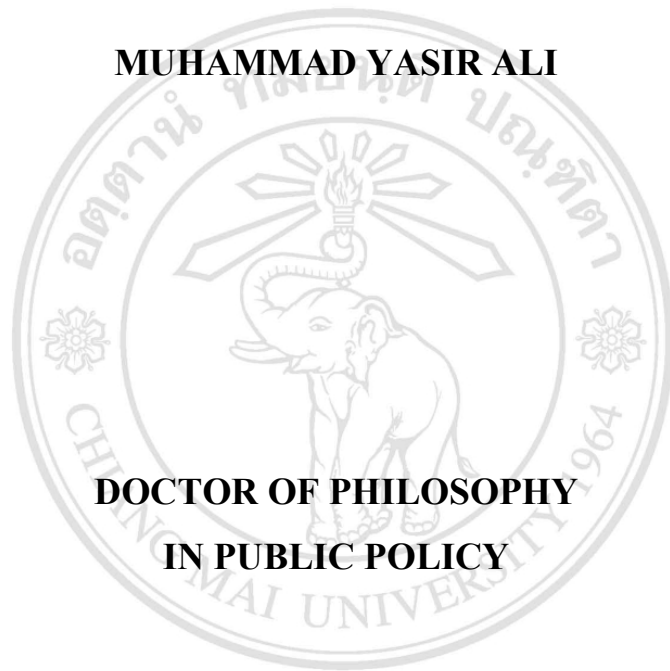


**TECHNOLOGY: DILEMMAS, ETHICS, AND  
COMMUNITIES**

**MUHAMMAD YASIR ALI**



**DOCTOR OF PHILOSOPHY  
IN PUBLIC POLICY**

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**GRADUATE SCHOOL  
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DECEMBER 2022**

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**MUHAMMAD YASIR ALI**

**A DISSERTATION SUBMITTED TO CHIANG MAI UNIVERSITY  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR  
THE DEGREE OF DOCTOR OF PHILOSOPHY  
IN PUBLIC POLICY**

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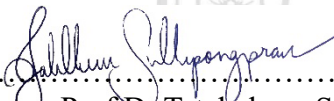
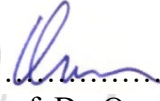
# TECHNOLOGY: DILEMMAS, ETHICS, AND COMMUNITIES

MUHAMMAD YASIR ALI

THIS DISSERTATION HAS BEEN APPROVED TO BE A PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY  
IN PUBLIC POLICY

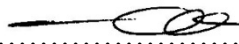
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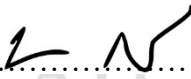
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## Acknowledgment

إِقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ ﴿١﴾ خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ ﴿٢﴾ اقْرَأْ وَرَبُّكَ الْأَكْرَمُ ﴿٣﴾ الَّذِي عَلَّمَ بِالْقَلَمِ ﴿٤﴾ عَلَّمَ الْإِنْسَانَ مَا لَمْ يَعْلَمْ ﴿٥﴾

[Al-Quran, Chapter 96, Verse 1-5]

Recite, Recite (Muhammad-Peace be Upon Him). Recite by the name of Allah who created you. Who created mankind from nothing. Recite what He taught you with his writings. Of things mankind did not know.

[Translated from “Un prophète”, 2009]

Muhammad Yasir Ali

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หัวข้อคุณูปการ	เทคโนโลยี: ภาวะอ่อนแอ แข็ง จริยธรรม และชุมชน
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### บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อพัฒนารายการเทคโนโลยีที่ก่อให้เกิดการเปลี่ยนแปลงทางสังคมวิทยาในด้านการเมือง การบริหารราชการ ความสัมพันธ์ทางสังคมและอำนาจ ทั้งที่ตั้งใจและไม่ตั้งใจ วิทยานิพนธ์นี้จำกัดขอบเขตไว้ที่การสำรวจล่าสุดของยุคเทคโนโลยี เช่น ปัญญาประดิษฐ์และไอซีที วิทยานิพนธ์ดำเนินการเป็นบทสรุปของบทความสามเรื่องที่เกี่ยวข้องกัน เอกสารฉบับแรกตรวจสอบพลังและการแทนที่ความรู้ที่สร้างขึ้นโดยอัลกอริทึมผ่านการทบทวนวรรณกรรม การค้นพบที่เด่นชัดคือประสิทธิภาพของอัลกอริทึม โดยอ้างว่ามักเป็นความเชื่อเนื่องจากในระหว่างขั้นตอนการพัฒนา ความถูกต้องของอัลกอริทึมจะถูกตัดสินโดยความใกล้เคียงของการคาดคะเนกับอุปาทานปกติ ในทำนองเดียวกัน อัลกอริทึมจำกัดความทฤษฎีทางสังคมไว้ในตรรกะของพวกเขา แทนที่จะขยายขอบเขตของการตอบโต้โดยใช้ความสามารถในการคำนวณที่ดีกว่า

ในบทความที่สองสะท้อนให้เห็นความท้าทายเกี่ยวกับคำถามเชิงบรรทัดฐานที่สำคัญเกี่ยวกับความยุติธรรมและความเป็นธรรมในสภาพการณ์ในปัจจุบันที่การเรียงลำดับเปลี่ยนแปลงและการผสมผสานระหว่างหน่วยงานมนุษย์และเครื่องจักรกลต่างๆ ซึ่งมีการผสมผสานกันมากขึ้น บทความนี้พัฒนาอนุกรมวิธานของหน่วยงานเครื่องจักรและใช้ทฤษฎีความยุติธรรมของ John Rawls เพื่อตรวจสอบว่าเงื่อนไขของความเป็นธรรมสามารถปฏิบัติตามได้อย่างไรสำหรับหน่วยงานเทคโนโลยีแบบผสมผสานแต่ละแห่ง บทความที่ 3 ตรวจสอบบทบาทของ ICT ในกระบวนการสร้างทุนทางสังคมและพลเรือนโดยศึกษากรณีการต่อต้านของพลเมืองพม่าต่อกองทัพพม่า ข้อค้นพบที่สำคัญ คือ ICT มีการพัฒนารูปแบบการใช้เทคนิคทั้งสำหรับนักเคลื่อนไหวที่เป็นภาคประชาสังคม แต่ยังคงขยายขอบเขตของเทคนิคการปราบปรามที่มีให้สำหรับระบอบการปกครองแบบรัฐเผด็จการ

ประเด็นสำคัญ คือ เทคโนโลยีไม่ได้เป็นเพียงเครื่องมือของความตั้งใจของมนุษย์ และด้วยความสามารถในการปรับขนาดอย่างมหาศาล เทคโนโลยีนี้สามารถเปลี่ยนอำนาจและความสัมพันธ์ทางสังคมระหว่างกลุ่มต่างๆ ได้อย่างมีกลยุทธ์ โดยการเพิ่มหรือลดทอนความสมดุลที่ละเอียดอ่อนที่มีอยู่ ดังนั้น คำถาม คือ การเปลี่ยนแปลงที่เราต้องการจะให้เกิดขึ้นนั้นขึ้นอยู่กับการทำนายมุมมองของนักเทคโนโลยีที่มองโลกในแง่ดีและผู้คลั่งไคล้ในเทคโนโลยีด้วยการตรวจสอบผลกระทบของเทคโนโลยีนั่นเอง



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<b>Dissertation Title</b>	Technology: Dilemmas, Ethics, and Communities	
<b>Author</b>	Mr. Muhammad Yasir Ali	
<b>Degree</b>	Doctor of Philosophy (Public Policy)	
<b>Advisory Committee</b>	Asst. Prof. Dr. Ora-Orn Poocharoen	Advisor
	Asst. Prof. Dr. Piyapong Boossabong	Co-advisor
	Asst. Prof. Dr. Panom Gunawong	Co-advisor

## ABSTRACT

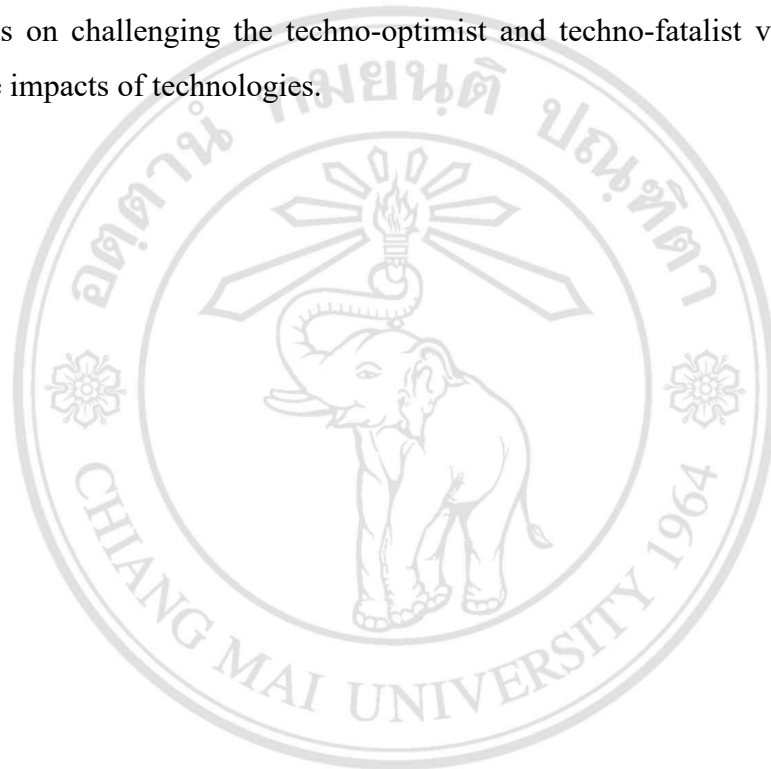
The purpose of this research is to develop a catalogue of technology enabled sociological transformation in areas of politics, public administration, social and power relations, both intended and inadvertent. The thesis limits its scope to the latest manifestations of the technological epoch i.e. Artificial Intelligence & ICT. The thesis progresses as a compendium of three interrelated papers. The first paper examines the power and knowledge displacements created by algorithms through literature review. The salient findings are the purported efficiency of algorithms is often a make belief because during the development process, the correctness of algorithms is judged by proximity of its predictions to a preconceived normal. Similarly, algorithms constrain social discourses within their logics instead of expanding the scope of debate by utilization of better computational capacity.

The second papers grapples with the essential normative question of justice and fairness in current climate where different permutations and combinations of human and machine agencies are increasingly hybridizing. The paper develops a taxonomy of machine agency and utilized John Rawls theory of justice to examine how conditions of fairness can be met for each hybrid technological agency. The third paper examines the role of ICT in processes of social and civil capital formation by utilizing case of Burmese civil resistance against Tatmadaw. The important findings are that ICT does evolve the



repertoire of techniques both for civil activists but also expands the range of suppressive techniques available to repressive regimes.

Important takeaways are that technology is not a mere instrument of human intentionality and given its tremendous scaling capabilities, it can strategically alter the power and social relations between various groups by augmenting or curtailing the existing delicate balance. The question, therefore, what transformations we want to take place, depends on challenging the techno-optimist and techno-fatalist view points by examining the impacts of technologies.



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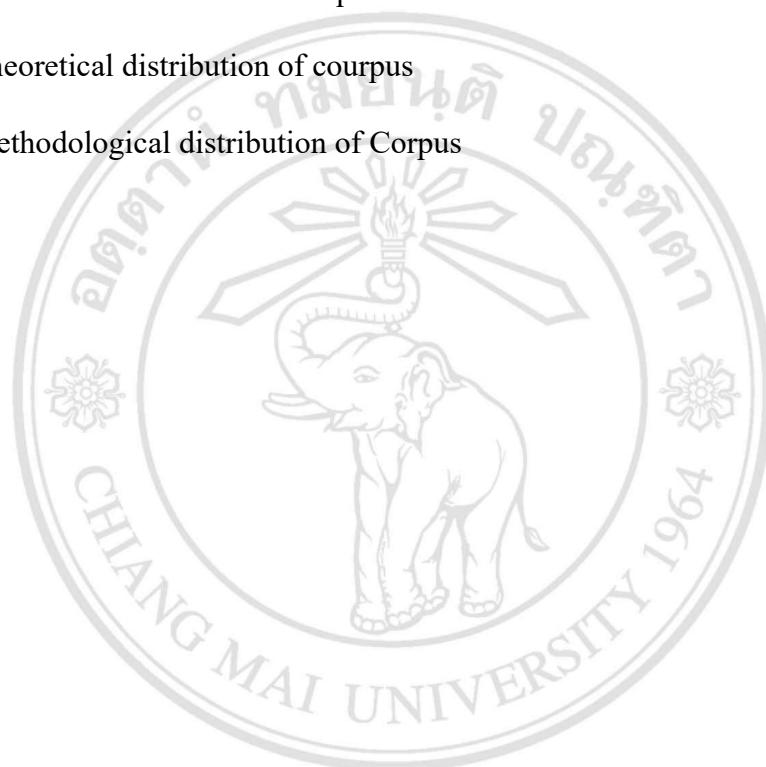
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## ข้อความแห่งการริเริ่ม

วิทยานิพนธ์นี้ตรวจสอบภาวะย้อนแย้งและโอกาสที่น่าเสนอโดยยุคดิจิทัลการรวมตัวกันล่าสุด คืออัลกอริทึมและเทคโนโลยีสารสนเทศและการสื่อสารความคืบหน้าของวิทยานิพนธ์โดยใช้เอกสารที่เกี่ยวข้องกันสามฉบับ ดังนี้

