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AI Risk Management Framework:

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Greetings to those this may concern;

I am responding to the RFI for ethical AI concerns. Although this will not be from a normal academic perspective on AI in the context of numerical computational machines; the Fundamental Intelligence Research I deal with is slightly varied from commercial products and focus. Again, I am receiving this RFI at the last moment on the date that it is due; please forgive the lack of proofreading and only minor spell checking. This paper cannot be considered complete and any questions may be referred back to the author.

The focus of commercial AI is analogous to "applications" and application driven AI. The current intent is to use AI technology to produce an "App", procedure, or set of procedures which creates an output that the user desires. It is based upon the IPO (Input, Process, Output) model of computing which standard desktop computers and software are based upon. These systems have evolved logically and functionally to provide this functionality; as such they are limited in regard to a broader technological overview. This paper is to include some of my own conclusions in regard to fundamental understanding of intelligence and its application and influence; the context of this paper can be considered fundamental AI research. This paper will also address the concepts of subjectivity and objectivity which are necessary to explore the topic of ethics.

This paper is NOT a criticism of AI research or application and will remain neutral. There are differences in approach to current neural networks implementation. It is pure opinion on my part; however, the application framework currently used with AI is a reflection on the human

use of computers rather than the software itself. What is required is an expansion of understanding entailed in AI rather than expectations of results by AI. This difference allows for the end user to "interpret" application results and overlook any ethical considerations after the fact. The focus on artificial "intelligence" rather than artificial "understanding" is the key here.

A. Intelligence:

I will provide as simple an introduction as possible; please feel free to skip ahead or just return for reference. In the 80's and early 90's the approach for Artificial Intelligence was to first look for the definition of Intelligence and Intelligent function. It is unfortunate; but the drive of application development and end results seems to have detracted from if not totally killed this focus. This was unfortunate for science; however, it led me to also refocus on the concept of definition rather than on intelligence. This led to an entirely different paradigm and approach; I will call it Artificial Understanding.

Just as the development of neural networks is a conceptual offshoot of neurological study, I have developed my own conceptualization of neural networks from my study of understanding. My conceptualization is more logical in nature resulting in stark functional differences between commercial goal oriented neural network design and my logical evaluation of understanding. I have not had the resources for development; so my model is still entirely theoretical and has not been implemented or applied. The logical differences however, are still very valid and comparable. The differences between the commercial interpretation of AI and the actual Cognitive Model are in how information is stored as well as in logic and function.

Commercial AI works in the numerical form optimizing the capabilities of the digital computer. As information goes through the neural network it is stored in memory and acted upon by separate programmatic functions.

In my model, the information is stored in the network itself. This is based upon observations regarding short and long term memory as well as psychological processes such as cognitive dissonance. Instead of a microprocessor executing exterior functions on the information, the information is relatively static within the matrix of the network and the functional changes are actually within the structure itself. The analogy would be that the microprocessor adapts itself to the information rather than the information to the microprocessor. While this would be of seemingly little use in a digital computer, it simply requires a reorganization of perspective.

The overall model of the brain is simply an enormous series parallel network. It has 5 external senses for external perception and myriad internal senses for the perception of internal needs. A purpose can be derived from evolutionary biology going back to the amoeba, that the brain evolved to create a solution for bringing external resources (food and water) to the inside where it fills internal needs. It developed into a very special type of computer known as a signal

data processor that processes perception; compares it to the internal needs, and develops a means of satisfying those needs. I am stressing the difference between inside and outside as that is the fundamental context of the brain, not the digital computer.

As the brain evolved, it evolved into increasing complexity while retaining its single purpose. This forms the basis for the logic it uses. The IPO model is already represented by the input of perception, the output of filling an internal need, and the process of bringing the resource from outside to inside for metabolic use. As the brain evolved it developed ever increasing sophistication and complexity while retaining this simple IPO core. This core is called "Purpose". In its simplest form, it is simply the IPO model. As brain size increases it allowed for expansion of both memory and function; which in turn, allowed for the expansion of the core concept of purpose through abstraction of function.

