HOLISTIC DEMOCRACY

Our society is an arbitrary complex multiscale system of systems of purposive actors and agents within continuous change. Present planetary problems are the legacy of multiscale-order deficiencies from the past, obsolete, Western, human reductionist worldview. They cannot be fixed by the usual, traditional, hierarchical approach alone, by doing what we do better or more intensely, but rather by changing the way we do, the way we understand the deep meaning of information and diversity. This is the main reason why past and current Economic theories will always fail in making reliable predictions. Reality is a shared social construction and we need a responsible understanding and use of high social impacting technologies. This ethical imperative challenges scholars to engage with the question of re-thinking what it means to be human and calls upon us to proceed differently in this world. Anticipation can be used to proceed differently in the process of "working" with the future when corporate businesses and governments have to come to terms with complexity, risk and uncertainty. Horizon Scanning-like and Scenario Planning-like tools offer the current best futures strategies and tools for making sense of how one could anticipate the future and make better decisions.

Because we cannot have a biggest or best model of the future, it means that futurists cannot reliably predict the future. Their task is to rather help find ways to understand the critical driving forces and uncertainties in the (business) environment and to use this almost bottom-up (BU) information to make strategic decisions. By a systemic point of view, the logical answer is to design and to use distributed (self-organizing) control, i.e., BU self-regulating systems, or even better, ABU (anticipatory bottom-up) self-regulating systems. Co-cybernetics (i.e. extended control theory and complexity theory) tells us that it is actually feasible to create resilient social and economic order by means of self-organization, self-regulation, and self-governance [Ostrom, 1990; 2010].

If we are going to manage the 4th industrial revolution with the same discriminative blindness and forms of denial with which we managed the previous industrial revolutions, the negative effects will be exponential [Zucconi, 2016]. At social level, inequality and unemployment destroy opportunity freedom. Radical inequality

significantly undermines opportunity freedoms and capacity freedoms and consequently radically undermines human capital as a foundation of community prosperity [Nagan, 2016].

As the global age seems to bring new possibilities and challenges, we need now to think in much broader terms than ever before. Political will emerges from the culture of people and value is the cornerstone of culture [Nagan and Weeren, 2016]. Creating culture takes time. That is the reason institutions must be stable for long time to achieve desired goals. Structure, culture and strategy must to be aligned to be successful [Lagomdzija, 2018]. Political culture emerges from the continuous interplay of law, science and policy [Nagan, 2018].

In real democracy, holistic governance requires the co-production of values between policymakers and citizens to make visible political and expert guidance and people's interests and concerns. Transparency of communications between citizens and policymakers is far more than making information available: it is building up effective coorganizational systems. The Law protects the civil society zone and real holistic democracy has to be based on three fundamental pillars: responsibility, accountability and transparency [Nagan, 2018].

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RESPONSIBLE UNDERSTANDING OF SOCIAL TECHNOLOGY

In the past decades, there were many examples to show how difficult and sometimes superficial can be the responsible understanding to social technology. The most recent one comes from AI technology to self-driving car.

The first self-driving car crash that killed a pedestrian showed how the autonomous Uber failed to slow down as it fatally hit a 49-year-old woman walking her bike across the street. Traveling at 38 mph in a 35 mph zone on Sunday night, March 18th, the Uber self-driving car made no attempt to brake, according to the Police Department's preliminary investigation.

The newly released footage of the collision that killed Elaine Herzberg in Tempe, Arizona, has raised fresh questions about why the self-driving car did not stop when a human entered its path and has sparked scrutiny of regulations in the state, which has encouraged testing of the autonomous technology.

"The video clearly shows a complete failure of the system to recognize an obviously seen person who is visible for quite some distance in the frame," said Michael Ramsey, research director with Gartner and an expert on self-driving cars. "Uber has some serious explaining to do about why this person wasn't seen and why the system didn't engage."

