then it would seem that the bias could not be averted, but, some extraterrestrial entity might provide an answer free of that human bias.

If those ethical issues cannot be resolved, then we ask a question about the counter-positive of self-organization.

## AUTODESTRUCTION

Surely, as we have said, a motive for people wanting to see aliens where there might now be any is motivated by a sense of impending doom here on earth. We return to Varela and Maturana, concerning autopoiesis, or self-organization within systems, that which enables the system to self-organize and maintain its identity. We now ask about a "germ" for self-destruction and infinite entropy (complete disorganization), the logical opposite of autopoiesis. The interaction between self-organization and entropy occurs within putative closed and open systems, both homeostatic (self-maintaining) and adaptive. We see phenomenological evidence that such a germ may exist by humanity's refusal to act together to stop humanity's possible effect on global warming, end nuclear war, use critical thinking, scientific methods, and philosophy to resolve the world's problems, instead of ideology.

Autodestructive elements already exist in systems, an example being the IL-18 T-cells in humans [15], and there is no logical reason to think that programmed self-destruction doesn't exist at the species level. After all, natural selection is predicated upon an organic system's ability to adapt, the lack of ability to adapt indicates a self-destructive core.

We look to entities outside the human species to evidence this dichotomy between autopoiesis and self-destruction, and we know that biologically such exists, as evidence by the IL-18 T cells, as well as extinction records evidencing natural selection at work. However, we ask in the grand scheme of things whether life, itself has this dichotomy.

Overall, we look at the *homo-sapiens sapiens* species and constantly marvel at our existence. We think pretty highly of ourselves, but overall, what of our survivability? After all, we look at the dinosaurs that might still be here were it not for an ill-fated asteroid over which they had no control. What of other species that lasted for millions of years? Ours has been on the planet for a scant some dozens of thousands of years (in comparison to the rest of animal life), and already we face extinction of our own making, as in global warming, nuclear devastation, and overpopulation. Again, we look at ethos, our human purpose and see that that interdisciplinary communication depends upon the willingness to communicate, and that willingness depends upon our willingness to get along together in a cooperative way.

We cannot seem to overcome human frailties, such as testing before we deploy. Our ego often trumps common sense and ethics. There is a rush to get it out the door before careful deliberation about whether it should go out the door. We cannot seem to incorporate logic fundamentals in our thinking, such as consistency, fact belied by our bizarre language constructions. We may have a fundamental defect in our spatio-temporal processing. Our software construction reflects the apparent inability to address basic inconsistencies of rendering. In one instance a message will pop up with an admonition about taking some action, ..., and when the same exercise is repeated later, such a warning does not appear. Inconsistency often dominates the landscape. It is not uncommon for a person to hold two contradictory viewpoints simultaneously. However, it may be that in certain contexts that haven't been discovered yet that what appears to be a contradiction holds the key to new knowledge. As Emerson stated in his essay *Self Reliance*, "A foolish consistency is the hobgoblin of little minds." In logic, such a position allows one to hold that anything is possible, and this may include the acceptability of environmental degradation, even though at the expense of human life. We allow ideologies and pseudoscience to dominate, when tried and true methods of scientific inquiry have demonstrated the soundness of such approaches.

Why not explore other intelligences? Surely, there may be one that will be the salvation of the species. Or, perhaps the species that does not have the mien to save itself should not be rescued. It is what Darwin and Wallace talked about in natural selection. In the grand scheme of things, perhaps we SHOULD be superseded by another intelligence that has a greater ability or fitness to survive. One wonders, however, why such "advanced" entities would bother with us today at all? If they are, indeed, lacking the self-destruction "germ" discussed earlier, and then such would reinforce the view that if natural selection exists everywhere in the universe, they must have those qualities that help ensure permanence. Why, then, would they want to engage in a species that has limited life? A sidebar discussion may refer to those scientifically fictional accounts of persons acquiring immortality ultimately regretting this property later.

## WHERE DO WE GO FROM HERE?

Overcoming the physical barriers to transmitting to other intelligent life forms seems to be a comparatively simple problem: sending messages via modulated high-frequency gravitational wave (HFGW) communications. That there would be a response would seem to imply that they had an ethics that allowed them to survive. But, what of us?