- 1) การประเมินพลังและการจัดลำดับความสำคัญของความรู้ที่เกิดจากอัลกอริทึมในขอบเขตทางสังคมการสังเคราะห์พื้นฐาน คือ สิ่งประดิษฐ์แบบอัลกอริทึมนั้นอยู่นอกเหนือเครื่องมือของความตั้งใจของมนุษย์อย่างมากและสร้างสคริปต์ทางเทคโนโลยี ซึ่งแทนที่อำนาจและความรู้ในรูปแบบที่คิดไม่ถึง ดังนั้น จึงเป็นเรื่องสำคัญที่จะต้องตรวจสอบสิ่งประดิษฐ์ดังกล่าวจากมุมมองทางสังคมและทางเทคนิค หากเราต้องการบรรลุปฏิญญาที่อ้างว่าสิ่งประดิษฐ์ดังกล่าวจะมอบให้
- 2) จริยธรรมของนวัตกรรมทางเทคโนโลยี/อนาคต โดยเฉพาะอย่างยิ่งกับมุมมองที่พัฒนาของการอยู่ร่วมกันระหว่างมนุษย์และหน่วยงานเครื่องจักร นำเสนอคำถามที่สำคัญเกี่ยวกับอนาคตและสวัสดิการของมนุษย์โดยรวม การค้นหาเกณฑ์ที่แน่นอนและมีวัตถุประสงค์เพื่อใช้เป็นเกณฑ์มาตรฐานสำหรับนวัตกรรมทางเทคโนโลยี/อนาคตเป็นการดำเนินการที่สำคัญ ด้วยการนำเสนอเกณฑ์ที่เรียกว่า Rawlsian of Justice as Fairness ซึ่งเอกสารนี้ได้รับการพิจารณาด้านจริยธรรมโดยใช้เกณฑ์นี้สำหรับการอยู่ร่วมกันที่หลากหลายของหน่วยงานเครื่องจักรและมนุษย์
- 3) เทคโนโลยีสารสนเทศและการสื่อสารได้รับการยกย่องว่าเป็น SAMIZDAT ในยุคปัจจุบัน อย่างไรก็ตาม สิ่งสำคัญ คือ ต้องตรวจสอบข้อเรียกร้องดังกล่าวในเชิงประจักษ์ บทความนี้ใช้ประโยชน์จากกิจกรรมการเคลื่อนไหวของภาคประชาสังคมในปัจจุบันของเมียนมาร์และการใช้ ICT เพื่อดูว่าจะมีการเปลี่ยนแปลงเมตริกซ์ต้นทุนและผลประโยชน์ที่มีอยู่ระหว่างเจ้าหน้าที่และนักเคลื่อนไหวได้อย่างไร ตลอดจนรูปแบบการพัฒนาของเทคนิคการสื่อสารที่นักเคลื่อนไหวทางสังคมและเจ้าหน้าที่ใช้ในการดำเนินงาน

## STATEMENTS OF ORIGINALITY

This dissertation examined the dilemmas and opportunities presented by the digital epoch, the latest manifestation of which are algorithms and information & communication technologies. The thesis progress by means of three interrelated papers, as outlined below:

1. Assessing the power & knowledge reprioritizations caused by algorithms in the social realm. The basis synthesis is that algorithmic artefacts are vastly beyond the mere tools of human intentionality and create technological scripts which displaces power and knowledge in hitherto unimaginable ways. It is pivotal therefore, to examine such artefacts from a socio-technical perspective if we are to attain the purported promise that such artefacts are assumed to confer.
2. Ethics of technological innovations/futures, especially with the evolving vistas of symbiosis between human & machine agency, presents important questions w.r.t. future & welfare of human collective. A search for a definite and objective criterion against which to benchmark technological innovations/futures is an important pursuit. It is proposed that Rawlsian criteria of Justice as Fairness presents one such criteria. The paper than derives the ethical considerations using this criterion for a varied symbiosis of machine-human agency.
3. Information & Communication technologies have been credited to be the SAMIZDAT of the present age. It is important however, to empirically examine such claims. The paper utilizes the current civic activism in Myanmar and use of ICT to see how it alters the existing cost and benefit matrix between the authorities and activists as well as the evolving repertoire of communicative techniques employed by the activists and the authorities.



# CHAPTER 1

## Introduction

### 1.1. Digital Era Governance

Any description of functioning of government features discussion of data, technology and technologically enabled affordances with a frequency that has almost assumed the proportion of a cliché. This attests to the nativity of technology for human species (colloquially summarized in an aphorism *homo digitalis*) and larger than life influence that technology will play in shaping the meaning of government for foreseeable future. Discourse over the topic on the other hand, transverse the entire range of spectrum from utopia to dystopia, with cautious optimism and fatalistic acceptance of digital eventuality falling in-between.

The advances in computation capacity, generation, storage, retrieval, transmission and processing of information have collectively been termed as “Fourth industrial transformation”. The state of utter non-convergence over the topic is not entirely surprising. It is owed to unavailability of historic analogs of transformation of basic institutions of human social organization, at such a gargantuan scale, in as short a time as couple of decades. This cataclysmic change over very short duration precludes incrementalism and path dependence, two primary stock responses of human beings to change.

As is the case with any emergent paradigmatic shift, there are vast discrepancies in potential and actual adoption, use cases, cross-sector advances, subnational & cross-national differences. All of these are predicated upon differences in state of the collectivity, at the time of technological penetration. Based on this intense panoramic hue of differences, it creates momentous difficulties in fashioning a description of scenarios which has some predictive relevance yet adequately account for difference as well.

Despite the topical variations cited above, technology however would remain a major mode of organizing human societies and a major tool of work. This expansive and sweeping sway has lasting impacts on the nature of government, the possibilities of its work, state and citizen relations, habits of thought and mind, mediated by transformations enabled by technology. All of these make it a fruitful and interesting area of research endeavor. However, technology and technological affordances are creating immense complexity due to their rate of evolution. Technologies per se are tools and therefore continuous readjustment, evolution and complexity to cater to emerging social needs and expectations creates a vast difference in technological specification and thus their ramifications. This complexity, added to the scope of its application, its ability to enact unanticipated or unprecedented influences in complimentary or even entirely unrelated subnational, national or supra national political, social, economic and ecological systems make it a very dynamic system, warranting a close scrutiny of this phenomenon. The collective study of technology and its role in governance processes, resulting implications and attendant transformations constitute the field of Digital Era Governance”.

## **1.2. Epochs of Digital Governance:**

### **1.2.1. New Public Management to Digital Era Governance 1st wave:**

Digital era governance emerged out of new public management, which has been likened to a quasi-paradigmatic shift as espoused in Kuhnian paradigms of scientific revolutions. Various isolated developments of budgetary deficits, fiscal austerity, perceived waste and loss in government services, lack of agility and ability to cope with complex and flexible demands among other reasons, ushered in the era of new public management. It replaced the pre-existing managerial paradigm to introduce market oriented reforms in public work and government reorganization. Albeit with significant regional variations, some major tools and methods of new public governance paradigm were: flattened hierarchies in public bureaucracies, profit and loss reporting of public enterprises, public private partnership, management by objectives, calculable

performance measures, focus from inputs to outputs, customer orientation, marketization and privatization. New public management paradigm remained a major theoretical perspective from 1980's to early 2000's when the digital era governance started emerging as a quasi-paradigm.

Unrelated development in technology most importantly information & communication technologies along with computational capacity, speed of communications and popularization of world wide web ushered in the era of first wave of digital era governance. This new digital paradigm was diametrically opposed to new public governance in salient ways. First that it emphasized reintegration of public services (as opposed to marketization, privatization or disaggregation under new public management). Digital era governance enabled thus due to platform affordances of information and communication technologies to foster genuine cross silo work collaborative arrangements, reducing costs due to speed and flexibility of communication and elimination of hierarchical duplicities. Secondly, platform architecture and affordance of information and communication technologies to foster cross silo collaboration and citizen co-production presented more efficient tools than non-digitalized new public management paradigm to reorganize public work as per citizen centric needs and demands. Thirdly, information and communication technologies entirely fused the government because of ease of interaction with citizens and clients, low cost of communication, ease of aggregation of feedback and major disintermediation of government services enabled through “do-it-yourself” government.

### **1.2.2. Digital Era Governance 2nd wave:**

Second wave digital era governance exacerbated the existing trends of reintegration, citizen centralism and digitalization albeit with marked variations from the first wave of digitalization. These disparate and diverging impact have been cited to emanate partly from enhanced digital capacity and maturing of digital government, but also in part to database effects. For example, reintegration in first wave was nominal as compared to the second wave because enhanced digital capacity and digital maturity enabled a fundamental reorganization of government services which helped to eliminate

duplicate delivery channels. Also, information retrieval and crowd effects enabled to explore alternative delivery channels with ease hitherto not possible. It enabled to achieve the new public management objectives of austerity and elimination of waste and bloat or unresponsive public organizations in a much better fashion than the tools offered by new public management in pre digital era. In term of citizen centrist 2<sup>nd</sup> wave of digital era governance exacerbated the trends of work reorganization precipitated by the first wave.

For example, on back of cross cutting cost free informational effects of information and communication technologies, it enabled jointed up delivery and merging of delivery channels by enabling experimentation with directorate structures of work rather than conventional departmental organization of work. It enabled to reorganize the work with respect to defined outputs or outcomes and enabled cost savings in terms of removing of multiple bureaucracies by enabling budgetary resource pooling, shared expertise or even executives. Besides, it created better accountability of public executives in terms of objective attainment and reduced opportunities for blame shifting across government agencies.

### **1.2.3. Algorithmic Governance?**

The latest technological manifestation in public services is employment of artificial intelligence. Artificial intelligence is essentially defined as “development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.”

Trends exacerbated by digital era governance of more responsive, joined-up, coproduced, responsive, agile government on the demand side and outcome driven, evidence based, fiscally positive government on the supply side, ushered in adoption of artificial intelligence in the government. The underlying technological advances underpinning this era is massive treasure trove of digitally readable human data, advances in computational and processing capacity to gather, sift, & analyze that data (collectively referred to as big data), successful use case in private sector enabled in the

massive adoption of artificial intelligence applications in government sector. The scope of this technological epoch can be identified by range of application from environment management, healthcare, justice system etc.

Artificial intelligence is not new phenomena but instead enjoying a second spring. After an initial promising progress in 1950's, it has made a comeback of late in new millennium due to many composite forces, few of which are cited above. However, the public road to AI adoption hasn't been one which is smooth or lacks its fair share of naysayers. Vast diversity in governance systems & capabilities and functions of government adds a further complexity to the study of this area. The increasing importance of this area of study can be gauged by rapid increase in publications, call for papers, conferences and various other scholarly activities dedicated to this area.

Artificial intelligence offers promising prospects of vastly transforming the government but this exactly emphasizes why it warrants a much closer scrutiny. An artificial intelligence application in commercial setting can be detrimental to one's right as consumer, however, when a juridical entity e.g. a government adopts an artificial intelligence solution, it can deprive a person his right as a citizen. Based on these reasons, there has been much scholarly interest in studying of artificial intelligence in government and rightly so, however, as any new area of study the insights are not synthesized in a holistic framework of understanding.

Two thesis structures are approved by PhD program at School of Public Policy, Chiang Mai University. Classic structure follows a traditional format of a book length thesis whereas alternative structure allows the thesis to be written as a compendium of three interrelated journal article length papers on a singular theme, each of can be read as a standalone paper. I have opted for the latter approach and have written three papers about the role of technology in social transformation, the normative criterion to guide such transformations and how technologies hinder or foster processes of civic capital formation.

The first paper, which comprises the Chapter 2 of this thesis, examines how artificial intelligence solutions displaces existing norms and values after embedding into existing structures of social roles and function, what kind of normative displacements it

creates, what kind of knowledge reprioritizations it generates and how effective/practicable are the purported remedies of Accountability, Transparency & Privacy. The primary aim of this essay is to critically examine the techno optimist and techno dystopian rhetoric surrounding the artificially intelligent solutions. Methodologically, the papers progresses by way of critical and interpretive literature review of scholarly enterprise surrounding artificially intelligent solutions. The paper serves the additional aim of synthesizing research findings on a newly emerging technological epoch characterized by algorithms.

The second paper, which comprises the Chapter 3 of this thesis, takes up the essential question regarding the need of normative framework to ethically navigate the progressively evolving machine agency. The age of machines which can mimic human cognitive abilities is already upon us. However, the ethical guidance regarding such capacities is scarce and patchy. The article attempts to fill this fundamental gap by proposing that John Rawls' Theory of Justice provide one such criterion to evaluate evolving machine agency from perspective of collective human well-being. The paper aims to contribute to the debate by expanding the examination of intelligent machines form perspective of justice besides the oft employed criteria of effectiveness, efficiency, fiscal prudence, business necessity etc.

The third paper, which comprises the Chapter 4 of this thesis, takes up empirical examination of how affordances of Information & Communication technology contributes to or hinders civic capital formation and collective action. The paper employs the case of civic activism that crystallized in wake of coup d'état in 2021 in Myanmar. The paper examines the conditions under which weak social ties generated by ICT crystallize real life participation. The paper tries to identify causal pathways and cognitive heuristics that systematically differentiates the activists who rely on ICT for information consumption as opposed to those who utilize traditional means of information.