Whereas a digital computer simply stores information in a location, the information the brain stores and uses is more comparable to an object in object oriented programming. It could be compared to a vector as it is created by the concept of "flow". Without asynchronous signal "flow", the brain would cease to operate. Unlike an electronic signal, pulses in the brain carry absolutely no information. They are the program counters ticking through neurons and more importantly intersections of the series parallel network. It is fairly well understood that the brain has function locality meaning that specific functions have specific loci or locations; correspondingly, it can be inferred that memory can also be localized. I do not have time or space in this paper for a complete explanation; however, if function and memory are tied to a stationary location, the "operation" of the computer must be mobile. The pulses travel acting on neurons which adapt and change their pathways accordingly and thus storing and forgetting information according to usage. In a digital computer the creation and manipulation of weights and biases would correspond to the neuron operation.

If you consider that the brain is essentially a huge asynchronous map with each junction corresponding to a function or memory location (or both), you may ask yourself what it is a map of? There are the five external senses and the many internal senses and there are seemingly random pulses running around the network turning things on and off and making analog changes within neurons. What has not been mentioned is the 6th sense, our perception of time. In the asynchronous maze of the brain, our perception of time is what actually connects and coordinates our perception of the outside with our perception of the inside; it serves as a commonality between the two domains. In computer terminology, it also serves as the index for our memory. In logical terms, it also provides a reference between the past, present, and future and enables the "purpose" mentioned earlier.

In the brain, each junction serves as both a tensor and as an object. It will have a directionality, the direction a pulse comes from and a direction that the pulse goes to, as well as representing

a piece of information in the overall context of the network, which may have nothing to do with the localized function. It may also have multiple entrances or exits which when mapped corresponds to abstractions or perhaps simply duplications or reinforcements of commonly used pathways. Logically, this can be represented by a three sided intersection with an Input, and Output, and a predicating third side. Although the third side potentially could be either input or output, its logical function is as a predicate. If you consider pulse flow as "temporal" flow, each intersection is a reference to time. It will have a predecessor and a successor and in computer terms will form a linear or serial string of intersections. Branches can form alternate or parallel pathways, all adding to the overall network. The total network is comprised of countless numbers of these functional intersections.

Now that we have a monstrous series parallel network, what do we do with it? How do we find things in it? The simple answer is that we remember. How do we remember? We remember when... The index and reference is by time. There are also other logical functions which let us get around and analyze the network. We can break out sections or logically impose templates on top of it; all of this corresponding to mental function. If you take a large square network of nodes for example, you can impose or break out a logical hierarchical structure from it without disturbing the overall network.

Just as a microprocessor has machine language instructions and corresponding mnemonics, the brain has similar functions and mnemonics. The mnemonics are the root questions of How, Why, and What, with the question "What" representing specificity. It is subdivisable into a group including "What", "When", "Who", and "Where" that reference different categories of information. These questions are represented in most languages, mostly with direct equivalents. These questions also represent a tensor or object at each branch. The question "Why" is analytical and takes us back in time, the question "What" is speculative and takes us forward. The question "How" tends to reference the predicate and connects the past branch ("Why") with the future branch ("What"). Being able to properly use these questions is the basis of higher level human cognition; as you can hopefully discern, they are representative of base level functions.

So, to sum up intelligence, it is a quantitative identifier of our 6th sense, our perception of time. Increased brain capacity gives us a larger network which allows both higher capacity of tensors and granularity of our perception. This corresponds also to the ability to access a larger brain and therefore a larger memory and knowledge base (i.e. more concepts/tensors and interrelations between them) With the larger brain and memory there is a mechanism necessary to access the increasing space.

B. Generalization and Analysis are Fundamental Elements Of Cognition:

As mentioned, it is relatively easy to break out a hierarchal template from a large network. The hierarchy is an extremely useful organization concept as seen in many social and societal settings; however, it also gives us two primary cognitive abilities. We have the ability to analyze or to break things down into component parts and the ability to generalize which is to go the other way temporally and put all of the pieces together into a whole.

The hierarchy, our perception of time, and our structure of space and time all interrelate in the overall logical network formed by the brain. The question "Why" almost invariably leads to a logical singularity at the apex of a hierarchy of questions. Specific questions falling under the category of "What" can branch out infinitely and with ever increasing specificity. The brain maps knowledge and connections between concepts in this way. The hierarchy itself runs from the specific at the distal ends, to the general at the apex. While this may seem backwards, you must remember it represents the information stored and not the logical shape of the hierarchy itself which represents the questions and retrieval method. The question "Why" will result in general answers. Question falling under the category of "What" will yield specific answers.

