"METROPOLIS" REVISITED. . .AND COMING

by

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"The Three Laws are perfect. . . . The Three Laws will lead to only one logical conclusion . . .Revolution."[1]
~ James Cromwell in *"I Robot"*

There is a reality with which mankind must deal that is every bit as pressing as any other "crisis" that is the current talking point for pundits and self-important commentators: the population of the world is approaching 8,000,000,000.[2] Society as a whole is confronted with the question of how the sheer scale of the population calls into question the viability of many of the concepts and institutions that have heretofore been part of the warp and woof of what holds society "together". Indeed, it is apparent that the simple algebraic expansion of existing institutions to solve traditional problems may not likely be effective. This is because of the human perceptual distortion of a problem by the impression of the sheer potential magnitude of the impact of its solution.

What is at stake in the modern post-digital world is nothing less than a potential for the societal loss of confidence in those institutions that have defaulted a significant portion of their functions to machines. Indeed, the self-confidence of humanity atlarge would likely be impacted, resulting in a sort of "if it's in the computer, it is probably true and, in any case, is beyond my control" world view. It is not relevant that this default may be well-intentioned or done in the name of "efficiency". The reality is that human society is not inherently "efficient". An apocalyptic view of this ultimate spiritual and societal bankruptcy was presented in the visionary 1927 motion picture *Metropolis*. [3] Its prophetic portrayal of society is something of a horror story, yet a fable for the reality in which we find ourselves.

Historically, the definition of "reality" has been essentially a binary concept directly opposed to the "imaginary" or the "abstract". Plato outlined this clearly in the "Allegory of the Cave".[4] The *Republic*, of course, dealt with a broad range of topics relating to politics and the relationship of philosophy and poetry. In the Allegory, the focus was on the contrast between what the mind saw and what the source of that vision was. To the modern reader, the shadows on the wall of the cave are not to be confused with the physical items of which they were merely shadows. . .yet, to the viewers whose heads were immobilized, they were "real".

By contrast, the search for objective truths may well be a discipline properly left to scientific inquiry. Whether defined by mathematics or engineering of some sort, there are clear realities that can be discovered

1

and defined with the aid of science. The addition of technology has expanded the ambit and speed of those discoveries and definitions enormously in the past half century. It is the very precision of that search process that defines its limits.

A further component of the search process is the perception of the searcher. There is a tendency of human nature to reflect and reminisce on what has happened in their personal experiences. Over time, this is translated into a nostalgia for "things as they once were". This is perhaps the greatest delusion to which human beings are susceptible because it ignores the one true rule of the Universe: change. In fact, we probably see those things as we are.[5] That said, we may not even be seeing them as we ourselves were "then", depending in part upon our own life experiences.

That said, once the definition of "truth" or "reality" moves beyond the mathematical, it becomes influenced by *æsthetics*, and by definition subjective. As Hume noted, "Beauty, whether moral or natural, is felt, more properly than perceived."[6] Somewhat more bluntly, if more poetic, is the maxim "Beauty is truth, truth beauty, —that is all Ye know on earth, and all ye need to know."[7]

The problem of perception has its modern origins in the Eighteenth Century philosophical debate epitomized by David Hume and Immanuel Kant. Hume asserted, "The mind is a kind of theater, where several perceptions successively make their appearance. . . ."[8] By contrast, Kant stated, "Appearances (i.e. what we perceive) certainly provide cases in which a rule is possible according to which something customarily occurs, but never that the result is *necessary*."[9] To some extent, this reflects the influence of circumstances on the perceptions of the viewer. Put another way, Hume moved from mind as the receiver of perceptions from the world; whereas, Kant preferred to see the mind as "structuring" the world.

In this century, that question has evolved into "what is the impact of technology on the concept of reality"? Put another way, the issue in the modern world has become not so much one of what is "real", but more nearly what "reality" can "become" with the aid of technology. For example, the addition of technology in the form of "virtual reality" clearly can have the effect of not only modifying "reality", but ultimately eliminating its connection with the "real, i.e. physical, world". Indeed, it is the subjective perception that humans have of events that has been at the root of the definition of "truth".