The self-driving car was equipped with sensors, including video cameras, radar and lidar, a laser form of radar. Although the technology is still under development, robot cars are intended to be superior to human drivers because they have a 360-degree view of their surroundings and don't get distracted.

"There is no question the laser should have seen her," said Brad Templeton, a Silicon Valley entrepreneur who was an early consultant on Google's self-driving project. "I know the technology is better than that, so I do feel that it must be Uber's failure."

Ramsey and Templeton both said that the automatic braking and forward-collision warning that are stock features on high-end car such as the Volvo XC90 that Uber uses in its tests should have detected the pedestrian and at least slowed the car. "Probably, that Volvo had it, but it was turned off," Templeton said.

Therefore, it is still unclear what went wrong in this case. It was around 10 pm at the time of the crash, and the video showed the

woman appearing in view a second or so before the collision. She was not walking in a crosswalk when the car hit her, though Herzberg's loved ones and some autonomous driving experts have argued that the technology still should have detected her.

Some have argued that under new rules issued by Arizona's governor, a strong proponent of the technology, a company like Uber could possibly be criminally liable if an autonomous car negligently killed someone. But the Tempe police chief, Sylvia Moir, suggested in an interview that she believed Uber was not at fault. She told The Chronicle on Monday that from her viewing of the video, it appeared that neither the driver nor the self-driving car were at fault (please note that has been already ascertained that the self-driving car was traveling at 38 mph in a 35 mph zone). She did not respond to an inquiry Wednesday about whether she had reconsidered that statement.

While hundreds of autonomous cars operate in Arizona, Moir said she was aware of only one other accident, which occurred a year ago. It also involved an Uber in self-driving mode, which was flipped onto its side. But authorities determined that the other car involved was at fault for failing to yield and cited its driver for a moving violation.

"I suspect preliminarily it appears that the Uber would likely not be at fault in this accident, either," Moir said. However, if Uber is found responsible, that could open a legal quagmire. "I won't rule out the potential to file charges against the (backup driver) in the Uber vehicle," Moir said. But if the robot car itself were found at fault? "This is really new ground we're venturing into," she said.

Uber has suspended tests of autonomous vehicles in all four cities where it operates them, Tempe, San Francisco, Pittsburgh and Toronto. The accident, the first pedestrian fatality involving a robot car, has cast a shadow on the nascent industry. Companies manufacturing the technology have argued that self-driving cars are safer than humans, but skeptics have pointed out that the industry is entering a dangerous phase while the cars are not yet fully autonomous, but human operators are not fully engaged. Yes, Uber has temporarily suspended its self-driving program, but has not yet commented on what caused the crash.

ILLOGIC LOGIC?

Vulcanian Spock's logic claim, "The Needs of the Many Outweigh the Needs of the Few" (or "the one"). This claim is made in various scenes in the Star Trek film titled "The Wrath of Khan" (1982), till Spock quickly perishes. In the next film, "The Search for Spock" (1984), once restored, Spock asks Kirk why the crew saved him. Kirk answers, "Because the needs of the one outweigh the needs of the many." This is, as Spock might say, a fascinating reversal of the message in the previous film by an illogic point of view. Does acting logically mean always putting the needs of the many first? Can apparently conflicting ideas like "destructive altruism" and "rational egoism" find a logical reconciliation? Our capacity to use logic, to integrate the evidence of our senses in a noncontradictory way, is part of our rational faculty, the very faculty that makes us human. Obviously, we also have the capacity to be illogical, but that is because our rational faculty also entails volition, the power to choose to think or not to think. We also have the capacity to experience emotions, which are pre-hardwired, automatic responses to our experiences in relation to our values (Various other species have an emotional capacity as well, but our values are chosen, so even on this score we are substantially different). Our emotions, though real and important, are not means of direct new knowledge by themselves; they are pre-hardwired, automatic reactions (embedded emotional intelligence) to experiences in relation to our basic value judgments for fastest response in order to survive and grow. Our means of new rational knowledge is reason, the use of observation and logic to learn and prosper. As a matter of fact, in logic, (a) the needs of the individual are what give rise to the need and possibility of value judgments to begin with; and (b) there can be no divide between acting logically and acting human.