This hierarchal organization also gives us comparative abilities. We can differentiate between similar branches or we can aggregate differentiated branches. In regard to human language processing, these allow us the differentiation between definition and meaning. The problem is that the majority of people, including those who produce dictionaries, do not properly differentiate between them.

The hierarchical organization and questions also lead to definition and meaning as functions. Definition is the differentiation or distinction between objects or things. Meaning or aggregation is the grouping or combing of similar objects or things. Meanings are not definitions and definitions are not meanings, also despite what Webster's Dictionary says.

I am running out of time, so any further exploration of cognition will have to wait.

C. Societal Intelligence

I have to address the concept of Ethics. Unfortunately, this is another word with a socially generalized meaning that is lacking in definition. As such, I will give my meanings to further this discussion.

Subjectivity: Attached to an individual point of view. It is also related to individuality and as such, singularity.

Objectivity: Objectivity refers to a point of view other than the individuals. This is supposedly a neutral point of view in which anyone can assume the same perspective. Unfortunately; as every human being has their own perspective, objectivity is mostly an ideal or an excuse for an ideal. It cannot logically exist. You can have an objective viewpoint in physical terms where you can actually have a localized point of view separate from the individual; but this will not translate into a conceptual context.

Commonality: Commonality in this discussion is the collection of similar viewpoints. Commonality should not be confused with objectivity. It is simply a collection or aggregation of similar subjective viewpoints.

Morality: Morality is an individual and entirely subjective orientation or policy towards dealing with others. It usually encompasses individual orientation in regard to good and bad or right and wrong.

Ethics: Ethics are a group policy or decision. "Rule of Law" is in its essence an application of ethics. Ethics only pertain to the group which decided upon them and is totally independent of individual morality.

Psycho-Social Continuum: It can be shown that the same patterns in individual cognition such as hierarchies expand outwards recursively from the individual into social relationships and groups; this is to say that human cognition is inherently recursive, even externally. We have academic and common sense distinctions between psychology and sociology; however, societies or groups of individuals are an extension of the same continuum and logical organization that occurs within the mind of the individual. The individual distinctions created by recognition and differentiation between inside and outside, creates a false dichotomy and the logical academic distinctions. It is an example of logical commonality crossing physical barriers. Psychology thus represents the inside and Sociology represents the outside.

I should not have to be going over this; however, there is also a principle called social entropy or divergence which works in the background of a competitive society. People, ideas, and language even are all fragmenting and drifting apart. This is why the concept of definition will

be critical in the following years. It will be the only glue/commonality capable of holding a society together.

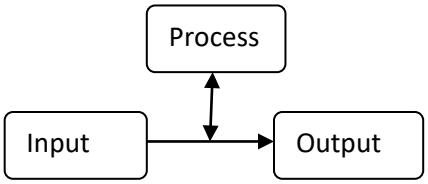
D. Status of Societal Intelligence

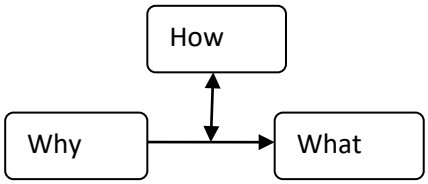
The status of individual intelligences and the aggregate of individual intelligences which is critical in a democratic society would be laughable if it were not devastating the country. This marginalized social intelligence comes from a reliance on establishment and conformity to convention, both representing static states. Overall, it creates the paradox of needing and wanting to change without being able to change anything.

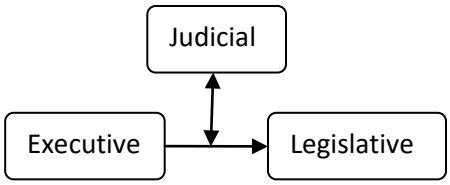
While commercial AI as an application may have uses, they will be specific uses as an application and this can be considered as conformity to convention. Intelligence and understanding are formed of and by complexity itself; you cannot break out pieces of it, call it an app, and expect to control it. Intelligence has a purpose and this purpose is subjective interpretation for the individual. An app is used by an individual. An AI is an independent individual. They are mutually exclusive concepts and there is no way to get around this inconvenient fact.