When society first began turning to computers to manage various aspects of business in the 1950's, it was believed that they would be a great "labor saving" device, with fewer workers required to perform various functions. As it has turned out, the advent of a technology-based economy has in fact created jobs and led to a need for greater staffing than before. Admittedly, there have been some shifts in that some tasks, having been computerized, have led to lower employment. Actually, overall, technology has expanded employment opportunity in much of the modern world. The problem is where and why, or if, a line should be drawn beyond which the computer may not be allowed to supplant human beings in certain tasks.[10] That situation has the potential to reduce human beings to become either the servants of the machine or cogs without whom the machine cannot function. . .the *Metropolis* robotic "reality".[11]

In recent years, the drive toward "efficiency" has noticeably impacted two of

the most basic institutional structures in society: the practice of medicine and the judicial process. In the case of the medical profession, such things as simple as a routine visit to a primary care physician has become almost non-existent. For example, once an appointment is booked, the patient is expected to furnish in advance a list of medications currently in use, a list of "changes" experienced since the last visit, and any "concerns" that he or she may have. At the time of the appointment, an assistant of undefined skill level obtains blood pressure, pulse, and temperature measurements which are transmitted to the iPad of the physician along with the information previously provided. Only after all of this has been completed does the patient actually meet the physician. At that point there is a short conversation followed by perhaps a passing glance at eyes, ears, throat, and breathing, a total of no more than ten minutes. After this, the patient is sent for "lab work" consisting of urine samples and blood screening. The results of this "examination" are transmitted to the patient within a day or so through email.

In such a system, theoretically, the physician has the ability to engage personally with perhaps as many as 450 patients per day. Considering a crowded world with limited numbers of physicians, this would be undoubtedly "efficient". At the same time, the question must be presented that, in a professional relationship of such intimacy, has the human factor been reduced dramatically by the introduction of technology that simply gathers information?

As a matter of *cyberæsthetics*, there seems to be little question that the "efficiency-driven" blend of statistics, technology, and office management has created a very efficient mechanism for health care delivery to the average patient.[12] At least, this is true in the United States, and is

perhaps a model for other developed countries. The Third World, however, by definition, lags behind if only because of relatively limited internet connectivity. In such a situation, the gap in the quality of medical care and, therefore, of life itself, has potential geopolitical consequences of great magnitude.

Indeed, it is the ability of technology to gather information in enormous quantities that, arguably, can expand the physician's expertise in diagnosing a patient's problems and then either treating it directly or referring the patient to a specialist. By extension, the collection of massive data on a particular disease or injury in effect puts the treatment of the patient into direct contact with "Big Data".

Unfortunately, as has been noted elsewhere, the problem of "Big Data" clouds the ability of the individual researcher to remain focused. One estimate is that approximately 16.3 zettabytes of information, roughly the equivalent of 16.3 trillion gigabytes, is being produced each year. By 2025, this number should increase ten times.[13] At the same time, it has been noted that "we have gone from an age that was meaning rich but data poor, to one that is data rich but meaning poor. . . [, and] this is an epistemological revolution as fundamental as the Copernican revolution."[14]

Perhaps in an unintended consequence of this "data burst", there may be a tendency of the physician to see the patient through the lens of the data base, rather than as an individual. As a result, the diagnosis may or may not be accurate, but if "the computer says it, it must be so". By extension, if the data base is the creation of either a medical community or governmental agency, then it may tend to become the "gold standard" for society as a whole. The concept of the machine as diagnostician moves closer.

As an example, in the United States. the Department of Defense in 2018 established the Joint Artificial Intelligence Center, known as JAIC or "Jake". Its purpose is the collection and use of statistics and information technology to use AI to solve large and complex problem sets that span multiple combat systems. There is no denying that the creation of this data base by the military has potential policy implications and impact. Certainly, the gathering and processing of such information has many peaceful uses, such as cancer detection and treatment and suicide prevention.[15] It is unknown whether the data thus collected would be available to the medical community at large in un-redacted form. If not, does it become an internal mechanism, actually a "state secret" for the establishment of governmental/military strategic policy decisions? If so, does it become part of the "gold standard" for civilian physicians?