AMBIGUITY AVERSION AND UNCERTAINTY

In decision theory and economics, ambiguity aversion (also known as uncertainty aversion) is a preference for known risks over unknown risks. An ambiguity averse individual would rather choose an alternative where the probability distribution of the outcomes is known over one where the probabilities are unknown, even if more favorable. This behavior was first introduced through the Ellsberg paradox (people prefer to bet on the outcome of an urn with 50 red and 50 blue balls to on one with 100 total balls but for which the number of blue or red balls is unknown) [1]. The paradox was popularized by the author Daniel Ellsberg (1931-), although a version of it was noted considerably earlier by John Maynard Keynes [2].

There are two categories of imperfectly predictable events between which choices must be made: risky and ambiguous events. Risky events have a known probability distribution over outcomes while in ambiguous events the probability distribution is not known. The reaction is behavioral and still being formalized. Ambiguity aversion has gender differences [3] and can be used to explain incomplete contracts, volatility in stock markets, selective abstention in elections, etc. [4],[5]. The concept is expressed in the English sentence: "Better the devil you know than the devil you don't". The basic idea is that people overwhelmingly prefer taking on risk in situations where they know specific odds rather than an alternative risk scenario in which the odds are completely ambiguous, they will always choose a known probability of winning over an unknown probability of winning even if the known probability is low and the unknown probability could be a guarantee of winning. That is, given a choice of risks to take (such as bets), people "prefer the devil they know" rather than assuming a risk where odds are difficult or impossible to calculate. Scholars have sliced and diced the terms "ambiguity," "uncertainty," and "ignorance," among others, in a variety of different ways. Oftentimes, the usefulness of these sharp lines isn’t plainly apparent. But one dividing line between types of unknowns, i.e. the distinction between risk and ambiguity, has recently led neuroscience and neuropsychology researchers to fascinating new biological insights.

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RISK TOLERANCE AND AMBIGUITY TOLERANCE

Evidence from brain science has shown that the amygdala and the orbitofrontal cortex (OFC) are more active when people face ambiguous odds rather than merely risky ones, suggesting that ambiguity is fundamentally more emotional [6],[7]. Even when precise odds exist, if they are unknown, as they often are in everyday decision making, then we treat the decision as ambiguous. Our preference for clear odds may have deep evolutionary roots. The OFC represents one critical structure in a neural system subserving decision making. Decision making is not mediated by the orbitofrontal cortex alone, but arises from large-scale systems that include other cortical and subcortical components. Such structures include the amygdala, the somatosensory/insular cortices, peripheral nervous system and the ventromedial prefrontal sector. The ventromedial sector includes both the gyrus rectus and mesial half of the orbital gyri, as well as the inferior half of the medial prefrontal surface, from its most caudal aspect to its most rostral in the frontal pole [7]. Damage to the ventromedial sector disrupts social behavior profoundly. Previously well-adapted individuals become unable to observe social conventions and unable to decide advantageously on matters pertaining to their own lives. Remarkably, the subject's intellectual abilities are generally well preserved, in the sense that they have normal learning and memory, language and attention, and they even perform normally on many so-called executive function tests, such as the Wisconsin Card Sorting Test (WCAT) [8]. Equally remarkably, these patients have an abnormality in their processes of emotion and feeling. The abnormality is such that they do not engage emotions in relation to complex situations and events, e.g. the emotion and ensuing feeling of embarrassment which are induced by specific social contexts [9],[10]. Furthermore, neuroscientist Joseph E. LeDoux finds two amygdala pathways in the brain of the laboratory mouse by the use of fear conditioning and lesion study [11],[12]. Although most of the research on the neural basis of conditioned fear has been conducted on animals, fear conditioning procedures can be used in identical ways in humans, according to LeDoux [11]. Information about external stimuli reaches the amygdala by way of direct pathways from the thalamus (the "low road") as well as by way of pathways from the thalamus to the cortex to the amygdala (the "high road"). The direct