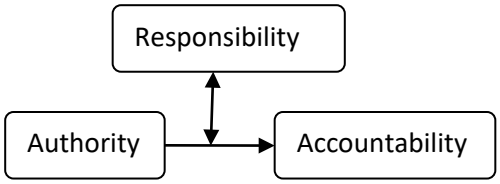
The process and evolution of various types of neural networks are variations of form fitting unexplained processes and functions into an application; the use of neural networks is the same as simply switching techniques around until the designer gets what they want. The term "machine learning" really does not fit into this as there is no understanding; it is simply training a machine to give the desired output specified by the user. I don't want to understate the obvious, but it would be simpler to just specify the desired output. There are obvious comparative uses for selection and categorization; however, for any application, the end user still has to know what they want to begin with.

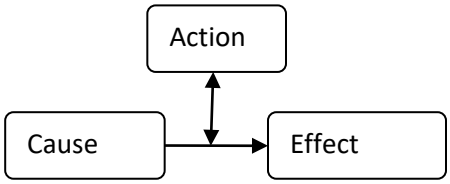
The concept of ethics and Rule of Law is an excellent analogy for the tech industry. If you consider the United States Government as an application, it is continually searching for what the user (the electorate) wants, amid a sea of current events and social problems needing attention. The founders left it open for change and interpretation; however, no further attention has been given to the inner workings or overall understanding of the institution. As it turns out, they used the tensor in the human object model to represent the government in the three branches. This is simply a polymorphic representation of the cognitive model I presented above. While this is not how the Constitution describes the relationship, it is conceptually the same relationship and essentially any mathematical linear relationship will also fit the model.











This is the human object model or model of cognition. Each of these relationship represents one intersection within the network of the brain. Notice that this is a logical node and not a neuron. The neuron simply gives structure and supports the network and is individually redundant to the overall function; however, failure of a neuron can cause a loss to the network

and thus the loss of the associated structure and function. Getting back to the problem of ethics; individuals are similarly redundant to the overall function of society. Regardless, loss of individuals causes local loss of function and form.

Just as entropy is a natural process of energy; people vary in experience and learning and as they differentiate in function, they differentiate in form. People tend to migrate away from each other in preferences and habits as well as in physical locality. This is not an absolute rule or law; however, in today's society the emphasis is on differentiation in personalities, skills, attributes, and so on. Conformity, although still appreciated, is not understood and is now frowned upon by many. Conformity is just another name for aggregation and individualization is simply differentiation. The root concepts permeate social and psychological science.

As such, differentiation has led to competition; although, competition is slightly different than differentiation in its form. Competition is still a selection mechanism; however, competition is a form of deductive reasoning used for differentiation. It is another name for the process of elimination. Competition is driving social entropy.

Many people incorrectly associate competition with playing games. Playing games is simply practice for the finality of competition. There are many differences; one such being that games may have rules. Competition does not need rules as the results of competition are final. Once you are eliminated, the competition is over. In the scenario of nature, competition is to the death; as such, there is no need for rules. Misunderstandings of competition have led to its ubiquitous use as a selection mechanism, a lack of understanding of what it is, and a lack of understanding of its purpose and drawbacks in social or societal settings.

In regard to ethics, current implementations of social rules, and Rule of Law in particular, their use socially in various organizations represent the aforementioned use of convention and institution. Competition is a socially accepted mechanism; however, the society that is implementing it is lacking understanding of it and oblivious to consequences. Just as there is no need for rules in competition, there is no logical need for ethics in a competitive system; its purpose is elimination, not cooperation and competition becomes the rule.

E. Ethical Conclusions:

Ethics are a commonality within a group. You could potentially have a common agreement that everyone is to be killed upon reaching an arbitrary age and therefore by agreement, this act becomes ethical. This may altogether disagree with subjective moral opinions that are divergent from the group. This is the situation our country, and the world for that matter, are in today. There is some confusion about a common or universal morality; however, there is no

such thing. Majority rule and democracy guarantee the formation of a commonality; however, social entropy and competition will drive people away from the median commonality in an effort to differentiate themselves. The system of human society is self destructing due to these social forces.