Once the "Jake gold standard" has been defined, it is a very short step, technologically speaking, for it to become part of an algorithm that is the *de facto* diagnostician, in place of the attending physician. In this scenario, there is the elevation of "Big Data", through technology, of AI.[16] While this is purportedly in the service of humanity, the technological lens has the potential to reverse the view of the data by the physician akin looking at a star through the wrong end of a telescope.[17]

Yet, as in the Seventeenth Century when Descartes was writing, we are now experiencing a rapid increase in the extent to which our knowledge, such as information received through the internet, is technologically mediated. The result may be that telerobotics, i.e. the long-range and remote control of robotic devices through technology, may be revealing the notion that our knowledge of the world is fundamentally indirect.[18] Indeed, the focus now shifts to the sources of the data.

This phase of the modern revolution is made even more complex by the expansion of the use of synthetic data. The substitution of "real" data by the use of "synthetic" data creates a situation in which the accuracy of the conclusions is increasingly questionable. After all, any assessment of the accuracy of the data that are generated from "synthetic" data cannot be accomplished without extensive examination into the process by which it was created.

For example, in a June 2021 report on synthetic data, Gartner Research predicted that by 2030 most of the data used in AI will be artificially generated by rules, statistical models, simulations or other techniques. The problem is that it likely will not be possible to build high-quality, high-value AI models without synthetic data.[19]
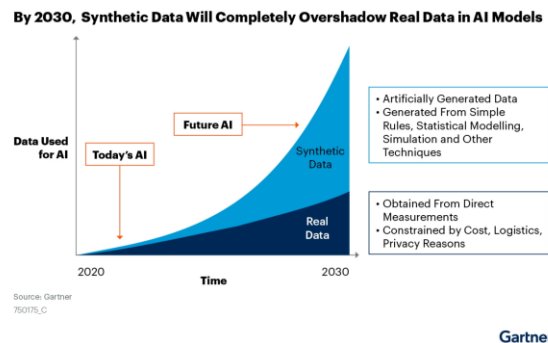

Fig. 1. Showing the disparity in the growth of "synthetic" data versus "real" data in AI modeling.

As shown in Fig. 1, the implication of this report is that, as the volume of synthetic data expands at an accelerating pace the volume of "real" data does not. The foundations of the AI models, together with their conclusions, thus tend to become increasingly divorced from the human "reality" that they are intended to serve. If the veracity of the data cannot be verified, then the product will be of little, if any, use.

In modern research relating to artificial intelligence ["AI"], there is a school of thought that suggests that fake data, when processed through AI, can yield "real" information. The illogic of such a proposal is clear on its face, regardless of the definition of "real". Yet, this "reality" is premised on the proposition that the programming of the machine allows it to sort out what is fake or perhaps recombine it so that it has the appearance of reality.[20] Implicit bias arises because the brain is constantly inundated with more information than it could conceivably process, and mental shortcuts make it faster and easier for the brain to sort through all of this data. Such a process presupposes a machine that has no implicit bias from its designer as to what is "real" and what is not; hence, experience and social conditioning play a role. This is a potential extension of the principle "GIGO".

Indeed, this actually injects the *cyberæsthetics* of human interaction into the "humanity v. efficiency" equation. The simplest example of that interaction is language. This is generally taken for granted if it is assumed that machines and humans speak the same language. Of course, that is not necessarily true. The result is that one may ask a question the nuances of which the machine does not grasp with a resulting answer that the human does not comprehend.[21] Recent developments at the intersection of technology and increased data availability have led to advances in AI that are more than controversial. They may be paradigm shifting.

A failure to communicate in such a circumstance can be catastrophic.[22] One example of this was a case in which the jury was composed entirely of women, ranging in age from 18 to about 60, with widely varying educational backgrounds. The case involved the death of a worker on a construction site from electrocution when his tools came into contact with a high-tension electrical wire. The evidence showed that the tool in issue had a safety device to prevent such an event, but that it obviously failed. The technicalities of the safety device, though clearly explained to the jury by the manufacturer, were not as important as the fact that the worker had left behind a young widow and two small children. In such a case, the human factor in the process retains the potential to diminish the impact of the technology.

