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Civic Online Reasoning - Achilles Heel of All Analytics

Short paper

Gopal, Tadepalli [0000-0003-2572-2627]

Professor, Department of Computer Science and Engineering
& Co-Ordinator, Center for Applied Research in Indic Technologies [CARIT]
College of Engineering, Guindy Campus
Anna University, Chennai – 600025, INDIA
e-mail: gopal@annauniv.edu ; gopal.tadepalli@gmail.com

Abstract: Reasoning is the action of thinking about something in a logical, sensible way. The fact that both good and bad reasoning is possible is the practical foundation of logic. Good reasoning preserves intent, fitness of the outcome for the chosen purpose and paves way for better fitness as one progresses. Overall, people's ability to reason about the information on the Internet can be summed up in one word: "bleak". Reaching the extreme points of any argument is not associated with any particular religion, nationality, culture or ethnic group. This increasing possibility of such contexts multiplies rapidly due to the interconnected lives of people, both on and off line. The infinite memory makes a technical loop between Ethics and Law that can result in an unending cycle of repetitions of similar contexts. The resulting complex challenge requires cooperation and coordination among all stakeholders at the national and international levels. The outcome ought to be centered around the people who made the context happen first even if the resolution of any dilemma is replete with "personal best answers" and data about these people keeps accumulating on the infinite memory.

Keywords: Reasoning, Infinite Memory, Ethics, Law, Cyclical Occurrence of Contexts, Personal – Best Answer

1 Introduction

Technology stems from good engineering. Engineering is a profession that constantly deals with many factors that are often replete with contradictory demands and constraints. Non-trivial approximations and compromises are quite frequent in engineering and technology. Technology is one the most dominant theories for societal change. While these changes can be very beneficial, they can control lives without any chance of knowing such controls are happening.

"Think ahead 10 years—about 1 billion children will be born on our planet. Children that will see Digital Workers as the norm. We must get this right, not just in quality and execution but in ethics and morality as well." – Mihir Shukla, Chairman & CEO, Automation Anywhere, California, USA.

Generation Z [Gen Z] that knows only the "Digital World" is becoming a driving force in virtually every type of user and consumer trend. Their connection to the digital world is so ubiquitous and so seamless that the digital experience is their human experience (Donath 2014). Nearly 70% of the Gen Z today spend a full working day online. More than 50% of Gen Z believes Virtual Reality will become a normal part of digital experiences within the next few years. Past 20 years have been dominated by the Generation Z on the "Digital World" (UNESCO, 2016).

Ethical and value dimensions in engineering, science, and technology are constantly being debated and studied by the professionals, publics, and decision makers of ethical, value, and policy issues in these areas. Responsible researchers, innovators and engineers cannot sit back and claim detachment from other human concerns such as environment, safety and political issues (Total Phase, 2017).

The technologies that 50 years ago (Anderson and Rainie, 2018) were described in science fiction novels made the society believe in their power to unite us and make us freer. They have been co-opted into tools of surveillance, behavioral manipulation, radicalization and addiction. One can sense being watch 24 X 7 but may never fathom who or what is watching.

In resolving an ethical dilemma, there is usually no right or wrong answer. The most effective way to answer is with specific anecdotes from one's past experiences. It is "personal best answer" (Martin and Schinzinger, 2017). However, this may warrant repetitive queries. The answers need to provide alternatives to facilitate the escalation of the dilemma to the higher authorities. Ethics is no more in the realms of philosophy. Technologies to track online behavior are perfected and very soon the progression of such a method may result in massively increased surveillance of off-line behaviors fueling research in studying the correlations between the online and off-line behaviors. Remote tracking and monitoring of physiological parameters, household parameters, emotions, response manipulators are all happening in a visible manner.