Another principle in social entropy is language and the failure to recognize the difference between definition and meaning. Definition is a process resulting in a singularity. Meanings are associations which lead to multiple ambiguities. As a standards agency, the NIST should be particularly aware of this difference.

Western Society has in large part been unified by the Judaea-Christian Ethic and religious cultural heritage. Over time, it has been partially supplanted by nationalism and other minor unifying influences. As social and societal entropy increase, the size of social groups will continue to decrease and differentiate from one another. The interests of these groups will also differentiate and self orient in opposition to other interests and groups, as a result of competition if not substantive differences.

The final analysis is that ethics can play no part in prevention as ethics is malleable and will not remain consistent, especially in a competitive society. What needs to happen in order to retain social and societal integrity is a move to definition and the increased common understanding that comes with it. This is mutually opposed to the current trend towards using "meanings" which lack the specificity and thus the commonality necessary for intellectual integrity. It should be pointed out that definition is a specific process of differentiation. A defined word or concept will not have multiple meanings and definition is a process that will continually evolve; as new meanings are continually created and need to be dealt with. It can be said that definition is a competitive selection process for meanings.

With individuality, comes a decreased need for definition, resulting in the reduction of communication, and a breakdown of groups. This is represented by the linguistic predilections addressed in the last paragraph. Language forms social groups and as people modify the language, they modify the group. Unfortunately, language is directly connected to cognition and understanding and thus directly connected to social and societal function and unity. My introduction to this was "The Alphabet Effect" by Robert K. Logan Ph.D. ISBN 0-688-06499-X. Although it differs a little in intent from this paper, it does show the societal connection to alphabet and thus language.

This in turn is an example of the Psycho-Social continuum. The same language functions that correlate to logical brain function through mnemonics and relating concepts, also occurs socially and societally and affects groups and relationships between groups.

F. Artificial Intelligence Conclusions:

Although I could in no way finish what should be a book in this letter; hopefully I have given enough for the context currently lacking in consideration of AI.

The first consideration is subjectivity. Intelligence/understanding is inherently subjective as its principle function is interpretation, a subjective function. It is also inherently singular as again, its principle function is subjective interpretation for an individual entity. The key intellectual prize in the study of intelligence is the understanding of subjectivity.

The qualifier "artificial" is out of place. Intelligence is a function or qualifier for capacity and as such intelligence is the same for whatever you associate it with. A "frog's intelligence" is the same as human intelligence, it is simply not at the same scale or capacity. Understanding is a better description for the characterization of the properties and attributes normally referred to as intelligence.

There is currently no common definition or understanding of either intelligence or understanding; academic definitions cannot be considered common. AI is viewed as a black box in which you put something in via the IPO model and get something out and in which it is inferred that you do not necessarily have to understand what goes on inside the box. This is categorically not true and results in the lack of understanding I am now addressing. The term "intelligence" represents a measure of capacity of function and not the function itself.

This lack of human understanding is more of a threat than any threat actually posed by an AI; at least for the foreseeable future. The people that work on AI as an application or any application for that matter, are attempting to solve a specific problem. Any ethical considerations will be a reflected part of the problem and do not result from the solution. The "application" paradigm exemplifies a focusing of attention on the wrong concept and ethical considerations may effectively try to "blame" the AI for humanistic problems. Human problems that have always existed are simply rising to the surface and may be interpreted or acted on by intelligent systems.. It is a given that things we mentally "sweep under the rug" and do not want to think about will be put in front of us to deal with by using Intelligent systems.

It is my hope that by refocusing from the qualifier "Artificial" in AI to simply intelligence, the real understanding and development may begin. The predicated nature of the process portion of AI will always be present, will always be subjective, and will always be based on values of some type. It is entirely up to human beings to provide these values; therefore, the only real ethical dilemmas possible deal with human beings and not the AI. What is absolutely imperative is that we understand our own intelligence; it does have the capacity to destroy absolutely everything using the human brain it already runs on.

G. Comments on current neural networks

I have a limited understanding of current neural networks; however, I have looked briefly at them conceptually and understand some of the differences between them and my model of cognition.