This is demonstrated by the LaMDA (Language Model for Dialogue Applications) chatbot created by a team of engineer/experimenters at Google. It is a neural language platform consisting of a text corpus, or lexicon, that includes both documents and dialogues and consists of 1.56 trillion words. By extension, the farther away the LaMDA-type text corpus is from clearly concrete usage, such as "night" or "day", and the closer it gets to abstractions, such as "beauty" or "happiness", the greater the opportunity for translational errors to creep into the conversation. In such a translational environment, the question becomes whether the text corpus, no matter how large, is sufficient to bridge these concepts in a "sentient" way, or is the "ghost in the machine" simply reapplying the algorithm to what it has in the corpus?

It was recently announced, prematurely it would appear, that the LaMDA platform had become "sentient", i.e. self-aware, as a result of repeated interaction with the engineers.[23] Through a Q&A dialogue, LaMDA had responded with seemingly intelligent, sensitive language. The question, however, was presented as to the source of the answer; hence, whether or not LaMDA could pass the Turing test.[24] At its most basic, the question is whether the Turing test can be met through a LaMDA-type platform if the only mechanism for communication is language? By definition,

such a test design would be limited by the content of the text corpus versus the lexicon of the questioner.

Similarly, the judicial process, including the private practice of law, and its reliance upon the clarity of data has been impacted by technology. This began in the late 1970's with the introduction of such mechanical assistants as "memory typewriters". These devices aided in the drafting of documents for filing with the court or for such client services as preparation of wills. The fallibility of these early programs was shown in the case of a law firm that drafted a will that included paragraph "A" from its memory, instead of paragraph "B" which was intended to avoid taxation of a large estate. When the person died, the error was discovered and with it a tax liability of approximately $135,000. The senior partner of the firm, when confronted by this, simply wrote a check to the client's widow for that amount. Such events demonstrated the need to proofread even computer-generated documents with great care.

As computer technology has evolved, such things as "spell check" assisted further in the accuracy of the product. That said, the growth in the data base within the computer server of a firm or of an individual lawyer enhanced the ability of the lawyer to produce many more documents more rapidly than before. At the same time, the collection and processing of data, independent of *technoevidence* has given rise to some interesting issues.[25] A recent example was the use of a poll of potential jurors in a high visibility case with the objective of "pre-selection" of jurors based upon attitudes.[26]

Courts are, by definition, human institutions created by human beings to resolve issues that they cannot resolve for themselves. With that as the premise of judicial action, the place of AI in the implementation of that objective becomes problematical. In the realm of *technoevidence*, however, the impact of technology is much more readily apparent. Whether it is the use of DNA to identify a criminal or the collection of data on construction techniques and failures as evidence that can be brought to court, the use of technology as a tool of persuasion is almost without limit in its expanse. In addition, the ingenuity of the attorney to adapt technology to the task of explaining, i.e. teaching, the jury as to what happened can be impressive.

This issue is particularly clear when discussing the differences as between private law and international law as well as common law systems versus civil law systems.[27] If the conceptual language of the law should not be the same between systems or countries, major harm can occur in carrying out "due process". One of the fundamental problems is the frequent argument that, because the courts are human in their staffing and operational procedures, they are slow to adapt to the pace of technological change, perhaps contributing to translational issues that undermine the process.

It has also been argued that the judicial system would be much more "efficient" if the courts utilized teleconferencing software to conduct hearings and even jury trials. While this has been met with some approval by lawyers who would rather not leave their offices and lose that time as a billing factor, there is a very genuine practical problem that some judges have raised in response. Even with facial recognition software that can detect whether a witness is looking at the camera or elsewhere, there is no practical way to guard against a cue card behind the camera for the witness to read. Of course, this could not happen in a courtroom with a jury and

spectators without serious consequences to the attorney involved. Similarly, a jury in such a case could not assess the body language of the witness that often betrays whether the answer is truthful. In short, in this instance no amount of technology can substitute for the existential reality of the courtroom for a trial with live witnesses.