The author has been advocating "ethics first" approach to resolving any conflicts and dilemmas. All professions and walks of life have admitted that the absence of codified standards of ethics the practice of law could rapidly degenerate into inconsistency and unpredictability. However, it is an irony that the very presence of an ethics code can unduly burden and limit the practice of law. This becomes obvious whenever "personal – best answers" prevail. The very nature of such answers is difficult to blend into the normative efforts aimed at by any Code of Ethics. The code of ethics brings in the much-needed humane approach to resolutions which can precipitate on the legal system (Johnson, 2000).

By then copious data gets recorded in various forms about the people staked in the process. It is understandable that concerns about Privacy, Data Protection and Trust are now becoming increasingly important in the technology space. "Trust" is characterized by adequacy for the purpose. Over the past three decades, trust has been cited as the

most powerful link that provides the right connections for the overall benefit of any given collective.

1.1 Limitations of Technology Deployment

Technology is a double-edged sword and it is seldom neutral. Technology can fragment the society and lead to challenging divides. The goal of deploying technology however advanced it may be, has always been to make it a tool in the hands of the human. In practice, the frantic pace of technology adoption in the society is creating more frequently contexts where the human is a pawn in the chain of technological advancements. The technology has become so very advanced that there is a yawning gap between the time for training and the time spell of the learning curve. The concerns multiply due to the increasing numbers of novice users and incompetent personnel providing and facilitating the technology. The concerns about minimum qualifications, certification mechanism and license to practice have a great degree of variation across the world and are clearly lagging behind the global adoption of technology. "Malpractice" is plaguing the deployment of technology (Florman, 1982; Stein, 2008). It is an often quipped that "an engineer or a technologist who has never been sued has not been in the thick of practice for a long time".

All resolutions of frequently emerging "Ethical Dilemmas" are revolving around personal character, willingness to stand firm regardless of the cost, ability to resign if necessary and adhere to strict reporting procedures and practices.

The basic characteristics of "Ethical Dilemma" are:

1. Ethical dilemmas are often open-ended: There is often no unique correct solution
2. There will typically be a range of possible solutions to an ethical dilemma
3. Deriving a good solution requires analytical skills that draw from a large body of knowledge

The core concern is these dilemmas can be recycled or manifest again even long after those people who propped the "personal – best answers" are no more in the context. This is one of the reasons for the ethicists to work on any feasible bounds for such answers. However, the subjectivity implied in the "personal – best answers" may still be non-zero. In any case, the ethicists do provision for non-trivial approximations. The mechanized memory is long – term whereas human and public memory is short. This facet of the "Mechanized Society" can recur across future generations for generations to come. So far there is no "content shredder" of "global purge operation" on the memory distributed in various modes all over the devices spread across the globe. There is an emerging and inevitable cyclical link between Ethics and Law. Technology as usual is warranting "Faith in Humanity at Large".

"Code of Ethics" may have two be in two highly inter-twined parts namely General and Professional Specific. People are vital in progressing towards sustainability and safety even if technology fails. The rapid advances in technology and the pace of its adoption in the society make even the failure obscure and invariably undetected. An

unknown technical artifact in the network can easily make everything fail and this artifact may go undetected as well.

2 The Technium

In the book “What Technology Wants”, the author Kevin Kelly uses the term “Technium” (Kelly, 1995; 2011) to describe the “global, massively interconnected system of technology vibrating around us,” extending “beyond shiny hardware to include culture, art, social institutions and intellectual creations of all types.”. One can seldom fight it. One has to live with it to learn and keep learning to live with it.

It is heartening to note that global literacy rate is high. The literacy rate for all males and females that are at least 15 years old is 86.3%. Developed nations as a whole have a literacy rate of 99.2%.

However, there are no universal definitions and standards of literacy. Most presented rates are based on the ability to read and write at a specified age. Such an Information on literacy is probably the most easily available and valid for international comparisons. Low levels of literacy, and education in general, can impede the economic development of a country in the rapidly changing, technology-driven world. The existential questions about the relationship with technology are every increasing. The technium is simultaneously an extension of life and nature.

The technium is an outgrowth of the human mind and also an outgrowth of the physical-chemical evolute that resulted in life. The technium perpetuates itself and grows making what it wants both complex and forceful. The technium branching off from the human mind is a threat. The designs are becoming intangibles. Flexibility, Smartness and idea – based approach to make things happen are dominating.