## CHAPTER 2

### Artificial Intelligence & Knowledge Displacements: A Literature Review

#### 2.1. Introduction

Like any emerging phenomenon, e.g. artificial intelligence, it is difficult to fashion a deterministic definition that accurately captures all important aspects across all empirical cases. Artificial Intelligence, broadly speaking, is defined as mimicking of human cognitive abilities by machines to perform tasks that are considered uniquely human, most importantly learning, reasoned decision making, linguist ability, reflexive examination of its own logic etc. among others. History of artificial intelligence is entwined with human pursuit of reason and earliest iterations of artificial intelligence can be found in middle ages through invention of mechanical devices like “Zairja” and its derivate like “Ars Magna” (Cohen, 1966). These mechanical devices operated by assigning numeric values to the alphabets in the question phrase based on alphanumeric *cypher*, thus converting the question to an algebraic expression. Then performing specified algebraic interpolations to arrive at an answer to the unknown questions (McCorduck, Minsky, Selfridge, & Simon, 1977). Interestingly, modern algorithms work on similar principles with alphanumeric cypher replaced with data analogues of relevant behaviour and algebraic interpolations with discovery rules of Inferential and Bayesian statistics.

AI had its modern origin in fictional works of Issac Assimov proposing three laws of robotics (Asimov, 1941) and mathematician Alan Turing examining the possibility of intelligent machines (Goncalves, 2022). Artificial intelligence has had multiple springs and winters, intermittent periods of hyped optimism and subsequent technical stumbling blocks. Summer research project on artificial intelligence at Dartmouth College in 1956 formally founded the research paradigm and coupled with governmental need for automated machine translator, a slew of funding was procured which ushered in fist AI

spring. However, the government assessment of developments in machine language processing ability was fairly poor and it put an end to government support for AI in USA (Automatic language processing Advisory Committee, 1966) whereas, UK following suit few years later (Lighthill, 1973). Second spring of AI started in Japan in 1970's with need for narrow AI expert systems for industrial processes (Ishii & Hayami, 1988) and saw subsequent interests from governments in USA and UK. This second spring oversaw development of LISP machines which pioneered applications like laser printing, graphic user interface, automatic memory management (Tanimoto, 1987). However, by the time these capacities were developed, the computational capacities of average computing devices rendered these advances useless and thus a new AI winter began. However, some promising results in this era were development of Dynamic Analysis & Replanning Tool (DART) which vastly outperformed human planners in logistical operations in chaotic environments and repaid all the investment made by US government in artificial intelligence since 1960's (Li & Tang, 2008). Third AI spring began in 2000's with exponential gains in computational and processing capacities, cloud architecture, proliferation of machine readable digital big data, Digital resources democratization like world wide web, information and communication platforms which continues unabated presently. Artificial intelligence based applications bring unprecedented opportunities to bridge information asymmetries in evidence based policy making, resource allocation, accounting for externalities across policy sub-systems and other complex issues of public choice. Artificial intelligence enables thus by learning and co-evolving design rules with dynamic pattern discovery across multiple policy realms, powered by advances in computational and scaling capabilities. These effects have inspired aphorisms like "data is the new oil" or "fourth industrial transformation" which are not entirely misplaced. The impact of artificial intelligence applications can be gauged by their scope of application in policing resource allocation and deployment, judicial decision making assistance, military applications, medical diagnosis, disaster management, environmental protection, natural resources management, attainment of MDG's, employment and hiring decisions, political communication etc. among other uses.



Despite these purported allocative efficiencies, critics argue that public realm is a venue where transparency about how inputs are transformed into outputs is of critical importance (Stiglitz, 2002) and artificial intelligence based decision and allocations are opaque. Another important concern is the underlying data over which artificial intelligence operates and that data is encapsulated socio-historic patterns of privileges and exclusions (Barocas & Selbst, 2016), thus basing the decisions on such data perpetuates these patterns. Another common concern is procedural fairness in generalizing group based characteristics to an individual especially in cases where negative outcomes are assigned etc. These and other negative externalities of artificial intelligence has spurred forth substantial deal of normative literatures about how to cope with these dilemmas and the prescriptive norms of accountability, transparency and privacy has been suggested widely. Artificial intelligence offers promising prospects of vastly transforming the government but this exactly emphasizes why it warrants a much closer scrutiny. An artificial intelligence application in commercial setting can be detrimental to one's right as consumer, however, when a juridical entity e.g. a government adopts an artificial intelligence solution, it can deprive a person his right as a citizen. Based on these reasons, there has been much scholarly interest in studying of artificial intelligence in government and rightly so, however, as any new area of study the insights are not comprised in a holistic framework of understanding. Literature surveys fulfil this scholarly need of synthesizing newly emerging findings into composite framework of findings which serve a foundation for further scholarly work to build upon. This paper deals with conducting a systematic literature review of political, social, administrative and legal dilemma that adoption of artificial intelligence crystallizes. Artificial intelligence is ubiquitous in private sector, yet gaining pace in public sector too. There is plethora of literature that examines various aspects of artificial intelligence in public sector, however, the aim of this paper is to go beyond the stock responses of transparency, privacy, accountability, black boxing or data issues of AI applications but instead examine various ways in which regulatory conflicts emerge during the social enactment of artificial intelligence applications.

## **2.2. Data & Methodology:**

Consistent with the scope of the article, which is to synthesize the findings on how legal, political, administrative & social conflicts emerge as AI and algorithms are increasingly embedded into the milieu of human societies, the most obvious methodological choice is a systematic literature survey. Following the heuristics proposed by Kitchenham (2004) on how to organize a systematic literature review to maintain objectivity along the process, we follow the following steps:

- a. Literature Identification.
- b. Literature Selection.
- c. Literature Relevance.
- d. Data Generation & Synthesis

### **2.2.1 Literature Identification:**

In this step the scope of the study is defined which are consistent with the objectives of the study. This in turn leads to ask precise questions that help identify relevant literature. Since the objective our study is to go beyond the standard descriptions of artificial intelligence, its perils and stock remedial responses of transparency, accountability and Privacy, we want to examine the dilemmas that arise at the intersection where the artificial intelligence negotiates with the existing practices, norms and interests. This leads us to formulate our questions as follows: How artificial intelligence negotiates with the existing legal, Political, Bureaucratic and normative regimes in era of algorithmic governance? How these negotiations lead to redistributions of resources and values across different social institutions and actors? What kind of displacements such renegotiations create? What implications does it have for the human agent, both as an individual and the human collective? What are the suggested remediation? Are these effective?

### **2.2.2 Literature Selection:**

At this stage, we define the literature selection and its justification for inclusion in light of the questions defined in the earlier section. Since we want the selection process to be as exhaustive as possible, we select Digital Government Reference Library

(DGRL), SCOPUS, Web of Science databases, further to be complemented by Google Scholar. Additionally, as we want to also see the implications of algorithmic governance on the Law, we include Law Review Commons database to our selection set of databases. SCOPUS and Web of Science are comprehensive databases catering to all disciplinary areas, therefore, scope of search was restricted to disciplines of Politics, Public administration & Policy, Sociology, Library Sciences, Business, Communication and International Affairs. Important to note that DGLR and Law Review Commons are specialist databases dealing with technology in government and the Law respectively, therefore, no discipline restrictions were required. The temporal scope of the study was restricted from 2010 onwards. The temporal scope is justified on the account that Artificial Intelligence is quite a recent phenomenon and queries extended beyond 2010 yield little fruitful results. The search results were also restricted by type of research to Journal Articles and Conference Proceedings. Having decided on databases, the next important step in this process is the selection of keywords to generate set of relevant literature. After a brief scoping review, a list of keywords was identified, appended in the Table below (Table 2.1: Search Keywords).

**Table 2. 1 Search Keywords**

<b>Database</b>	<b>Keyword</b>	<b>Boolean Modifier</b>
SCOPUS, Web of Science, DGRL, Law Review Commons	Normative, Ethic, Law, Legal, Social, Politic, Governance, Culture Algorithm, Big Data, Artificial intelligence, AI, machine learning, deep learning, reinforcement learning, supervised learning, unsupervised learning, neural networks, natural language processing	The modifier for Keywords within each cell was “OR” and across cells was “AND”

The process of searching the selected databases concluded at the end of August 2021 with yielding a total of 350 search results. For the generalized databases i.e. SCOPUS, DGLR & Web of Science, top 100 most relevant results were selected whereas for La Review Commons, top 30 most relevant results were selected. The distribution of search results across databases was as follows: DGLR (100 results), Web of Science (100

results), SCOPUS (100 results) & Law Review Commons (30 results). After removal of 42 duplicates, the final studies identified were 288. This was then further complimented by addition of 10 most relevant studies from Google scholar that were not identified before, revealing the final selection set of 298 studies.

### **2.2.3 Literature Relevance**

The next stage was to ascertain the relevance of the final selection of studies to the proposed questions for this literature review. The abstract of all 298 studies were carefully examined to reveal their relevance to the following questions: The study should have an explicit focus on algorithms and their underlying technologies on areas of law, politics, public policy & administration and socio-cultural norms. The study should examine how algorithms as socio-technical assemblages compete with existing concepts, practices, norms and values? The study should identify sites of such dilemmas and value conflicts along with description and technics of how such conflicts arise? The study should go beyond stock descriptions and present novel take on these dilemmas or already proposed existing normative prescriptions? Given the above scope, finally 30 studies were revealed that met the above cited criteria. The primary reason for drastic reduction in number is owed to the fact that many studies employ pre-existing prevailing frames about artificial intelligence e.g. most notably black boxing, data or developer biases, prescriptive norms of accountability, transparency and privacy, procedural nature of justice etc.

### **2.2.4 Data Generation & Synthesis:**

At this stage, each study in final selection set is studied in detail and its finding organized in a systematic manner. To keep the manner of data capture consistent across all studies and focused on objectives of the literature review, we developed a template to ensure commensurability of information captured across the selected literature as well as their consistency with the objectives of the literature review identified in section 2.1. The data fields of the template and their description is captured in Table 2.2: Data Template.

**Table 2. 2 Data Template**

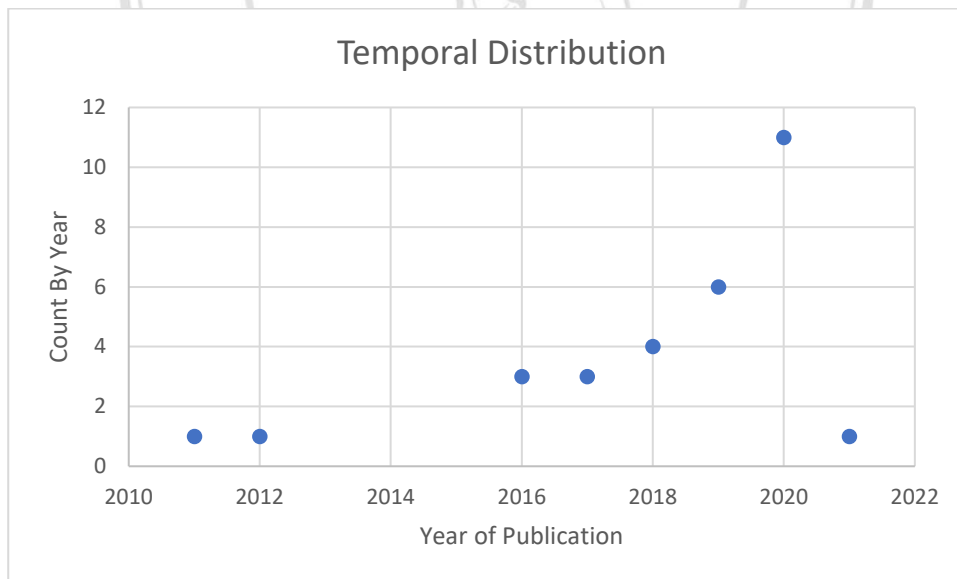
<b>Category type</b>	<b>Data Field</b>	<b>Content Description</b>
<b>Descriptive Information</b>	<b>Serial Number</b>	<b>Number of count</b>
	<b>Reference</b>	<b>IPA citation of the study</b>
	<b>Year</b>	<b>Year of Publication</b>
	<b>DOI</b>	<b>Distinct Object Identification</b>
	<b>Keywords</b>	<b>Words of indexation for study</b>
<b>Methodological Information</b>	<b>Research Question</b>	<b>What is the main research question of the study?</b>
	<b>Theoretical Framework</b>	<b>What theory has the study utilized and how?</b>
	<b>Methodology</b>	<b>What is the methodology adopted by the study?</b>
<b>Thematic Information</b>	<b>Value Dilemma</b>	<b>What value conflict has the study identified?</b>
	<b>Area of Value dilemma</b>	<b>What area (Political/ Social/ Administrative/Legal/ Normative) does the dilemma pertain to?</b>
	<b>Mechanism</b>	<b>How that dilemma comes about?</b>
	<b>Implication</b>	<b>What the implications of that particular dilemma?</b>

After capturing the information exhaustively in the above template for each study selected for detailed exposition, the synthesis step was rather automatic i.e clubbing together of the studies by areas of value dilemmas.