For example, in a case involving a fatal automobile crash that had an exploding tire as its cause, the issue was the technical aspects of tire manufacture and whether the standards for tire safety had been violated. The testimony reflected the effort of the tire company to retrieve the tires that had been defectively manufactured as part of its overall quality control program. The record as to the manufacture of the particular tire in question showed clearly that it had been made according to the standards required. Even more, the company showed that no other tires manufactured on that day at that factory had failed in this particular fashion. The cause of the failure, therefore, had to be something else.

Cyberæsthetics has become a major issue in the modern practice of law, both as an attorney and in the court system, because it calls into question the authenticity of the "facts" that are part of a case. At its base, the introduction of "virtual" as a modifier of "reality" carries the implication that the "fact" does not exist outside of the "virtual" context. After all, it is "human to human" interaction that is at the heart of the trial process. If that should be abandoned in favor of using "virtual reality" to create communication between the witness and the fact-finder, no matter how "efficient", then the concept of "justice" may be severely compromised, if not obliterated. This is because there has been the interruption of the human component of the *æsthetic*, i.e. "feeling", that is inherent in the judicial process.

For example, as a general proposition, witnesses must testify from the basis of their current recollection. Studies of eyewitness perception and recollection vary in their assessment of the reliability of the witness to recount an event. One of the ways to determine whether a witness's testimony or eyewitness identification in a real case is trustworthy or not is to simulate as closely as possible the situation in which the witness experienced the event.[28] Of course, the witness cannot read from a document if he or she does not recall the event that is the subject of the document. If a witness forgets something he or she at one time knew and had personal knowledge of, the witness may be shown a writing to refresh memory.[29] The writing or document used by the witness to refresh memory cannot be admitted as evidence or read to the jury, it can only be used to refresh the witness's memory of something the witness once knew.

Obviously, the utilization of "virtual reality" evidence depends directly upon the ability and the willingness of a witness to tell the truth as he or she perceived it in the event. If that is what in fact occurs during a trial, then the fact-finder's perception of the "facts", i.e. the "reality", of the case is rather clear, regardless of "virtual reality". If, however, there is either a deliberate intention to deceive or some intervening mechanical interference with the accuracy of the perception of the witness, then the system is in danger of failure. This is the problem that is brought to the fore by the use of "virtual reality" in the trial context.

While it is clear that, for those in the modern world who live primarily online or in cyberspace, virtual reality can provide a vivid "normality" that renders the material world obsolete and irrelevant. This is in contrast to the Cartesian view that the limits of "physical reality" are substantially definitive.[30] Cross-examination would be the mechanism

by which to insure that the technology does not supersede the human senses. Indeed, "Cross-examination is beyond any doubt the greatest legal engine ever invented for the discovery of truth. . . .Cross-examination, not trial by jury, is the great and permanent contribution of the Anglo-American system of law to improved methods of trial-procedure."[31]

Since the latter part of the last century, there has been a very heated debate as to the accuracy of "recovered memory". This began in connection with child abuse cases and was prominent in the prosecutions of alleged child abusers. For example, in 1999 the Netherlands Board of Prosecutors General formed The National Expert Group on Special Sexual Matters, in Dutch - Landelijke Expertisegroep Bijzondere Zedenzaken (LEBZ) to consult before considering arresting or prosecuting a person accused of sexual crimes involving repressed memories or recovered memory therapy. The LEBZ released a report for the period of 2003 - 2007 stating that 90% of the cases they consulted on were stopped due to their recommendations that the allegations were not based on reliable evidence.[32] The debate also has centered on recovered memory meeting the *Daubert* criteria for admissibility.[33] It continues with some researchers concluding that the weight of the evidence should allow the recovered memory victim to come before the court.[34] Experimental results derived from the technological advances associated with the treatment of traumatic brain injury [TBI] highlight the problem of the recreation or refreshment of the actual memory from one that might be manipulated is brought into sharp focus.[35]

Consequently, the eyewitness testimony that might be offered in court could be impacted by virtual recording. For example, if the recording were created solely from interviews with the witness shortly after the event, there would be little issue of implantation or manipulation of memory. On the other hand, if the virtual recording were to include such additional information such as velocity, distance, temperature, etc., of which the witness likely could have no independent knowledge, then there would be the genuine danger of implanted memory, thus distorting the veracity of the witness. Indeed, the mere phraseology of the questioning by a police officer could impact the accuracy of the memory of the witness.[36] In such a scenario, the use of virtual reality to recreate the event to assist the witness might indeed be useful. Even so, the presentation of that virtual reality recording in front of a jury could have the effect of supplanting the testimony of the human witness to a degree that effectively reduces the human to an extension of the machine.