thalamo-amygdala is a shorter and thus a faster transmission route than the pathway from the thalamus through the cortex to the amygdala. However, because the direct pathway bypasses the cortex, it is unable to benefit from cortical processing. As a result, it can only provide the amygdala with a crude representation of the stimulus. It is thus a quick and dirty processing pathway. The direct pathway allows us to begin to respond to potentially dangerous stimuli before we fully know what the stimulus is. This can be very useful in dangerous situations. However, its utility requires that the cortical pathway be able to override the direct pathway. It is possible that the direct pathway is responsible for the control of emotional responses that we do not understand. The time saved by the amygdala in acting on the thalamic information, rather than waiting for the cortical input, may be the difference between life and death. It is better to have treated a stick as a snake than not to have responded to a possible snake. Most of what we know about these pathways has actually been learned by studies of the auditory as opposed to the visual system, but the same organizational principles seem to apply. The low road is a pathway which is able to transmit a signal from a stimulus to the thalamus, and then to the amygdala, which then activates a fear-response in the body. This sequence works without a conscious experience of what comprises the stimulus, and it is the fast way to a bodily response (a more primitive mechanism of defence). The high road is activated simultaneously. This is a slower road which also includes the cortical parts of the brain, thus creating a conscious impression of what the stimulus is (a more sophisticated mechanism of defence). "Amygdala hijack" is the term coined by psychologist Daniel Goleman [13]. Drawing on the work of Joseph E. LeDoux, Goleman uses the term to describe emotional responses from people which are immediate and overwhelming, and out of measure with the actual stimulus because it has triggered a much more significant emotional threat.

From the thalamus, a part of the stimulus goes directly to the amygdala (low road) while another part is sent (high road) to the neocortex (the rational "thinking brain"). If the amygdala perceives a match to the stimulus, i.e., if the record of experiences in the hippocampus tells the amygdala that it is a fight, flight or freeze situation, then the Amygdala triggers the HPA (Hypothalamic-Pituitary-Adrenal) axis and hijacks the rational brain. This emotional brain activity processes information milliseconds earlier than the

rational brain, so in case of a match, the amygdala acts before any possible direction from the neo-cortex can be received. If, however, the amygdala does not find any match to the stimulus received with its recorded threatening situations, then it acts according to the directions received from the neo-cortex. When the amygdala perceives a threat, it can lead that person to react irrationally and destructively. A 2010 study that replicated a variation of Ellsberg's urn experiment (using juice) with rhesus macaques showed that our preference for clear odds may have deep evolutionary roots. University of Rochester cognitive researchers found that monkeys also prefer known odds over unclear probabilities, even when that preference isn't rational. This phenomenon holds for chimpanzees and bonobos, too [14]. In 2012, neuroscience researchers at Yale Univ. and at University of Sydney published a study suggesting that adolescents, despite their often wild behavior, are actually less risk-tolerant than adults [15]. An adolescent tolerance of ambiguity, they found, is what compels teens to test the unknown. There is no real biological advantage for adolescents to be risk-seeking but the advantage comes with ambiguity tolerance. Rather than seeing uninhibited behavior as the product of underdeveloped brains, research suggests that teens are programed to explore what they don't yet understand. Risk tolerance and ambiguity tolerance follow different pathways across the human life span, and they are even affected uniquely by weather: ambiguity is more bearable after the sun comes out [15]. Rather than portraying the unclear as solely negative, researchers are instead revealing ambiguity to be a powerful cognitive force that can drive our brains in fruitful directions. Recognizing ambiguity, it turns out, motivates creativity, exploration and learning.

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