## 2.3 Findings & Analysis

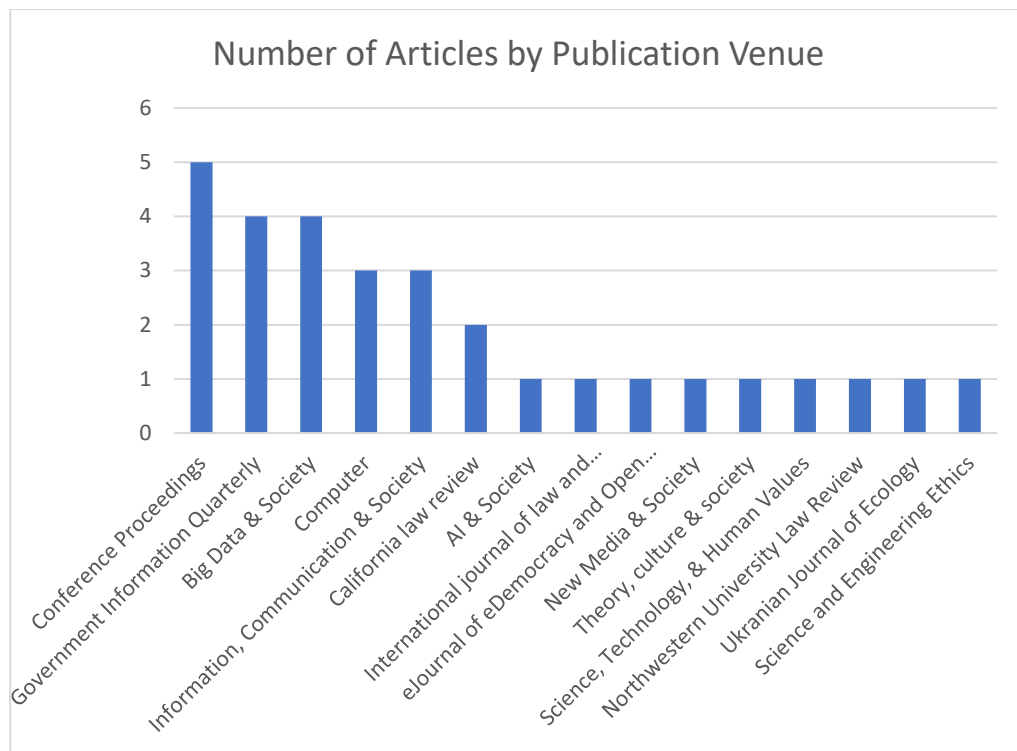
### 2.3.1 Descriptive Analysis

This section contains the descriptive analysis of the corpus that made the final sample of 30 studies. It analyses the Temporal, Thematic, Theoretical, Methodological and Journal/Conference wise distribution of the corpus of literature analysed for this study. Figure 2,1 represents the temporal distribution of the corpus, starting from year 2010 which was identified as cut-off point. As the graph illustrates, the study of artificial intelligence is gathering pace in recent years with highest number of publication in year 2020. Year 2021 shows only 1 publication but that is owed mainly because data was collected in mid-year 2021. This indicates two main findings: One that artificial intelligence is going to remain fruitful enterprise for research and two that more findings about implications of artificial intelligence as to how it interacts with other regulatory regimes is accruing considerably.



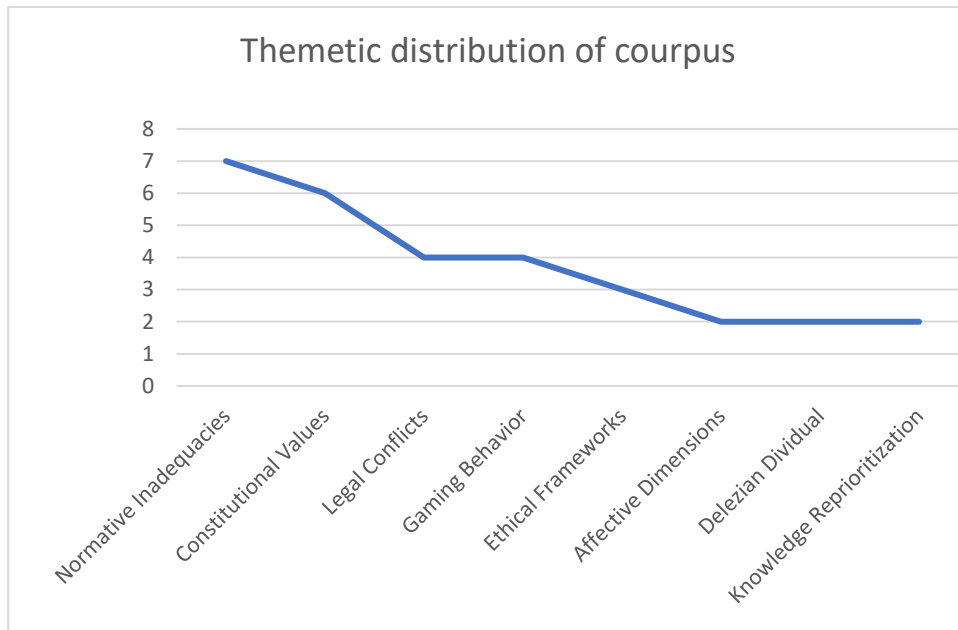
**Figure 2. 1 Temporal Distribution**

Figure 2.2 represents the distribution of the selected corpus by publication venues. Predictably, majority of AI related work gained traction in technology related conferences and technology focused journals with Government Information Quarterly and Big Data & Society Journal leading the pack.



**Figure 2. 2 Number of Articles by Publication Venue**

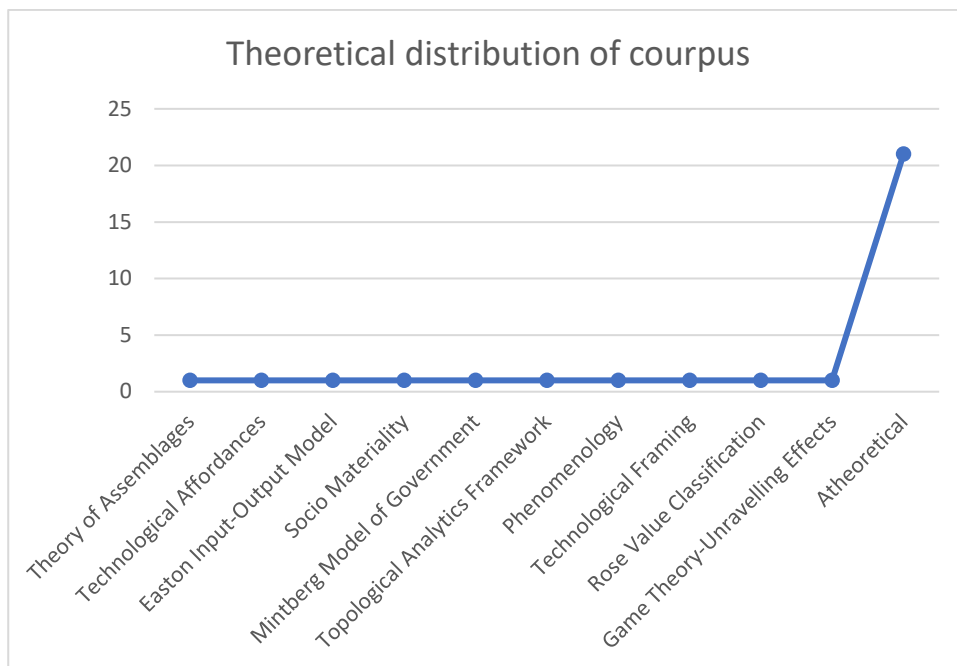
Figure 2.3 represents the thematic distribution of the selected corpus of research. Most of the studies in the corpus are focused on inadequacies of normative remedies of transparency, accountability and privacy followed by AI level policies conflict with constitutional values. Similarly, impacts of AI on practice of law is another prominent area of research interest followed by how various AI solutions are prone to pernicious forms of gaming behaviour and impacts of the same by various actors.



**Figure 2.3 Themetic distribution of courpus**

Figure 2.4 represents the theoretical lens employed by the corpus. As its evident, majority of the work is atheoretical relying upon empirical gathering of insights and there is no clear convergence regarding theoretical choices. It is evident of newly emerging interest and non-cumulative trends in a nascent field of study which is artificial intelligence.

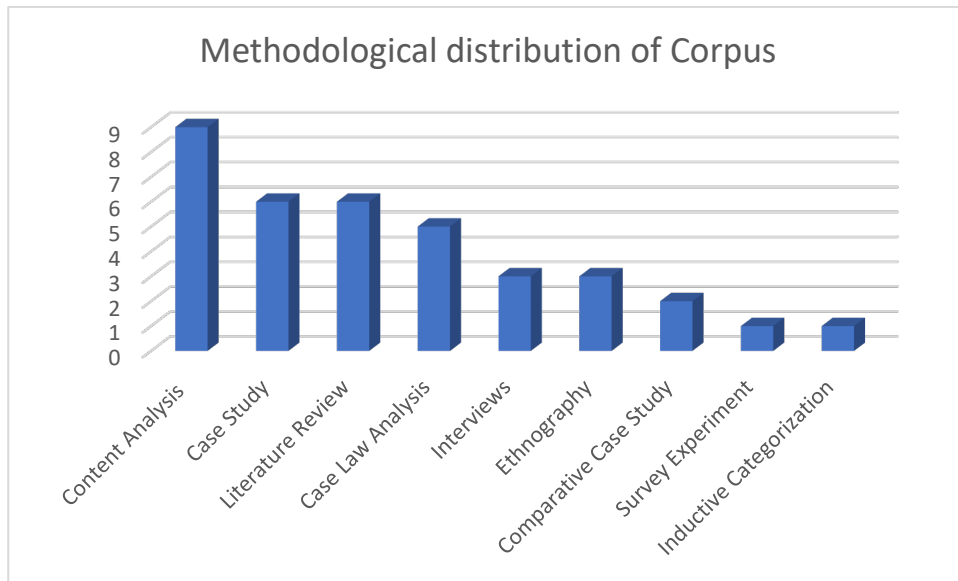




**Figure 2. 4 Theoretical distribution of corpus**

Figure 2.5 represents the methodological lenses adopted by the studies that form the corpus. As it is evident, majority of the work employs content analysis followed by case studies and literature reviews. It comports well with the nascent and emerging field of artificial intelligence which has not yet consolidated and matured enough to form a consistent theoretical foundation. An interesting aspect of methodological distribution is that case law analysis pertaining to artificial intelligence presents a fruitful pursuit to yield interesting insights about ambiguous nature of artificial intelligence.

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**Figure 2. 5 Methodological distribution of Corpus**

### 2.3.2 Thematic Analysis

#### 2.3.2.a Legal Dilemmas:

Artificial intelligence applications create multi-faceted legal dilemmas and value conflicts. Owing to limitations of selection process, the following findings are not exhaustive but instead limited to the findings that arose during surveying and selection of literature. However, inclusion of case law analysis provides a productive venue of generating new insights into nature and function of artificial intelligence supported assemblages and resulting legal dilemmas.

No Privacy future: Peppet (2011) raises an interesting prospect of how ubiquitous data and artificial intelligence mutually facilitate normative transformation of the society into a no privacy society. Relying on game theoretic conception of “unravelling effects”, Peppet argues that ubiquitous data and related technologies present tremendous opportunities to bridge information asymmetries and moral hazard in market for services like insurance. People can voluntarily choose to communicate hitherto private information about their health, behaviour, lifestyle choices, driving patterns etc. which companies can then use to price their products better. People having better health records

thus have an incentive to share their medical records which can result in lowering of health insurance premiums. This in turn has unravelling effect where people who withhold private information are naturally accorded a “high risk” treatment, thus creating a perverse incentive for keeping one’s information private. This results in a situation where no arena of private life remains private. Empirically, unravelling is taking place in markets for automobile insurance whereby people are willing to place real time trackers in their cars. This illustrates the vacuity of prescriptive norms like privacy for artificial intelligence enabled assemblages which facilitate a norm convergence in a way that makes prescriptive remedies like privacy ineffective.

Labour Market Discrimination: For a particular employment decision to be proved discriminatory towards an individual or protected group, Labour market anti-discrimination laws generally rests upon two standards of proof: Is there a demonstrable intent to discriminate? In the absence of first, is there an adverse disparate impact for minority/protected classes of people? Demonstrable intent to discriminate relies on establishing that conduct during a particular employment decision discriminated against a particular individual. Given the information asymmetry between the applicant & the employer and peculiarities of the hiring process, it is often quite difficult to establish. Disparate impact doctrine on the other hand relies on evaluation of a series of employment decision to ascertain if it collectively disadvantages a particular class of people in hiring outcomes. Owing to information asymmetry in employment decisions, the best hope most often is disparate impact doctrine. Artificially intelligent hiring support systems have gained widespread acceptance in many jurisdictions on their perceived predictive accuracy for future employment outcomes and thus conferred legitimacy on account of business necessity. The mutual effect of these laws and acceptance of business necessity for use of hiring algorithms render the claim of any discrimination effectively unchallengeable on account of disparate impact doctrine. An additional concern is that the databases upon which such algorithms operate and generate statistical inferences, have aggregation of socio historic biases embedded into them. This aspect along with proprietary nature of data and design that algorithms use, almost effectively renders labour market decisions unchallengeable.