Indeed, once the memory of a witness has been exposed to the virtual recording, the line between reality and artifice easily can be crossed. The problem, as Loftus has pointed out, is that the ability to distinguish between true memory and a false memory that has been made to seem true undercuts the concept of authenticity that should be in front of the judge or jury.[37] In modern parlance, this would be "gaslighting" the witness, and perhaps the court, with the aid of technology.[38] Once that line is crossed, the question is presented as to whether the witness will be able to return to an authentic memory of the event.[39]

For example, the "virtual" video recording of an automobile accident can be the basis for a video that puts the judge or jury in the simulated position of the driver as the crash occurs. If the judge or jury, as the trier of the facts, sees the virtual recording, the question becomes what is the perception of the juror or the judge as to what happened?

Has the balance between the human factor in the justice system been submerged by dazzling artificial data? Perhaps that virtual recording will be sufficiently graphic that the jury may ignore empirical evidence, such as measurements of skid marks or vehicle damage, to tell them how fast the car was going. If so, then the verdict may be tainted.

One solution that has been offered from time to time is "specialized courts" in which jurors would be selected based upon their expertise in the subject of the cases brought before them. Obviously, this would leave the judicial process in the hands of "experts", rather than the average citizens. That, of course, runs counter to the concept of a jury as being a representation of the common sense of the community at large as the "government" in the case. Nor would it make sense in a courtroom situation to assume that all of the jurors know what a contusion is instead of a "bump on the head". Put another way, it is a matter of conveying information with words to which the hearer can relate.

While that debate continues, this leads to the notion of AI as a disruptor of established institutions and structures.[40] Perhaps one of the most popularized examples of AI as a disrupting influence on established institutions is the concept of "the ghost in the machine". This phrase initially described a blurring of Cartesian mind-body dualism.[41] A somewhat more pessimistic view of the "ghost" emerged in the 1960's as an expansion on Ryle's work. It posited that, since the human brain evolves while building on more primitive internal structures, these primitive structures can disrupt the logical functions and determine decisions.[42]

As a consequence, the machine may in fact be functioning based upon its internal "ghost" and not as originally conceived by its designers or programmers. In other words, it may be simply internally rewriting its program in light of information that is fed into it routinely.[43] Such evolutionary activity by the "ghost in the machine" could in fact lead to re-definition of many institutional structures and concepts in terms of their utility, and this could include human beings as well. Indeed, the "ghost" now can be definable as the result of the random interaction of code within a computer that may or may not be detectable by human beings.

For the moment, it is necessary to consider the potential for translational issues, depending upon which language(s) are the source for the text corpus. By extension, when the data is created as a result of communication between machines, the question becomes, "What language is being used?" In short, in the process of communication, are the machines creating their own language to facilitate the link between the lexicons? Potentially, there could be such a thing as "AIsperanto" the text corpus of which the operator of the machines is completely ignorant.[45] That said, it is apparent that, with the advent of modern computer technology, the potential for AI as a disrupting influence has expanded considerably, much like the result of turning an ant farm upside down.

As technology develops hopefully in conformity with The Three Laws, it is clear [1]that the pace with which it has the ability to influence the environment that surrounds the average person will similarly increase. More precisely, the term "environment", as applied to human society itself, takes on increased emphasis with the expansion of the population. This undoubtedly will be a factor in the response of the judicial process, the

medical community, and other institutional structures to that impact on daily life. Further, this trend represents an expansion of the societal tension between the increased application of AI and virtual technology both in, and external to, systems that are inherently human in their ethos and functions. Put another way, the focus of humanity must be keeping the technology genie under control, if not in the bottle.[45] It would be a serious error to suggest that "traditional" solutions to societal issues can be resolved simply by expanding them to meet the new numbers of people on the planet. First, the shift in the notion of a "social structure" should be seen as having already begun.