There perhaps is a mathematical and philosophical way out of the "fishbowl" dilemma. How does one know what s/he is thinking or how does one look into her/himself? One of the first things a person learn in physics is the concept of the reference frame and how to transform them. In order for a person to assess where s/he is, s/he needs a "measuring stick", and this is provided by a point that is relatively fixed. That is, one sets a boundary, just as in calculus. There is a phenomenological reason for doing this. If one magnifies any gauge, or scale, such as in a marker on a meter stick, s/he will instantly realize that one has to mentally divide the marker in half in order to be sure that both sides are represented equally. Yet, this becomes impossible at quantum scales, because of the

uncertainty produced by Heisenberg's principle that the position and momentum of a particle cannot be exactly measured simultaneously. There always is constant movement, so one has to fix a boundary arbitrarily, and this really can't be done, except by statistical mechanics. We ultimately set the limits, all this suggesting that fixation is a figment of our mind, rather than something occurring in reality. We recall Plato in wondering if there really are forms "beyond" us and what we are seeing are but poor representations of them. Our limits are but fuzzy boundaries, at best.

A second consideration is philosophical, more pointedly, phenomenological. One need only walk into a completely dark room or a room that is in one shade only. It will impossible to discern objects, because there is no contrast. We see marks on a chalkboard, because there is an interplay between what the chalk is – a color, and what it is not – the background of the chalkboard. The same is true for anything else; one has to have something that an object is not to discern it. Hegel in his *Phenomenology of mind* presents a very elaborate discourse on how an individual ultimately can understand her/himself through an "other". So, we may not be able to apprehend ourselves because of this self-reflexive property, but given a reference frame, we may be able to transcend the problem.

Speaking of reflexivity, we have in mathematical logic the expression "Rxx", something is reflexive of itself. It is in mainstream discourse that this refers to identity, something in and of itself. This is not the same as equivalence, where something is apart from another but still alike in every respect. For example two papers clips out of the same box are not identical, but equivalent, as there is SOMETHING different about them, even if it's a different set of atoms, albeit of the same substance, iron. Equivalence, then, implies reference frames, even though one object is the reference frame for the other. We see this in the logic of relations, such as  $(R_{xy} \wedge R_{yz}) \rightarrow R_{xz}$ , where something bears a specific relation to a second thing, and that second thing bears the same relation to a third, so the first bears that relation to the third – transitivity. In this way, the properties of a reference frame are populated.

In all of this, we see that the minimum condition for something apart from itself is binary, and this would apply to our viewing ourselves outside of ourselves. Thus one device or being outside of ourselves would suffice to provide the differentiation necessary to see ourselves, again, even if were the location of atoms. That is, it might be that a clone would be sufficient. The more differentiation, the more we could see of ourselves. A condition, however, is the ability of that entity to tell us what she/he/it is observing in us.

We raise another issue in how confident we can be of what is presented to us about ourselves, i.e., the idea of objectivity. We ask as alluded to above, how can one escape bias? We touch upon the notion of objectivity to "flavor" our discussion of getting out of that proverbial "fishbowl" of subjectivity. It is recognized in philosophical literature that there are the theories of consensus (an agreement exists with others that something is the case), correspondence (what we see matches what really is there), and coherence (holding something to be true doesn't conflict with the way I hold other things to be true). Each of these is fraught with problems, of course, but they all contribute to our so-called understand of who we are and how we fit into the environment. If one examines each carefully, however, they will see reference framing, where the integrity of one

assessment of what is true “looks” to another for its integrity. A central issue is whether all in a group- -collectively – because HUMANS made the observations they are true – at least to the human. That is, the issue of validation OUTSIDE of the human being is needed.

In this we appeal to “objectivity” [16] but this by no means solves the problem of bias. Our reference frame is bias, and this may motivate us to seek something outside of us as a source of that objectivity, as in Plato in his forms theory, or whether everything we see actually exists (Aristotle), or whether it is of our own making (Indian view of “Maya” or illusion). Not only do we have to make a judgment, but collectively humanity has to do so also, especially before it encounters other life forms so as to not only be able to recognize and communicate with them but do so without carrying the seeds of human destruction.