Market Implications: Regulatory guidelines on merger of businesses operates on assumptions that are entirely inapplicable to the markets of data and technology, which are a recent phenomenon. Miller (2019) presents a detailed expose of merger guidelines and how they are ineffective to combat the emergent properties of markets for data, technology and algorithms. Prevalent approach of market competition regulators has been that mergers between firms competing in same markets or same goods impedes competition (thus adversely effecting consumers) and therefore such mergers have been a primary consideration of competition regulators. However, the definition of data, algorithms based upon it, social media platforms etc. can easily betray classical definition of goods or geographic markets. In many cases, access to particular kind of data can confer position to a single player to entrench himself in market, establish barriers to entry for other competitors or exact exorbitant pricing. Current global practices of data/technology related companies operating in different geographic location and poorly defined service markets makes current competition guidelines ineffectual. An interesting and related aspect is how the classical conceptions of valuations of businesses in terms of market share are entirely inapplicable to data/algorithm or technology markets. Presently, market concentration is computed through dollar-value measurements to determine market concentration (Herfindahl-Hirschmann Index). However, in markets for data or social platforms that generate data or algorithms based upon such data, dollar value measurements are neither computable, nor an appropriate measure. E.g. data or social media interactions is driven through “attention or interaction” computed through time. Therefore, the most appropriate measure of market concentration should be proportion of aggregate attention in such markets as advocated by Wu (2018).

Merging boundaries of legal concepts and definitions: Long standing legal definition of concepts that serve as cornerstone of justice are challenged by shape shifting, amorphous and ambiguous nature of data driven services and algorithms. E.g. Vasiliev, Pechatnova & Mamychev (2020) examines the legal vacuum in Russian legal institutions created by rapid evolution in digital ecology and its embeddedness in public and civil life. Undertaking a comprehensive case law analysis in Russia, the article exposes a pernicious legal dilemma that fixed geographic jurisdiction of court poses. The article presents two landmark cases in which amorphous nature of digital ecology and its

attendant dilemmas came to the fore. In one case, an applicant filed a lawsuit of breach of privacy against ads placed by google which corresponded to his communication. Trial court rejected the claim basing its decision on the inapplicability of the jurisdiction of the court on a foreign corporation. In another case regarding bankruptcy proceedings, obligor was denied the request for password for crypto wallet based on the fact that Russian civil rights do not extend to crypto currency, thus crypto currency and its transactions lay outside the legal field of Russian federation. Both these decisions were overturned in higher courts and facing further legal challenges. Both these cases provide an instructive account of how conventional notions of law applicable to well defined geographic jurisdiction often fails to take into account the evolving nature of digital ecology that betray easy geographic demarcation. Similarly, algorithms and their products create amorphous boundaries regarding personal effects and assets which classical notions of law are incapable to account for.

### **3.2.2.b Public Administrative Dilemmas:**

The ubiquitous presence of algorithms and platform technologies enabled by big data create multiple paradoxes for exercise of public administration. The following section appends salient finding on this topic that arose within the limitation of this corpus selection.

a. Reprioritization of Knowledge & Work: Evolving tools of public work and their attendant socio material aspects redefine the citizen and their needs. Vogl (2020) makes an interesting observation that the 1<sup>st</sup> generation information and communication technologies (ICT's) essentially transformed the nature of street level bureaucrats' work. Only form of knowledge that was compatible to the modality of ICT was tabular and structured data, with distinct categories of identification amenable to the ICT prompted templates. This resulted in transition of nature of work from relational to categorical where essential task was filling of standardized templates taking the bulk of workers' time. It deprioritized forms of knowledge that was difficult to codify or did not conform with data categories, mostly intuitive and tacit knowledge acquired through observations over a long period of time. This changed the nature of work of street level bureaucrats'

to more administrative nature where the primary concern was filling of databases and checking boxes. Algorithms that can utilize unstructured or text data can once again facilitate the transition in the utilizable categories of knowledge and change the nature of public work from categorical to relational. However, algorithmic mode of governance will facilitate its own forms of reprioritization of knowledge categories and its attendant revisualizations.

b. Performance Management & Algorithmic Governance: Goals of public administration are often intangible as they are subject to ontological and discursive battles of problem definitions and solutions, feedback loops from previous policy choices, emerging knowledge and changing political priorities. All these conditions enable potential for continuous redefinition of goals and resultantly, evolving means and parameters of performance measurement. Oftentimes, inputs/outputs/throughput of tools of work become performance measurement tools. This problem is exacerbated manifold in era of algorithmic governance. Algorithms, by their architecture and design, are highly dependent on the data input to generate accurate statistical inference or decision rule. More importantly, depending on the objective of algorithm, often times there is no cross validation or counterfactual for the decision of algorithms. For example, for hiring prediction algorithms, there is no validation mechanism for false negatives (For example, an eligible candidate rejected from being hired) or no cross validation for false positive for recidivism prediction algorithms (Assigning a high recidivism score to a defendant). Bright, Ganesh, Seidelin, & Vogl (2019) highlights how algorithmic era governance can be prone to bureaucratic gaming. In light of goal displacement where algorithmic tools become tools of performance measurement, public workers can conform their behaviour to better match the algorithms, thus in effect making the algorithms ineffective for the purpose they are meant for, i.e. ascertainment of probability. The potential of such gaming is lent further credence by Toll, Lindgren, Melin, & Madsen (2019) which finds in analysis of prevalent discourses in Swedish AI policy documents that bureaucratic class interests and concerns far outweigh the service delivery, public engagement and risks posed by Artificial Intelligence.

c. Gaming in Algorithm Development: Sun & Medaglia (2019) conducts an empirical study of various stakeholder groups in adoption and implementation of a healthcare predictive algorithm in China. The study finds that, quite predictably, that different stakeholder groups (Doctors/administrators, IT developers & Policy makers) place varying emphasis on different factors and accord different saliency to multiple factors. This in itself is neither inexplicable nor condemnatory, as these stakeholder groups have different professional aims, norms, incentives and performance appraisal tools and methods. The matter is complicated however, when different stakeholder groups mentioned challenges of the medical algorithms. Paradoxically, IT firms mention social challenges, Doctors mention economic challenges and Policy makers mention technical challenges. A possible explanation offered is that each group is selectively choosing challenges that is not within their area of responsibility. This finding of selective discourses by different stakeholder groups necessitate mechanisms of collaborative governance in era of algorithmic governance to avoid “vision lock in” caused by non-representative and selective stakeholder representation.

d. Affective Dimensions of Algorithms: Emotions in public sector, both for public servants and citizens, has been generating a significant research interest. Affective dimension not only impacts the motivation of public servants but also, the citizens which interacts with it. After all, public service not only allocates resources but also has a value allocative function and it shapes how significantly how citizen views their relationship with the state, their place in it and in relation to it, its fairness, accountability and transparency. It is therefore imperative to examine the affective dimension of algorithms, as algorithms becomes defining feature of public work spaces. Lee (2018) reports some important insights based on a survey experiment that juxtaposes people’s reactions & perception of decision made by human vs. machine agent. Machine decisions are considered less fair and trustworthy than human decision maker on qualitative tasks whereas comparable on mechanical tasks. Interestingly, even on mechanical decisions reasons for trusting human decisions is their perceived knowledge and authority whereas for machine decisions it is their unbiased programming. In another study of human experiences with algorithms, Bucher (2018) reports that algorithms make choice that are algorithmically correct but humanly wrong because of decontextualized understanding

of human life based on past interactions e.g advertising infant care and dating adverts to same person. Similarly, the study reports various interesting insights into how intimately algorithms affect psychological processes which are constitutive and generative of human experience e.g. algorithms interferes with the processes of spontaneous discovery, keep muddling up peoples present with their past choices or prime people to renegotiate their behaviour. All the affective dimensions of algorithm-human interactions have implication for public administration and how people perceive and interact with it.

### **3.2.2.c Political Dilemmas:**

This section examines the various impacts algorithms in government and larger algorithmic culture has for the exercise of politics in our times.

a. Gaming Political Discourses: Kolkman (2020) in his extensive ethnographic and triangulated study of eight algorithms across policy domains report some interesting insights into not only how algorithms not only facilitate policymaking but instead dominate it. Superior performance of algorithms is attributed to making policy positions commensurable thus increasing agenda access, policy options exploration, consensus formation or target system management etc. However, Kolkman (2020) finds an evidence of algorithms in promoting confirmation bias and entrenching existing worldview. He finds that an algorithm has attained such a level of credibility that political parties have started making policy proposal to get the best rating from the algorithm and thus it serves as an external validation mechanism for their policy proposals and signal credibility. This reiterates the concern that algorithms can hamper the processes of human ingenuity, spontaneous discovery and politics as an arena for free exercise of ideas. Paradoxically, the model developers believe this to be a wrong approach to policy making and insist that solutions should be proposed without algorithmic considerations in mind. Such approach really leaves the best ideas out which often are newest and does not fit the parameters of the algorithm. In this way, algorithms assume the role of obligatory passage point promoting debate within their parameters whereas stifling novel solutions.



b. Liberal Democracy & Economy Compact: Political and economic theory has long maintained that economic growth goes hand in hand with liberal democracy. Main theoretical reason for this belief was that democracy creates a marketplace for ideas and discursive arena for interest articulation which allows individuals and institutions to maximize individual utility. This maximization of individual utility lead to maximum collective utility. This theory had empirical support as well as observed with most wealthy economies being liberal democracies. However, era of algorithmic culture and governance holds real potential to append that dichotomy, as is becoming increasingly apparent. Susar & Aquaro (2019) highlight this observation that panoptic surveillance and patrolling potential facilitated by affordances of Artificial intelligence and digitalization of human life break the normative compact between liberating people and reap prosperity or repress people and remain poor. It is enabled by potential of AI capabilities to gather, conjoin, sift, monitor, categorize & summarize an enormous amount of data intelligibly which is not possible humanly. This encourages selective censoring of ideas by enabling free exchange for selective topics while blanket repression and surveillance for others.

c. Constitutional vs Policy Level Value Divergence: Increasingly research finding are accruing and pointing to a pernicious trend of value and goal divergence between constitutional values and policy level values related to artificial intelligence (Viscusi, Rusu, A., & Florin (2020)). It points to the fact that besides facile commitment to constitutional values, when it comes to real field level artificial intelligence, considerations vary. This on one hand paves way for value and social frictions in society. Secondly, it indicates lack of political will to protect constitutional values when conflicts emerge because of artificial intelligence applications. Ossewaarde, & Gulenc(2020) finds that country level artificial intelligence policies are full of technological solutionism while ignoring power asymmetries, politico-administrative & discursive nature of social problems. Paradoxically, while AI is mythologized by selective curation of stories as a futuristic force, it is purported to fulfil the old national dreams- 16<sup>th</sup> Mercantile Dutch, Techno steering & leadership of European Union by German state and in case of United Kingdom, AI serving a vehicle of resurrecting “Our Industrial Revolution”. The nationalist visions are divorced from the fact that modern rule based world order emerged

after the chaos created by pursuit of nationalist dreams. Schneider (2020) also reveals interesting patterns in his comparative study of modes of algorithmic governance based on economic interests. It finds that countries in leadership race of digital economy (US & China) have different approach as compared to consumer countries like EU, Mexico etc. The leading countries, based on their respective institutional trajectories, use AI to exercise control or let it reign free from any kind of regulatory oversight, whereas for user countries it is more amenable to inculcate careful regulatory approach.

#### **3.2.2.d Social Dilemmas:**

Any new mode of governance undergird social transformation as per its technological assemblage. It is no surprise, therefore, that algorithmic governance is creating new opportunities, convergences, divergences and conflicts in the process of becoming a dominant social force. This section examines various novel insights into transformations of social and relationship among its constituents owed to this mode of governance.

a. Transparency: An Elusive Idea: Transparency is the democratic ideal that informs how inputs are transformed into outputs/outcomes and serves as cornerstone of decision legitimacy. It has long been held as a primary ethical cornerstone of algorithmic governance. Besides the more central critique of black box nature of algorithms, there are concerns aplenty. E.g Jordon, Fenn, & Shannon (2020) focuses attention on how transparency and AI interact in pernicious ways. Machine readable open biological and chemical databases coupled with scalable AI can pose real threats to cyber bio security. It has become even more visible with Covid-19 crisis. Besides, Annany, & Crawford (2020) raise important deficiencies of transparency. Important findings are that transparency can in fact be occluded by disclosing too much information, transparency is often phenomenological in the sense that dynamic interaction with information disclosed can reveal patterns necessary to make sense of information, transparency can harm groups that need protection etc. Similarly, Kemper, & Kolkman (2020) emphasize the need of critical audience as a necessary precondition for transparency to be realized in modes of algorithmic governance.

b. Privatization of Culture: The archetypal account of Amazon classifying non hetero romantic fiction to category of adult fiction on eve of 2019 valentine's day in its algorithm, rendered all such content invisible to millions of consumers worldwide. It went on to expose the extent to which the essential processes of culture and its permissibility are increasingly shaped by algorithms. More interesting is how these choice is essentially concentrated in very narrow hands and commercial interests and how it impacts culture and its products. Algorithm driven indexation, curation, sorting, filtration and prioritization of content are essentially normative and cultural choices which are increasingly outside purview of human actors. Striphas (2015) argues that business secret clauses, Non-disclosure agreements, non-compete clauses etc. is effectively creating new apostles of culture despite the overt appearance of democratic and participatory digital culture. Crowds do not have much role besides the creation of raw data and emancipatory rhetoric like "crowd wisdom" etc. doesn't not go beyond the surface to the real content of how this data is used to enact choices that shapes our culture. The cumulative effect is that processes of culture formation have been relegated to the private.

c. Accountability- An Elusive Ideal: Accountability debate also runs into similar conundrums with no clear black and white resolutions. For example, it is almost impossible to maintain a clear chain of accountability for technological decisions because of multiple reasons. Firstly, there is no consensus on the adequacy of the existing laws for assigning accountability and responsibility (Kerikmäe & Pärn-Lee, 2020), with debate perpetually hovering between emphasizing that existing laws are sufficient to inadequacy of existing legal frameworks to cope with nature and effects of algorithms. Secondly, commercial interests in promoting newly emerging technologies hamper development of extensive responsibility frameworks for holding adverse impacts of such technologies accountable (Schneider, 2020). Kolkman (2020) finds that transparency is still an elusive ideal even for static algorithms. He finds that transparency is not possible even for static algorithms because algorithms are too complex for even specialists to understand. Secondly, algorithms are adjusted and readjusted in light of how well they match the perceived correct prediction and documentation for such retrospective changes often lag and thus such changes are very often not known.