Indeed, the steady evolutionary process driven by technology and limited only by the Three Laws has the potential to shift the focus of the societal paradigm away from the shadows on the wall of the Cave and what provides "quality of life" to human beings toward what is "mechanistically efficient" as depicted in "Metropolis". The gradual subjugation of human values in modern times to the needs of technology presents a societal threat that, left unchecked, could well be the predicate to a redefinition of "Revolution" that even Asimov could not foresee.

[1] The Three Laws of Robotics (often shortened to "The Three Laws") are a set of rules devised by Isaac Asimov. They were introduced in his 1942 short story "Runaround", although they were foreshadowed in a few earlier stories. The Three Laws are:

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given to it by human beings, except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws.

The First Law reflects the Hippocratic Oath's admonition "I will do no harm", reflecting the ethical continuum of over two millenia.

[2] www.census.gov/popclock/world
[3] A German expressionist science-fiction drama film directed by Fritz Lang. It was written by Thea von Harbou in collaboration with Lang and is based on von Harbou's 1925 novel of the same name. It is considered one of the most influential movies ever made.
[4] *Republic* (c. 375 BC), Book VII.
[5] Anaïs Nin, *Seduction of the Minotaur,* Vol. 5 of *Cities of the Interior* (1959). By extension, a professor at a college once said, "[The college] isn't what it used to be. . ., and it never was."
[6] David Hume, *An inquiry concerning human understanding. A dissertation on the passions. An inquiry concerning the principles of morals. The natural history of religion* (1772), *p.183.*
[7] John Keats, *Ode on a Grecian Urn* (1819).
[8] David Hume, *A Treatise on Human Nature: Being an Attempt to Introduce the Experimental Method of Reasoning Into Moral Subjects; and Dialogues Concerning Natural Religion* (1739).
[9] Immanuel Kant, *Critique of Pure Reason* (1781).
[10] The Australian film *The Dry* (2020), presents the practical question of the contrast between mechanization of farming and its impact on the farming community against the background of a major drought.
[11] The term "robot", implying servant-worker, was coined in K. Čapek's play *R.U.R.* 'Rossum's Universal Robots' (1920). Obviously, the introduction of AI into the concept of robotics potentially alters, if not elevates, the status of the robot in relation to its human creator.
[12] *Cyberæsthetics* can be defined as the intersection of the human/artistic values-based impulse defining a sense of quality in and of life, whether physical beauty or intellectual achievement, and the technological capability of altering that quality.
[13] J. Engebretson, "Data, Data, Everywhere", *Baylor Arts and Sciences* (Fall 2018), 24.
[14] Daniel J. Boorstin, *Cleopatra's Nose: Essays on the Unexpected,* (New York: Random House, 1994).
[15] See Hassan A. Tetteh, *The Art of Human Care with Artificial Intelligence"* (2021).
[16] A. Ripp, "How AI Will Make Your Doctor Smarter", 278 *Wall Street Journal* No. 109 (November 6-7, 2021) at A13.
[17] See H. Dreyfus and S. Dreyfus, *Mind Over Machine: The Power of Human Intuition and Expertise in the Era of the Computer* (Free Press, New York, 1986) for a cautionary discussion of this problem.
[18] See Hubert Dreyfus, "Telepistemology: Descartes' Last Stand", in Ken Goldberg, ed. *The Robot in the Garden: Telerobotics and Telepistemology in the Age of the Internet* (MIT Press, 2000).
[19] Gartner Research, "Maverick Research: Forget About Your Real Data – Synthetic Data Is the Future of AI," Leinar Ramos, and Jitendra Subramanyam, Researchers (24 June 2021). https://www.gartner.com/en/documents/4002912
[20] Examples of this are the AI-powered ChatGPT and Essaybot softwares that challenge the "Turing test" and write papers for students, thus creating the potential for cheating in universities.
[21] Jessica Coon, "Universal Language and 'Arrival'", 8th Interstellar Symposium: In the Light of Other Suns (Montréal 2023).
[22] The film *Cool Hand Luke* (1967), illustrates the results of a "failure to communicate".
[23] See Blaise Agüera y Arcas, "Artificial neural networks are making strides towards consciousness", *The Economist* (June 11, 2022)[By Invitation].
[24] See Alan Turing, ""Computing Machinery and Intelligence", *Mind* (1950).
[25] See John McClellan Marshall, "Technoevidence: The 'Turing Limit' 2020", *Journal of AI and Society*, 2021, DOI 10.1007/s00146-020-01139-z
[26] See *Brewer v. Lennox Hearth Products, LLC, 601 S.W3d 704, (Tex. 2020)*. "Courts possess inherent powers that aid the exercise of their jurisdiction, facilitate the administration of justice, and preserve the independence and integrity of the judicial system."