## CONCLUSIONS

To relate the presentation to the central aim of IIS and interdisciplinary themes, we can ask the question, "Whom are we to be able to look at ourselves so we can look at others?" Just whom are we, anyway? The very structure of our language should give us a clue - using "who" or "whom". "Who is the subject; "whom" is the object. At the outset, we are faced with the problem of objectification. We seek others to and through whom we can do that. (As still another sidebar, do you know that we have constructions to express objectification? "S/he had been been" is a legitimate construction, just as "S/he had been had" is fine, both being passive, the action being done to the subject, i.e., an "other" performing that action. Only, we do not normally think of human beings as being created in test tubes but emerging on their own - a true autopoiesis. Such, though is a myth, as there is something giving rise to us. We are not deductive systems; something outside that system creates it, again, another example of hoe cannot escape that "Principle of Induction" - see below.) Hegel, in his Phenomenology of Mind presents this question at the outset by positing an "other", thus setting forth the foundation of the modern dialectic as applied to sociology. An extension of this is the building of a system.

In one sense (surely in a Cantor set theory sense), we are as a single unit - one species - that does not have an "other" to have order, the minimum of two (a homo sapiens sapiens and an "alien") being the requisite for an order. It is Buber's "I – Thou", a foundation of both the generic religion of attempting to find cohesion, the basic ordering (*re-legere*, or the Latin for “to bind”, or “cohere”, and the sectarian religions, each in an attempt to instantiate (x)(Px), the P being the *re-legere*. We need another set of beings in order to have that order, hence a minimal system, the most primitive order, the most primitive of relationship – one in terms of the other, that “in terms of” being that which defines this most fundamental of relationships, the most fundamental law, of process. We see this pattern pervading mathematics, systems theory, societies, and life, in general.

Our quest about ourselves, as in SETI [17] is one about finding out what binds or coheres, and this is the present ground upon which persons from many disciplines stand. We seek to know more about who we are any why we are here. Hundreds of years ago before scientific disciplines became so formalized there were the natural philosophers, who concerned themselves with the age old questions about the nature of our existence.

What is space, time, vacuum, etc? Are there innate structures? Is what we see a reality or illusion? Humans have been so preoccupied with what is here on earth, but because of their frailty in not being able to provide themselves with all the answers they need they look upward, often seeking a source that can explain things and solve problems. Wars are the most bleak and direct evidence of the inability or unwillingness to communicate and cooperate. On a more subtle level it is in the realm of academics, where one person fails to understand the complex lexicons and concepts of another. It has been argued that if the earth were threatened with an invasion, the species would come together quite rapidly to meet it. In that case, it may be supposed that people would learn another's language and quickly.

The venue for this article is appropriate – an organization dedicated to interdisciplinary communications, and we see this as a beginning attempt to use such a forum to find ourselves through that interdisciplinary process, to affirm our identity. However, such may not be enough, not only our possibly facing an external intelligence is intriguing but it provides us an opportunity to reflect on ourselves and how we may communicate cooperatively and meaningfully.

Overlaying this is what we call the "Heisenberg (uncertainty principle) family of issues", demarcated by Alonzo Church (Church's Theorem), Godel (incompleteness), the Problem of Induction" (Hume, Mill, and Russell), among others, that exhibits that "fishbowl" problem in philosophy, where we can't seem to get out of ourselves to examine ourselves, i.e., escaping that human bias. At the most basic level - the quantum world - it seems to be the case that we create reality - a collapse of the state vector (if we may take the liberty of saying so) - and we would say that this all has to do with the nature of spatio-temporality. We ask whether time, itself is an illusion, as some physicists are asking.

A series of questions occurs, each pointing to one of those rabbit trails in our discussion. Are we an emergent phenomenon, possibly to be assisted by an alien intelligence in the future? Is this part and parcel of what identity means? If we were to meet an "alien" and we were able to "see" ourselves through that alien - it "reporting" back to us, how would we apprehend that? In what spatio-temporal dimension would that be? Would we recognize it? What would be the nature of the bias? Is bias something that has its own being? We ponder that with the identification of a myriad of exoplanets, even in the limited volume of our universe near our Solar System, are we near to the cataclysmic event of extraterrestrial interaction and “other minds looking at us”?

These are some of the rabbit trails, and the endpoints – the holes - can be quite bizarre and not very intuitive. Our presentation hopefully will spark that conversation in each one of us and help us gain a greater understanding of what it means to be truly interdisciplinary.

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