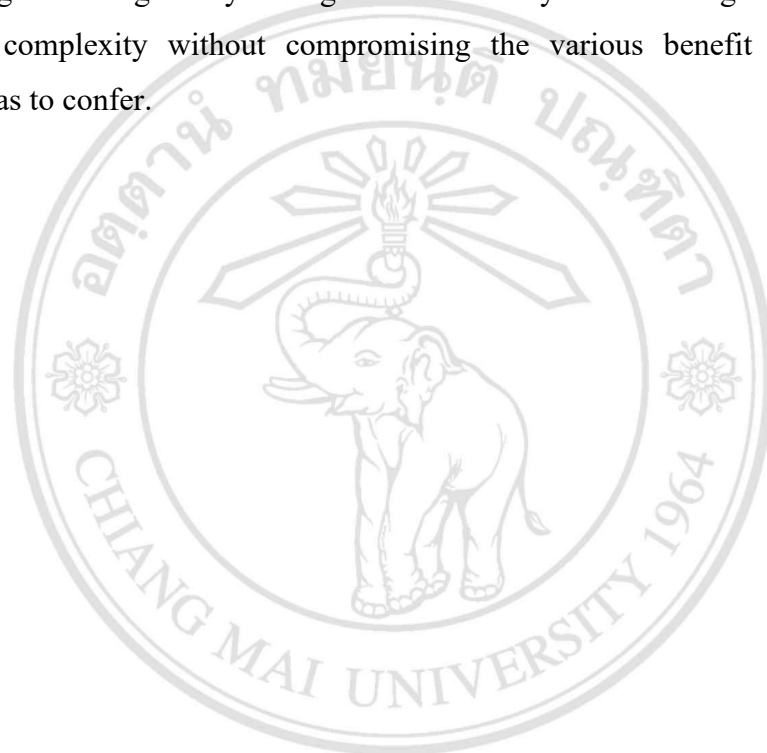
## 2.4 Conclusions:

This section will try to synthesize some key lessons that can be learnt from the findings of this study and how it comes to bear upon the legitimacy of adoption of these technologies. In order to truly benefit from the potential of these solutions, it is important to pay close attention and pre-empt various displacements their use may entail. There are dynamic sources of tension underlying many conflicts and displacements created by artificial intelligence. First, there is incentive divergence between the commercial interest to promote this new technology and ensure a robust framework of accountability (Katyal, 2019; Cobbe & Singh, 2021; Lu, 2020). This conflict is further exacerbated by National AI policies which prioritize commercial logics over constitutional values. This leaves a normative vacuum for dispute resolution, if and when, they arise by use of such solutions.

Similarly, business secrecy clauses need to be defined in a more granular way which does not preclude access to how a particular algorithm reaches a particular decision rule.

Second, artificial intelligence can create normative convergences in societies in a way that deprioritizes certain normative choices e.g. privacy as argued above. This point illustrates the vacuity of prescriptive norms for artificial intelligence because artificial intelligence due to its architectural affordances facilitates norm convergence inimical to the prescriptive values. Similarly, algorithms can assume position of obligatory passage point which structure discourse and set the outbound range of political discourses within their parameters. The assumption of this nodal position of authority by algorithms which are artefact of human intelligence is quite dangerous in stifling human entrepreneurship. Thirdly, there is vast potential of gaming in development, adoption and application of algorithms as illustrated above. All policy endeavours are prone to gaming to some extent but contingent ontology of algorithms make gaming more pernicious. Algorithms by design depends on and learns from the interactions with them and therefore systematic gaming by developers, users etc. can gradually make them go awry because algorithms learn from the input data. Secondly, in many cases there is no mechanisms of cross validation for false negatives or false positives generated by algorithms (e.g. a harmless offender accorded a high recidivism score). Lastly, many legal and regulatory practices do not take into account contingent ontology of algorithms e.g.

fixed geographic jurisdictions of law does not take into account transnational nature of algorithms or that anti-trust guidelines work of definitions of markets and goods not consistent with data markets, or business regulations compute market share through dollar value concentrations whereas in data markets relevant metric is proportional attention etc. All the above stated points consolidate some of interesting findings how algorithms are fostering various dilemmas as they come into contrast with existing social, normative, legal and regulatory arrangements and they need for regulatory focus to address this complexity without compromising the various benefit that artificial intelligence has to confer.



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## CHAPTER 3

### ETHICS OF TECHNOLOGY: A JOHN RAWLS FRAMEWORK

#### 3.1. Introduction

Any description of future of government features discussion of data, technology and enablement with a frequency that has almost assumed the proportion of a cliché (Cordella & Iannacci, 2010; Kraemer & King, 2006). This attests to the over-sized influence that technology will play in shaping the meaning of government for foreseeable future. Discourse over the topic on the other hand, transverse the entire range of spectrum from utopia (Ferraris Et. Al., 2020) to dystopia (Segal, 1994), with cautious optimism (Luftman & Ben-Zvi, 2011) and fatalistic acceptance of digital eventuality (Licker, 2022) falling in-between.

The advances in computation capacity, generation, storage, retrieval, transmission and processing of information (Hilbert & Lopez, 2011) have collectively been termed as “Fourth industrial transformation” (Ross & Maynard, 2021). The state of utter non-convergence over the topic is not entirely surprising. It is owed to unavailability of historic analogs of transformation of basic institutions of human social organization, in as short a time as couple of decades. This exponential change over very short duration precludes incrementalism (Quinn, 1978) and path dependence (Levin. Et. al., 2009), two primary stock responses of human beings to uncertainty and ambiguity.

As is the case with any emergent paradigmatic shift, there are vast discrepancies in potential and actual adoption (Karahana Et. Al., 1999), use cases (Yi Et. Al., 2005), Inter sectoral advances (Corradini & De Propis, 2017), subnational differences (Bayer Et. Al., 2016), cross-national differences (Bussell, 2011) among others. All of these are predicated upon differences in state of the collectivity, at the time of technological penetration (Lee Et. Al., 2013). Based on this intense panoramic hue of differences, it brings us to the paradox of classical Greek philosophy i.e. how to explain co-existence of persistent order in face of ubiquitous change (Graham, 2008)

Generally, description of futures thinking about governments in relation to fourth industrial transformation comes up in one of the three hues, listed in order of ascending machine agency:

1. Data Assisted Human Agency
2. Data Enabled Partial Machine Agency
3. Data Driven Full Machine Autonomy

### **3.1.1 Data Assisted Human Agency**

Hand holding enabler scenario is the most common state of digital adoption by any social collectivity which is at “Beginner” level of digital adoption.

Governance collectivities, egged on by concerted economic forces of austerity and fiscal compulsions (Dunlevy Et. Al., 2011), scarcity (Acemoglu, 2010), changing composition of work force (Meyer, 2011), stagnating productivity growth (Stiroh & Botsch, 2007), lifecycle of infrastructure assets (Koronios Et. Al., 2010) etc. variously, leveraged digital solutions. The basic imperative for digital adoptions was to enhance efficiency of public works to relieve the cumulative effects of the preceding (Pang Et. Al., 2014). The substantive changes brought about in the scope of public service signified optimization of performance, elimination of duplication of efforts with efficiency as prime goal. Some hypothetical applications of technology at this phase of adoption involves biometric access and digital time keeping in public workplaces, regularization of public workforce (e.g identification of ghost employees), Human resource information systems and self-service portals, optimization of some social collective benefit e.g optimizing traffic flows through algorithms to target commuting and stall time. Or optimizing efficiency for each iteration of service e.g timing and route management of garbage collection to optimize collection per trip or eliminating fraud or waste in social benefits programs etc.

It is important to review the nature, timing and targets of these technological adoptions. The main reason is that it would generate generalizable knowledge about technologic adaptation, useful for influencing the pace and direction of future

technologic epochs. First and most important feature of these adoptions was that they were entirely made possible by advancements in unrelated fields. So technically, these cannot be termed as adaptations but rather exaptation (Garud Et. Al., 2016). Secondly, this exaptation was made possible by expedient political narrative emphasizing fiscal constraints and balanced budget (Boyabatli Et. Al., 2016). Thirdly, rate of exaptation was mediated by pre-existing nature and structures (Miranda Et. Al., 2016), where more instrumental role in delivery of actual services, presence of market or third sector agents to facilitate service delivery, nascent level of mutuality of goals all mediated pace of exaptation.

As must be apparent by now, this stage of technological exaptation in public work comports most clearly with “New public management” theoretical orientation.

### **3.1.2. Data Enabled Partial Machine Autonomy:**

This stage of technological exaptation is most clearly observed in governance collectivises which can be conceived as either transitioning from beginner to intermediate level or entrenched at intermediate level of technological exaptation.

This stage is characterized by largish scaling back of direct provision capabilities due to interplay of dual social factors. First factor is self-perceived efficacy of governance collectivity to be able to achieve social deliverables without direct provision. The sources of this perception can be rooted in satisfactory leveraging of networks in past (Rethemeyer & Hatmaker, 2008), availability of technical proficiency and infrastructure to design, measure and monitor-in-real-time contract specifications (Lu Et. Al., 2000), antecedents of successful cross-collaborations (Tang & Ho, 2019) and mutuality of goals to deliver social outcomes. All these conditions and various others, create positive feedback loop and history of successful priors to draw from, which jointly reinforce and facilitate technologic exaptation. Second factor is sufficient technologic proficiency in general population to both, supply for such a workforce and general preference to live in conformity with ideal of a digital life (Davies, 2011). An important externality, as in previous stage, was indigenous sophistications in cloud computing,



ultra-high speed data transmission, mobile communication etc. which create possibility for this stage of exaptation.

An important consideration at this stage is backdrop of conducive social pre-conditions, whose symptoms can more satisfactorily be observed than described. Such emergent social conditions can best be conceptualized through Rousseau's Social Contract (Laskar, 2013). For a society to progress to this stage of technologic evolution requires an "Evolved Contractual society" as contrasted to "Relational society". "Contractual society" provides a matrix of norms, game rules, availability of market capacities and sanctity of contract that create conditions for delivery channels compatible to this stage (Gottlieb, 1983).

The scope of public work at this stage of exaptation is expanded policy making capacity and expanded oversight with central goal being management of service quality with better designed; targeted, flexible & timely interventions. Clearly, the goal of public work at this stage is an expanded construct than mere efficiency optimization at the earlier stage.

Some prominent examples of the nature of public work at this stage include data driven behavioral insights to nudge for better social outcomes for example analyzing localized predisposition tendencies for diseases and shaping choice architecture in real time. Similarly, utilizing AI/ML based insights to adapt policy instruments (Ciuriak, 2019) is an increasingly common example.

As must be apparent by now, this stage of technological exaptation in public work comports most clearly with "New public governance" theoretical orientation.

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### **3.1.3. Data Driven Full Machine Autonomy:**

Hands-off technology enabled scenario is more of a future vision of technologic exaptation than an extant positive reality. However, there are many developments which are all collectively and variously accruing in a direction, which can be conceived as a new synthesis. After description of impacts of this technologic exaptation state on policy and its administration, a brief examination of socio-economic & historic processes

driving this stage are propounded. Additionally, availability & adequacy of theoretical frame of references and normative anchors, to navigate this stage of technologic exaptation needs to be examined in detail.

At this stage, the direct provision capabilities of government would be significantly rolled back because of expectations of individualized and customized citizen experience (Hasle Et. Al., 2014). Therefore, digitally competent citizen is an a priori for this stage of exaptation (Berson & Berson, 2003). Secondly, in terms of service delivery, governance collectivity takes a self-service approach, enabled through simultaneous co-existence of digital identity with natural identity (Carrasco-Sález Et. Al., 2017) of each citizen. In this self-service form, governance collectivity provides digital architecture e.g. through apps, kiosks etc. to provide information and access services while leaving the discretion of opting in and checking for self-suitability on citizens' themselves (Fotaki, 2011). This service delivery architecture would accrue trifecta of benefits. First, it would enable citizens to craft localized and personalized service responses. Secondly, it would help provide basis for automatic readjustment of governance collectivity's goals, objectives, work and its routines and processes. Thirdly, it would eliminate the impression of governance collectivity's insularity, interference, red-tape, estimation and design problems etc.