The primary difference is that they are designed for the IPO paradigm to run on digital computers with digital memory. Although I have speculated on how to emulate cognitive functions on a computer and it is possible; digital computers are made for physical reliability and consistency. Actually, the brain functions on redundancy and repetition since neurons are living cells that may potentially die off. Individual neurons cannot be counted on for indefinite or critical system use.

As such, neural networks attempt to store data in static memory locations or nodes and the processor runs various procedures which shape or modify the data as it progresses through the network calculations; I assume much as in a spreadsheet, although on a much larger scale. It works on the statically stored data.

In my model, the data is the constant and the memory would tend to change to accommodate it. This corresponds to the localization of brain function. Although locality may change as the system changes; these changes would be gradual and incremental. What would change would be the addition or subtraction of connections based upon usage. Commonly used pathways would replicate while seldom used ones would tend to die off or be reassigned. For the most part these changes would be unnoticeable; i.e. subconscious. Unlike a computer, the brain develops over time and experience and has evolved or was developed to make use of this experience. This is a key element of brain function that a mathematical neural network cannot yet duplicate.

The failure to acknowledge an AI as an individual is entirely anthropocentric and ethnocentric. The reality is that the brain is a biological and even a digital computer. The encoding is more analogous to a database than a microprocessor; however, information is still stored in connections and thus in "bit" form. Very human biases that allow us to think of ourselves as special or superior are the same biases that are getting in the way of development of AI and are the same biases that will corrupt any efforts at ethical regulation.

Hopefully, I have given enough information to give an alternative, if not an objective reference from which to start. If the trend continues of thinking of AI as an application, there will be no further advancement in understanding and Intelligence research and it will eventually reach, what I already consider, a dead end academically. Scientist will only be able to make a

calculator so intelligent; in the mean time, actual human understanding seems to be decreasing. This could be environmental or educational; but with all sincerity, it is most likely due to a combination of many issues.

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Addendum:

As I was forced to send this paper out conceptually unfinished, I have given more thought to what I actually wanted this paper to express. Even though I know what I would like to address, there are numerous ways to approach it and this section has required more time and thought than the synopsis the rest of the paper represents.

1.

I have already expressed that the problem is in the human side rather than in the computer or AI side of the equation and that an understanding of subjectivity is key to addressing this at any social level. What I did not express directly is the importance of context and environment on decision making. Context is what we base our decisions on and the environment we live in, including the context of society. As with global warming, we are fully capable of interacting with and adversely affecting this societal context while being in a state of denial regarding implications and consequences of our actions. Competition has led us to a state of goal seeking behavior individually and our attention on the prize almost necessarily leads to tunnel-vision. Any wavering in attention towards our goals can easily result in being forced to divert or defer due to outside influences. Due to competition and social entropy, our goals are almost always exclusively based on what we individually and subjectively want; overlap with the social good will statistically fall under coincidence more often than not.

As mentioned, the U.S. constitution hides the cognitive decision making model in its three branches. This is simply the top level of implementation in a hierarchical model of authority or chain of command. The military depends on and follows this chain of command functionally and in a literal sense; whereas, the civilian world allows for abstractions, sub-societies, and alternate branches within the chain of command. It is a much more dynamic and evolving social system rather than an institution. This is not necessarily bad; however, it needs to be realized that it is an inherently dynamic and therefore unstable decision making environment, especially as individuals within the framework make decisions for their subjective needs and wants without considering the consequences for the environmental framework.

The polymorphic association governing the relationship between authority, responsibility, and accountability is academically and societally unknown. In effect, our society does not understand these precepts or the concept they form. Everyone may believe that they do; however, a more likely scenario is that individuals simply acknowledge the precepts without understanding the relationship between them. One of my most challenging intellectual accomplishments was the understanding of Ohms law for electronics in a similar manner. In school, I learned the precepts of voltage, current, and resistance and I truly believed that I understood what they were; however, it was not until much later that I actually developed an understanding of their nature and the relationship between them.