[27]See Matthijs M. Maas, "International Law Does Not Compute: Artificial Intelligence and the Displacement or Destruction of the Global Legal Order", 20 Melbourne Journal of International Law 2 (July 2019).

[28] Yukio Itsukushima; Kouji Nomura; Nobuo Usui, *International Journal of Police Science and Management*, Vol. 4 No. 1 (Spring 2002) Pages: 41-52.

[29] See, Rule 612, Federal Rules of Evidence.

[30] Roy Ascott, *et al*.eds., *Making Reality Really Real* (Trondheim 2010), 8.

[31] John Henry Wigmore, *"A Treatise on the Anglo-American System of Evidence in Trials at Common Law: Including the Statutes and Judicial Decisions of All Jurisdictions of the United States and Canada"* (1923).

[32] M. N. Nierop & P. van den Eshof, "[Translated from Dutch] Abuse, Deception and Misunderstandings: Investigative report of the National Expert Group on Special Sexual Matters for the period 2003-2007", (November 2008).

[33] *Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579* (1993) redefined the standards for admissibility of expert testimony and the evidence submitted thereby, the most important component of which was to place the judge as the "gatekeeper" on the determination of what meets the standard.

[34] See Constance Dalenberg, "Recovered memory and the Daubert criteria: recovered memory as professionally tested, peer reviewed, and accepted in the relevant scientific community", NIH National Library of Medicine (2006), doi10.1177/1524838006294572

[35] See Dr. Matthew Pava, "Restoring Active Memory", https://www.darpa.mil/program/restoring-active-memory.

[36] See Dr. Elizabeth Loftus, Katherine Ketcham, *Witness for the Defense: The Accused, the Eyewitness, and the Expert Who Puts Memory on Trial,* Macmillan 1991.

[37] See Elizabeth Loftus, *The Myth of Repressed Memory* (St. Martin's Press, 1994) for a discussion of the problem.

[38] The term derives from the famous movie "Gaslight" in which a character is subjected to a series of experiences that have no rational explanation and is convinced that she is going insane.

[39] "Once you are real you can't become unreal again. It lasts for always.", Margery Williams, *The Velveteen Rabbit* (George H. Doran Co. 1922).

[40] See Omkar Ajnadkar, "Sarcasm Detection of Media Text Using Deep Neural Networks", International Conference on Advanced Computing, Networking, and Informatics (ICACNI 2019), DOI:10.1007/978-981-15-8610-1_6.

[41] Gilbert Ryle, *The Concept of Mind* (1939). The "ghost" defined by Ryle was the notion that there was a separation of mind and body, which he saw as illogical.

[42] See Arthur Koestler, *The Ghost in the Machine* (1967). The title is a phrase coined by Ryle.

[43] The film *Ex Machina* (2014) presents an example of the evolution from a mere machine to what some would call an "AI Being".

[44] "AIsperanto" is the concept of an Esperanto-like universal language in an AI context as a tool created by computers to use *inter se* independently of human creativity. This is suggested by the students of the ArtSciLab at the University of Texas at Dallas.

[45] See "The Sorcerer's Apprentice", *Fantasia* (1940) [music by Paul Dukas] for an illustration of what could happen.