The scope of public policy and its administration at this stage of technologic exaptation is to enable flexibility and automaticity in readjustment of objectives, work processes, routines and resource deployment by elimination of agency & information based silos & echo chambers. This is brought about by applying advances in machine learning analytics, quantum and cloud computing with the central goal of this stage being optimization of the throughput of the entire governance collectivity.

The move from rather narrow objectives of resource optimization or service quality optimization to optimization of throughput of the entire social system is the most distinctive element of this stage of technologic exaptation. There has long been an accrual of findings in policy studies that components of social systems are linked in very complex ways and their collective interactions produce outcomes vastly more diverse than predicted, much less controlled (Vespignani, 2009). Owing to this, it is very hard to

evaluate if any policy ever met its objectives. Results of any evaluation changes dynamically, depending on how wide a net is cast to compute externalities (Steinacker, 2006) in other sub-systems (much less other governance collectivities-international or subnational). The preceding is one of the primary reasons why no policy evaluation is ever unanimous. This phenomenon classically was studied under Systems theory at least since the 1970's, with Complexity theory (Klijn, 2008) being its latest manifestation.

Since it has been stated at the onset that this a prospective future state, therefore, some trends instead of examples are surveyed that point to convergence towards this state. Thirteen agencies collectively looking at various aspects of security function in United States have developed private joint cloud which creates integration of databases, work priorities and elimination of duplication etc. to ensure seamless threat detection and response (Abd Al Ghaffar, 2020). The closest approximation of this stage of technologic exaptation is "Result10" program initiated by New Zealand government in 2017. Result10 seeks collaborative reorganization of ten public agencies around major life transitioning events of the citizens. Some of the life events, for example include child birth, becoming victim or witness to crime, turning 65 etc. where the opting in is left to citizen discretion enabled through digital identity (Results 10 Program, 2018).

As is the case with previous epochs of technologic exaptation, this scenario is brought into being by interplay of myriad, interacting as well as isolated, developments. First came the isolated and sufficient advancements in quantum computing and associated computational sophistications which made a hands-off technology enabled future a tenable thought. Similarly, developments in other areas including advance robotics (Von Braun & Baumüller, 2021), deep machine learning and neural networks to approximate human decision processes of evaluating alternatives created a diverse array of technologic enablement in artificial intelligence facilitated decision making (Lloyd & Paine, 2019).

### **3.2. Normative Anchors for Navigating the social transformation:**

Related social forces that provided backdrop for the new synthesis emerged at political and economic fronts. An accurate description would rather be theoretical and empirical developments in politics and economics, which are conspicuous by their absence, to tackle emerging problems peculiar to 21st century. On the economic front, consider for example, need to conceptualize a category of goods at a meta-analytic level higher than “public goods” (Carnoy & Castells, 2001). It is essential to visualize solutions to impediments in collective action related to global hunger; illiteracy & warming, environmental degradation, climate change, space pollution, local & global displacement, lunar & space mining, environmental engineering e.g cloud seeding etc. Similarly, also consider inadequacy of definition of property rights in face of changing nature of products of 21st century and their attendant ancillary effects (Brousseau, 2004). Some examples of products of 21st century with unclear property rights include consumer data (consensual or not), citizens’ data, digital privacy, Internet neutrality, publically deployed artificial intelligent algorithms, information curated on clouds (public or private), architecture of world wide web, decision for information curation on internet (which requires essential normative judgments), inadequacy of copyrights to address access to knowledge essential to 21st century experience.

Similar conundrums abound regarding politics which can sympathetically be categorized as inadequate at producing solutions to 21st century challenges. For example, political institutions are viewed as opaque, insular & distant (Taglioni, 2011). This description is supported by repeated survey findings in which a politician fares not better than a used car salesman in occupational comparison in advanced democracies, underscoring lack of public trust (Hochwarter, 2012). There is ample evidence of fracturing of political system, strewn across the landscape. One cursory look can reveal the pervasiveness of inward looking nationalism, secessionist movements from supranational governance collectivities or level of trust in supranational deliberative forums (Knutsen, 2016). The state of affairs simply reflects the depth of malaise afflicting political institutions- a malaise which can be characterized as not succeeding in the production of incentives to save its own consensus, much less carrying out its own mandate (not to mention generation of new social consensus). Such state of affairs, taken

either way, points to at least one of the two inadequacies- either a distributional inequity (Schneider Et. Al., 2010) or a communicative inadequacy (Meyer, 1999). Unavailability of new theoretical categories and their interrelationships among themselves and extant categories aside, the existent knowledge is also very fragmented. The degree of fragmentation can be surveyed by the fact that even basic knowledge claims about state of political and economic systems are not uncontested. Some important examples include contested evidence about increasing polarization/sorting debate of political systems (Mason, 2015). The jury is still out if political systems in advanced democracies are more polarized now than before or not. Also, there is no consensus on which group enjoys the most legislative success e.g an average voter, economic elite, business or public interest group (De Bruycker & Beyers, 2019). Similarly, there is no consensus on if wealth and income inequities have actually increased or not (Bernard & Jensen, 2000), if the recovery from every financial crisis is a complete or a quasi-recovery, with new economic equilibrium deflated than before etc. One of the primary reasons for this knowledge fragmentation is deployment of different operationalization to measure same constructs and lack of theoretically grounded basis to do so, among others.

Given the fragmentary nature of discourses, knowledge claims and institution survey above, it is imperative that the most important need for anticipated digital future is a new social contract to regulate state-citizen relation within an evolved “Post Contractual State”. Such a desire would be predicated upon new habits of mind and thought, evolved social norms, co-existence of digitalized identity with natural identity, profusion of ICT enabled non-moderated electronic deliberative forums and possibilities it creates, reduction in informational asymmetries and frictions, almost zero information generation and circulation costs and most importantly, significant reduction in barriers to mass collective action, all of this mediated by technology as survey above. An added dimension at this stage is perception of possibilities in the polis, regarding technology. For example, personalization and customization of citizen interaction with the state would become a standard expectation, rather than an ideal. Similarly, the enablement created by technology to eliminate leakages in collating and summarizing citizen preferences in real time would create expectations for elimination of principal-agent frictions in political representation. The preceding factors dictate that digital future is re-

conceptualized, not in terms of its functions or characteristics, but instead in terms of citizens' lived experience, collectively and individually. In this sense, reconceptualization is proposed as a point of interaction between the citizen & the state, which not only shapes the citizens' perception of the state but also her place w.r.t it, the kind of social contract it has chosen to endorse, the values that it has decided to allocate, the norms & the venues for the following contacts it has chosen to establish and expectations it has or hasn't chosen to create. All of the preceding has important implications, for shaping relationship of the citizen and the state. But more importantly so, provides a substrate of possibilities for all social relationships.

Three co-existing technological futures each embodying a processing increasing symbiosis of machine and human agency, along with various collective and individual developments facilitating it, are surveyed above. It would be apparent by the preceding discussion that any discussion of digital futures brings us to the most fundamental question of political and social philosophy i.e what to optimize, why that particular objective and the whole set of debates about the constitutional and moral limits of governance collectivity to bring such social optimization about. Besides the contention surrounding the normative basis of this objective, there are pragmatic considerations aplenty as well. For example, what are theoretical basis to navigate the practical and logical steps of this social transformation.

### **3.3. John Rawls' Theory of Justice:**

These uncertainties lead to a search for adoption of a framework that can be justified for policy choices at each technical epoch, not only in terms of performative criteria but also in terms of ethics. Hitherto, there is little research that exist to propose or adapt a normative/ethical framework for systematic evaluation of technological decisions. This is a unique contribution of this research. Besides, this research provides bench marking criteria to evaluate ethical considerations of technical choices and explicates the rationale for choice, thus making it more amenable to evaluation, not just in terms of effectiveness or efficiency but also in terms of how it distributes benefits and values across a society. With increasing importance of technology and more importantly,

the exponentially rising capability of technology and resultant uncertainties, make these normative questions exceptionally important.

The choice of an ethical framework to be adopted for technological initiatives is notoriously difficult for many reasons but most conspicuously the breadth and scope of technology in public sector, its applications, implications, complexity and diversity makes it intractable for a generalized frame of reference. Consequently, the framework should be generalizable enough to cater to the scope and breadth but also, granular and concrete to provide actionable decision rules under changing & complex circumstances. I propose that John Rawl's Theory of Justice (Rawls, 2004) is highly apt for the task at hand.

Rawls developed his celebrated framework to optimize conditions of social justice &/or fairness in a society/state or governance collectively. The crowning achievement of this framework is that it makes no a priori assumptions about the ideology, system or structure of society and instead starts from least number of assumptions and condition of ignorance about the distributions of values, burdens and benefits in a society. Thus being at this stage of ignorance and no prior knowledge, any rational individual would choose a system that is just to secure best outcomes for oneself. An additional benefit is that it distinguishes a fine point of non-zero sum or synergetic effect of social systems. Thus the framework recognizes that just distribution maybe suboptimal for collective optimization thereby reducing the collective well-being. Based on this realization, it provides a rational criterion for tolerating social inequality i.e. an unequal social system/technological future can be better than a just future, based on the argument that worse-off segment of society is better-off in an unequal system than in a just system. Finally, it allows for venues for deliberation and adjudication of social interests to allow for systematic change.

The sequential derivation of Rawls' system is as reproduced below:

- i. Optimal system of social organization should provide greatest liberty possible to all, with only condition of no infringement upon rights of others.
- ii. Inequitable inputs, outputs & outcomes, be them economic or social, have only one condition of tolerance i.e. even the inequality of inequitable system should be beneficial than the equality of equitable system for the lowest strata (residualised).
- iii. If a society accepts inequitable system based on meeting condition (ii), that it ensures that the residualised are not effectively hobbled from access and positions of power or other opportunities that enables them to change system design to their benefit.

Having stated the proposition of the framework, we survey each tech epoch and deduce what kind of conditions does the framework necessitate for it, to achieve the ethical/normative touchstone. A brief synopsis of Rawls' framework to each digital future is appended at Table 3.1.

### **3.3.1. Data Assisted Human Agency:**

The overarching aim of a tech initiative at this stage is performance/efficiency optimization as measured through various objective and quantifiable measures e.g. increasing per trip efficiency of garbage collection routes or decreasing collective traffic stall time etc. The universality of Rawls' framework for ethical consideration in technological initiatives at this stage is demonstrated through examining the implications of each ordered condition:

#### First Order condition/Vindication:

The most important consideration at this stage is to consider that the initiative increases the efficiency of what? and for whom? How are the costs and benefits of this initiative distributed? How this initiative reallocates/reprioritize the values in a governance collectively?



Taking the empirical case of static algorithm that optimizes traffic stall time by integrating traffic lights system in a particular geographic vicinity. optimization initiative these considerations take empirical form of decrease fuel consumption & emissions of vehicles and collective commuting time. It largely benefits the public road users and especially those commuting during rush hours. The initiative prioritizes the values of environmentalism.

Second Order Condition/Vindication:

At this stage the most important considerations are if there is any particular residualization created by the initiative, how does it impact the residualized group and what are the justifications for still going ahead on base of enhanced collective well-being argument. How a particular initiative enhances collective well-being despite the residualizations it creates?

Working with the stall time optimization initiative, these questions take the empirical form: How does it impact the rights of non-motorized road users e.g. cyclists. How does it impact the rights of citizens in affiliated social systems e.g. curb-side walkers, elderly whom the slow traffic benefits etc., what are the mechanisms through which a collective well-being argument for this initiative can be justified, while accounting for the residualizations it creates?

Third Order Condition/Vindication:

At this stage the most important consideration are the existence of avenues that can serve the role of adjudicative forums for the ongoing evaluation of the initiative and bring to the fore hitherto new groups who are impacted by the initiative, adversely or favourably. These evaluations serve as continued justification and validation of the initial assessment and its assumptions or revise the viability of the initiative.

Since the role, function, design and decision rules of such adjudicative forums are common to all three technical epochs, please see the “Adjudicative forum” section below.

### **3.3.2 Data Enabled Partial Machine Agency:**

The scope of tech initiative at this stage of exaptation is service quality optimization enabled through expanded oversight, better contract monitoring to offer better designed, targeted, flexible & timely interventions enabled by data. Each ordered condition of Rawls' framework is explored to examine its potential to provide normative anchors for epoch of digital initiatives.

#### First Order condition/Vindication:

The most important questions at this stage are that the initiative improve the service quality of what kinds of goods/services, how does it measure those improvements, how are the costs and benefits distributed and what values does it encapsulate?

An additional set of consideration at this stage are those arising out of data collection/utilization methodologies and transparency about it. The critical consideration here is the awareness that the existent social biases & exclusions are embedded into the data because data is encapsulation of social structures and interactions. An important example in this regard can be systemic under representation of minorities in centralized databases due to structural and other barriers.