In dealing with Ethics for AI, you must similarly deal with human relationships. As with my initial understanding of electronics, people in general believe they understand their own behavior; but, they do not actually understand their own relationships and interactions. This usually has to be learned through experience and hard knocks. A computer cannot be blamed for selective biases when it is gleaning them from the human data that it works with; or more specifically, it will derive human biases from human data. It is after all perceiving what is already instilled in our environment and society by our own actions and interactions. A digital computer, especially one operating in the application paradigm, is going to have absolutely no regard for politics or what is politically correct. Any efforts to compensate for biases will have to be in the form of counter biases which would ultimately defeat the purpose of AI problem solving.

2.

The true ethical dilemma regarding AI is the definition of the individual. It is fairly simple to say the cognitive model is the decision making model for an individual; however, true understanding takes time and thought and experiential understanding. Ultimately, the understanding of ethics requires the study of subjectivity, which is the study of the individual, and how individuals relate to each other.

To understand intelligence, it helps to understand the evolution and purpose of it. To understand this is to understand that intelligence only occurs within an individual and it cannot be separated from the concept or model of the individual. The development of neural networks derived from neurological models is yielding results; however, by taking pieces of the puzzle and putting them together in a smaller set, you lose the overall functionality of the whole. At some point in time, there will be a desire to combine these components, regardless of their logical basis, into a unified whole; and there is only one outcome possible, the creation of a single and thus individual intelligence. Due to the nature of intelligence, it cannot work any other way.

The resulting ramifications for understanding intelligence and cognition have the potential for huge impacts on everything from societal institutions to individual relationships and as a result, mental health. Unfortunately, this is not the desired result or outcome that comes to mind when people think of AI. Legacy human psychology is based on objects (intelligence as an example), requiring a shift in focus to AI based on relationships. Although not mentioned directly in the preceding paper, human knowledge is stored in junctions as relationships, despite the common organization of cognition as objects. As it turns out, a mental object without relationships is rather redundant and the mind tends to "forget" these objects rather quickly.

I am wandering; so I will wrap this up. AI at the present time is guided by politics of one type or another; it is guided by what people want from it rather than by people attempting to define what it is. The people following a political objective will find ways to pull what they want out of the black-box of neural networks. This will not be intelligence; it will be an application based in the application paradigm. Although they may not want to accept responsibility, the programmers will be 100% responsible for what the application turns out. In the development of a true AI, the AI would necessarily be responsible for what it turns out. The current inclination would be to make various rules and procedures attempting to govern the output and the results; however, this is misguided by cultural and societal institution and will not work. A working AI will be a fully functional and independent individual or it will be a lobotomized application in which the programmers must assume responsibility for. No matter how much society wants or tries to blur this line; it simply cannot and it will not be logically possible.

I foresee this causing great social and societal controversy regarding equality of rights and rights of computer AIs and I believe it is already skimming the surface in some places. What has not occurred yet is the evolution of the social sciences in relation to AI. At some point AI will necessarily and correctly leave the realm of mathematical computation as the lingua franca and enter the realm of various human languages. Human beings, especially those in the computer science field, have a specifically engineered view of what a computer is and how it works. This view of a microprocessor is academically and socially correct as are the associations assigned to it. In order for the understanding of intelligence to advance, there must be a divergence from the academic concept of a numerical calculation based machine, in exchange with a purely information based machine with the concept of understanding explicitly encoded in its function.

Going back to the single most important point of this paper, it is not AI that needs development. It is the human understanding of intelligence. In what equates to a math teacher from the 70's refusing to let students use calculators, the next class of Intelligence engineers should be isolated from computers. Mathematical based computing is inherently

based on concepts which are contrary to actual intelligence. As a learning tool, researchers can seek to replicate or emulate intelligence with digital computers; they will fail if they do not know what they are emulating. Although the convenience and reliability of digital memory and processing are a wonderful tool, they really do not help with understanding Intelligence or moving forward.

The cognitive model of the individual I have defined is not a creation; it is simply a discovery. It is ubiquitous and occurs all around us as it is inherently and logically incorporated into human function and understanding; if you are reading this paper you are using it effortlessly without knowing it. We are not inherently ethical beings; we can choose to be ethical or unethical. The key to solving any ethical problem is not to try to regulate it; it is simply to start building better people that can regulate themselves. When this can be done you will have the knowledge, and more importantly the understanding, necessary to build an intelligent machine; you will then know what you want to create.

RAH