The boundaries of innovation are being pushed aggressively. The world is witnessing the emergence of “digital sovereigns” that set the rules of the road, the nature of the code, and the associated practices and terms of service. The impact is being felt on the way algorithms operate and make decisions. The deployment of ethicists is happening slowly. An ethicist: is one whose judgment on ethics and ethical codes has come to be trusted by a specific community. The articulation of the judgment aims at making it sufficiently objective for others to mimic or approximate that judgment. However, presently ethicists are providing a means of acquiring knowledge that may progress towards generic global contexts that include the “digital sovereigns” and the vagaries of civic society at large. Also domain specific “Code of Ethics” are emerging through professional societies.

The manufactured world has become so complex that the only way to create yet more complex things is by using the principles of biology. This means decentralized, bottom-up control, evolutionary advances and error-honoring institutions. Biology is difficult to integrate with other engineering disciplines and the yawning gaps become important risk factors very soon in the process of maturing them.

The author opines that it is not the technology that dictates the ethical and even moral dilemma. It is the human use case involved with a given application that determines the most viable protocols, practices and service level agreements. That human use case is

amenable to be modeled as a "Knowledge Worker". The model is generic but the pertinent biology is elusive and may hold the keys for assuring safe use of the technium.

3 Knowledge Worker

The trustful individuals are neither necessarily gullible nor are necessarily vigilant but rather there are two types of trustful individuals:

- the ones who are careful and sensitive to information revealing opportunism
- the ones who are indeed gullible

"Trust, but verify" - Russian proverb

The default state of the mind is "Trust" (Sapolsky, 2017). Social trust stems from a belief in the honesty, integrity and reliability of others - a "faith in people". Technium warrants faith in people at large. It's a simple enough concept to describe. As one begins to specify the process step – by – step one's amygdala learns vigilance and distrust. These aspects then begin to dominate the way men and machines come together. The perceived security threats make the start as "zero – trust" that is counter intuitive to the way societies are built. "Social Accountability" is a positive assurance in the foundation for "faith" in people at large. The beginning of Social Accountability may have to be as seen in the Figure 1.

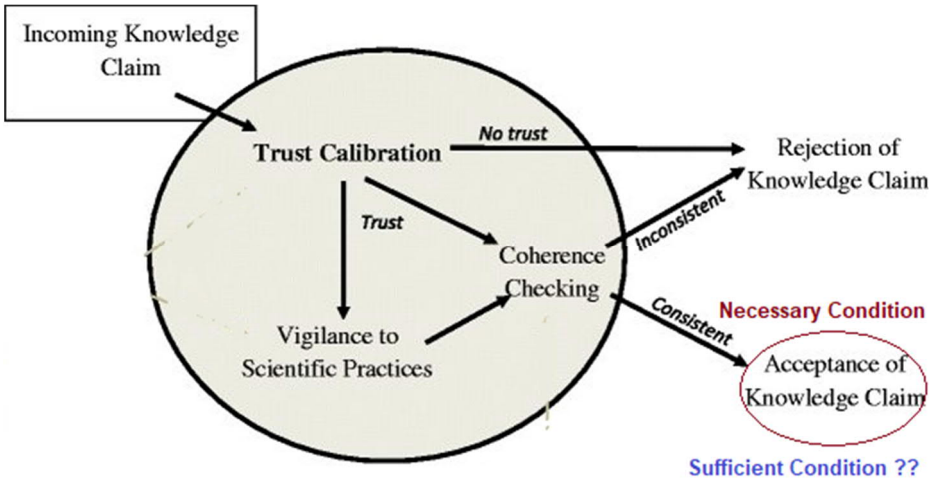

Figure 1: The fresh beginning of Social Accountability (Hand et al 2016)

This implies "Knowledge Workers". Knowledge workers (Drucker, 1929) are comprised of pharmacists, public accountants, engineers, architects, lawyers, physicians, scientists, financial analysts, and design thinkers. The concept of "Knowledge Worker" reflects a change in society which took place between 1937 and

1957. The precepts of the Cartesian world-view no longer held sway. However, the idea did not really take off. The average organizational reward system (Gal and Hadas, 2016) causes a knowledge worker to reject almost all project management initiatives. This is one of the reasons that a significant proportion of many projects fail. The challenges are:

- Can there be "Personal – Best Reward Systems" across interdisciplinary works?
- Can a given "Code of Ethics" be dove – tailed into "Knowledge Economy"?

This is by far the best hope for Civic Online Reasoning in the 21st Century. However, this is becoming increasingly difficult in practice. Grounded Theory (Stol et al., 2016) approach that works well in the field of healthcare has been adapted for other disciplines. Grounded theory sets out to discover or construct theory from both the qualitative and quantitative data, systematically obtained and analyzed using comparative analysis. "Grounding Claim" is a reactive approach.

A claim is a statement that asserts something is true. A grounded claim (Denning, 2011) is a claim accompanied by sufficient, relevant supporting evidence. The evidence can be either facts or opinions, or a mixture of the two:

- **Objective evidence** consists of facts. Facts can be independently re-verified or possibly falsified.
- **Subjective evidence** consists of opinions. Whether an opinion is accepted as supportive of a claim depends on how much we trust the opinion maker.

Can all this happen in less than 15 Seconds?

A good number of use cases can be studied in the application areas given below.

- Misuse of Personal Information
- Misinformation and Deep Fakes
- Lack of Oversight and Acceptance of Responsibility
- Use of Artificial Intelligence
- Autonomous Technology

The cyclical relation between ethics and law evolves in the technium making it the achilles heel of all analytics.

Some emerging ethical practices include the following.

- Respect for all the Stakeholders
- Moral Use of Data and Resources
- Responsible Adoption of Disruptive Technological Innovations
- Culture of Responsibility

The challenge is to build the rules for civic behavior to include faith, accepted customs, practices, standards or models for ethical actions that have sufficient longevity i.e. the action stands the test of time. The leadership ought to facilitate social negotiation of both" necessary and sufficient conditions" cited in Figure 1. The thrust for

localization is evident from the factors such as faith, accepted social norms & customs, generation gap, listening, persuasion, influence, empathy and rapport. The social and life skills of people in a limited geographical area i.e. local area show a high confidence level on such factors even at the operational levels. The evolution of computer network technologies provides a good testimony for such a feature of civic population.

4 Conclusions

The larger context of limited access to technology is more challenging. Statista, a leading global "Business Data Platform" reports that as of January 2021 there were 4.66 billion active internet users worldwide i.e. 59.5 percent of the global population. Of this 92.6 percent i.e. 4.32 billion accessed the internet via mobile devices. Civic technology is not merely building complex and wonderful applications. It has to deliver within an expected multi-stakeholder context. The genericity of social context is such that, a majority is readily satisfied with the fulfilment of the basic necessary conditions for acceptability. The sufficient conditions are seldom looked for in proceeding further in to action. Such chains of reasoning over a large sample of global populations make it appear a social norm. It is the dearth of viable and pragmatic civic online reasoning approaches that is the Achilles heel of analytics based on such approaches.

A "good measure of localization" is the quintessence of future proofing the provenance. Rapid advances in machine learning, cloud computing and data mining & analysis are poised to transform organizations and economies. They also have the potential for strengthening the efficacy of social accountability and citizen engagement mechanisms.

The traditional civic leadership has a pronounced trait or condition to cause things to happen, to have an influence, to make a difference, hopefully in a positive way. Technological leadership is not any different. A technological leader is someone who makes something happen either in the technology or aided by the technology. Future leaders ought to inculcate a deep, intense, almost intuitive feel for the technology deployment in new ways. Such a leadership skill entails creating a culture of collaboration with technology in a multi-stakeholder context for more productive internal operations and better processes to reach customers and their customers.

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