E.g. taking the example of pervasive recidivism prediction algorithms in criminal justice system, the essential question asked here are what are the objectives of the use of these algorithms in criminal justice system? Is it to alleviate the administrative pressure on judicial staff or alleviate resource burden? Is it to protect society from crime? Is it to rehabilitate the offenders? Or Is the algorithm being retributive in nature? What are the patterns of socio historic inequities embedded into the algorithm that may accord differential treatment to different class of offenders? Is it justifiable to determine sentence for an individual based on generalized group characteristics or statistical similarities? How does the concern for procedural justice or fairness balances with the identified interest for adoption of such algorithms?

### Second Order condition/Vindication:

Important set of questions at this stage are what are the justifications of initiative viability despite residualizations created by choice of objectives, parameter measurements and data generation processes, if any. How can the enhanced collective welfare argument still be justified in light of the preceding?

E.g. in case of recidivism risk prediction algorithms at this stage we ask the questions like how collective welfare argument can be justified in light of objections like fairness of applying group characteristics to individual, social-historic basis of over and under representations in data, how social change over time may make the data generated predictions irrelevant however, what normative justification may still exist for using the same, if any.

### Third Order Condition/Vindication:

At this stage the most important consideration are the existence of avenues that can serve the role of adjudicative forums for the ongoing evaluation of the initiative and bring to the fore hitherto new groups who are impacted by the initiative, adversely or favourably. These evaluations serve as continued justification and validation of the initial assessment and its assumptions or revise the viability of the initiative.

Since the role, function, design and decision rules of such adjudicative forums are common to all three technical epochs, please see the “Adjudicative forum” section below.

### **3.3.3. Data Driven Full Machine Autonomy:**

The scope of tech initiative at this epoch is automaticity, real time adaptation of service delivery to citizen needs, citizen centric governance with default opt in options left at discretion, automatic adjustment of public workforce and cross-silo collaboration to adjust to demand patterns of citizenry and their fluctuating needs and tastes, integration of digital and natural identity to provide individualized and response services. We now examine the application of Rawls three orders of vindication to see how best to navigate the ethical considerations for this technological future.

#### First Order Condition/Vindication:

Since the goal at this epoch is automaticity and full customization with default opt in, the essential questions to be asked is what are the systematic factors that may hinder opt in by certain segments of population or individuals. How certain systematic opt out can skew the capabilities of the system, what are the data generation processes and rules of statistical evidence that generate customizable outcomes. How transparent, accountable and more importantly explainable are those underlying data and statistical processes that generate customization.

Examples include some deep learning technological affordances like neural networks. Although, it provides capabilities to approximate human reasoning process, the problem remains with explaining its continually evolving decision rules. Another important consideration is as machines have considerable agency at this epoch, the importance of data security and the system integrity is paramount which does not allow for any backdoor to tinker with these processes.

#### Second Order Condition/Vindication:

This stage of vindication requires that a system justifies its residualizations based on enhanced collective welfare argument. For this technological feature that relies on automaticity, data driven self-learning and considerable machine agency, some factors are paramount. First, ensuring that there is not systematic characteristics to set of individuals opting out of the system. If so, then there should be explicit examination and explanation of why the technological system is still justifiable on collective welfare argument. Secondly, there should be a flexibility to alternative provide the service through conventional means. Thirdly, in case of self-learning systems that are necessary for automaticity and customization, the explainability of their evolving decision rules is paramount. The decision rules should be understandable to a lay person.

#### **3.3.4. Adjudicative Forums:**

Third ordered condition for technological choices, as per Rawlsian framework to ensure justice, is the right of the people adversely effected to have power to suggest

changes to the system design. This provision for the disadvantaged to change system design necessitates adjudicative or deliberative forums where the ill effects of technological choices can be deliberated upon. A related question during such process is proof of burden, rules and quality of evidence and who is to bear such burden. Although the question of who is to bear proof of burden might be simple to answer i.e. the group which claims to have been adversely impacted, the question of what evidence is admissible and how to substantiate is quite nuanced. For example, there is a whole body of literature in legal theory about the balance of probabilities vs. beyond reasonable doubt doctrines. Another complexity is apportioning costs of bring forth claims of adverse technological impacts. For example, the disadvantaged are most often the segment of population lacking means and resources to bring their claims to standing. Therefore, how costs of bring forth such claim is also another problem. Despite these obvious difficulties, the necessity of such deliberative forums to continually re-examine the social justification of technological choices is crucial.

The necessary flexibility required to adjust technological parameters to evolving public consciousness is a very complex and challenging task but the express and explicit intention to tackle this challenge is necessary to social legitimacy of technological choices.

**Table 3.1 Digital Futures & Rawlsian Criteria of Justice**

Tech Epoch	Rawlsian Criteria of Justice
Data Assisted Human Agency	<ul style="list-style-type: none"> <li>• Every social member should have equal access</li> <li>• System for viewing system output if creating systemic or structural exclusions</li> <li>• System of justification of those exclusions</li> <li>• Documentation of effects of exclusion</li> </ul>

**Table 3.2 Continued**

Tech Epoch	Rawlsian Criteria of Justice
Data Enabled Partial Machine Autonomy	<ul style="list-style-type: none"> <li>• Dashboard of choice exhaustive enough to cater all social preferences</li> <li>• System for viewing system design remains relevant to emerging or changing preference architecture</li> <li>• System of justification for dashboard exclusions if any</li> <li>• Documentation of effects of dashboard exclusion if any</li> </ul>
Data Driven Full Machine Autonomy	<ul style="list-style-type: none"> <li>• Attention to accessibility to all (Issues of education, intergenerational tech adaptability, digital access issues, differently enabled people)</li> <li>• Attention to embedded biases in data collection processes</li> <li>• Attention to biases in big data analytic process</li> <li>• Attention to reflections of social biases in data</li> <li>• Black boxing of administrative and bureaucratic decision making</li> </ul>
Deliberative Venues (Common to all three futures/EPOCHS)	<ul style="list-style-type: none"> <li>• Sunshine clauses-periodic right to challenge exclusions</li> <li>• Well defined methods and avenues to challenge exclusions</li> <li>• Burden of proof or process (Administrative, juridical or etc.) not be transferred to mobilized groups</li> <li>• Transparency in process of adjudication</li> <li>• Adequate recording of the process of adjudication</li> <li>• Open access to record of adjudication</li> <li>• Criteria of justice not on definitive but balance of probability approach if challenge does not infringe upon others' right</li> </ul>

### 3.4. Conclusions

The article examines how various technological futures can solutions can be made fair/just by adopting a systematic approach. To this end, Rawls theory of justice is adopted as a theoretical lens. However, there are some real world impediments that prohibit post implementation ethical legitimacy of technological choices. Foremost is the prevailing models of public procurement for technological solutions. Most important aspect of public procurement is proof of work is output driven instead of outcome i.e. the installation of technological solution instead of achievement of outcome that it purports. Although, there is legitimate necessity of recompense for work gone into building such systems, it does not further the purpose of achieving outcomes that technological solutions purport. Secondly, for continued legitimacy of technological solutions, it is important that solutions are flexible which often is not technologically possible. Thirdly, technologies co-constitute matrix of possibilities by how they are taken up in societies, they allocate resources, redistribute values and shape norms. Thus technological legitimization is a dynamic and continually evolving process. The milieu of shifting norms and values make it increasing complex to socially legitimize technologies but it paramount if we have to sidestep what Gilles Deleuze called “Societies of Modulating Control”.

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## CHAPTER 4

### ICT & Collective Action: A Burmese Case

#### 4.1. Introduction:

Burma (Currently Myanmar) shares with other post-colonial states a set of complex social, economic, cultural and institutional challenges (Sylvester, 2016), albeit with local variations in manifestation of these complexities. These complexities arose out of multifaceted contradictions and value conflicts embedded in attitudes, mores and laws of colonial administration (Humphreys, 2012) of large part of the world, which created modes of administration and governmentality of its own, dictated by the singular and novel aims of colonialism. The manifestations of colonial governmentality oscillated from subtle for example colonizing of educational curriculum to generate new habits of mind (Elder, 1971) to overt for example, statues of law granting differential treatment to those governing and governed, objects to be enumerated or census (Ihonvbere, 1994). A quick and haste withdrawal of colonial powers which was a consequence of shifting global power balance and new realizations borne out of horrors of WWII, conferred abortive and partially gestated nationhood (Gupta, 2007) on large number of hastily cobbled geographic landmasses. Many of these countries were not by definition nation states as they were inhabited by multiple ethnic groups, which were mutually indifferent at best and hostile at worst. In many cases, these ethnic groups had not gone through the process of historic gestation through which groups assimilate to foment shared identities or work out functional social contracts (Voss, 2015). These social contract provide basis for trust in constitutional or legal guarantees of federalism and make statehood possible despite multi-ethnic societies. Devoid of such process, nation is an ensemble of competing ethnic groups with periodic episodes of violent conflagrations. Burma is an interesting example of this dynamic comprising of eight major ethnic nationalities at independence and later extended to an astounding one hundred and thirty-five (Cheesman, 2017).



The governmentality of a colonial regime was extractive by design (Acosta, 2013) and civilizational by justification (Vimalassery, 2013), thus dictating a necessity to have capacity for organized violence and organizational structure conducive for it. Based on the dictates of particular extractive governmentality which required structures of organized violence, it provided the seed for later imbalance of power in majority of post-colonial countries between the executive/legislature on one hand and the Military/Civil on the other (Luckham, 1971). Additionally, in many cases Military was the most organized, well-resourced, disciplined and ubiquitous institution in colonies capable of governing or at least staging a dramaturgical exercise of governance and semblance of continuity in highly fractured societies (Slater Et. Al., 2014) - a dynamic clearly visible in many post-colonial nations with Burma being no exception. This institutional power imbalance was further complicated by lack of effective and adequate native representation in structures of colonial administration (Wimmer, 1997), which paved the way for later capacity deficits in developing countries (Cooke, 2003).

Thirdly, the dominant state institutions under colonial rule were disproportionately represented (Chaudhary, 2006) by particular section of society e.g. ethnicity or Linguistic or a geographic group. It is dictated by many consideration e.g. appeasement of majority, ethnic clientelism etc. This factor of disproportionate representation in a skewed structure of power, pre-existing institutional power imbalances and inapplicability of checks and balances exacerbates existing inequities and conditions rife for hegemonization of minority ethnicities by majority. Burma also serves a textbook case of this dynamic as composition of the Burmese Military Leadership (Tatmadaw) is highly concentric of Bamar ethnic majority (Than, 2004).

Besides the three preceding mega trends of ethnic fragmentation, Institutional power differential and inter-ethnic representational imbalances, there are many aspects of colonial governmentality that creates various perverse yet interesting tools of administration, respective rationalizations and accompanying justifications. These tools through their embeddedness into work routines and processes of institutions, continue the distortions and identity inversions consistent with colonial governmentality and its objectives. This necessarily keeps in place the structure that promote mistrust and the

otherness of citizens belonging to different ethnolinguistic groups which impedes the development of inclusive society. There are three quite interesting examples of pernicious effects of this colonial governmentality and its attendant identity inversion. First, the use of census, power to enumerate and classify (Kalpagam, 2000)- in Burmese case all ethnic minorities consistently claim that they are systematically underrepresented in census to effectively undermine their representation in Government (Heikkilä-Horn, 2009). Secondly, colonial administration for its singular focus of extractive governmentality, in retrospective evaluation and rationalization, gain positive assessment by ethnic minorities as compared to culturally hegemonic government of countrymen (Wimmer, 1997). Finally, colonial governmentality is dramaturgical instead of performative as brilliantly portrayed in a true story “Shooting an Elephant” (Orwell, 2009). Memoirs of a colonial administrator in Burma, it recounts the reporting of an elephant on rampage by villagers. The colonial administrator reaches the scene armed with a gun but the elephant has run the course of its anger and peaceably eating sugarcanes. The administrator, now faced with pressures like expectations of the native crowd, concern for the impression of virility and how it reflects on the administration, shoots the elephant. One that the choice is purely dramaturgical but more importantly, the administrator in search of virility loses his autonomy and himself become brutalized instead of brutalizer. These institutional ethos of dramaturgical administration persists through institutional practices (Manning & Martin, 2015). A recent example would be the discursive battles in arena of nomenclature whereby Tatmadaw changed the name of Burma to Myanmar and Rangoon to Yangon. Playing on word play “Yangon” can equally be translated to “No more enemy” (Do Kham, 1998), notifying the elimination of opposition to the military rule and ethnic struggle.

All the preceding accumulation of effects dictate relationship between the citizen and the state in particular ways. One that there are imbalances of power between institutions most commonly Military and Legislature/Executive there by creating dynamic of alternating military rule with quasi democratic civil rule. Second, there are inter-ethnic strife which is further exacerbated by inter-ethnic representational differences in institution of power e.g. Military or judiciary. Finally, the exercise of

power in such a state is dramaturgical as opposed to performative concerned with protection of image or idea rather than optimization of citizen related objectives.

The Burmese independence had to contend with centuries of unmediated issues of history, identity, ethnicity, religion and geography (Thomson, 1995). The borders had waxed and waned throughout various monarchical dynasties, depending on relations with the neighbours and autonomous ethnic nationalities (Lieberman, 1980). An additional complexity had been that even during colonial administration, the autonomous frontier regions were administered as a separate entity (Prager Nyein, 2009). These issues of identity, geography and composite nationhood came to the fore at time of independence of Burma. A question of position and relation of autonomous and semi-autonomous ethnic nationalities and various ethnicities with Burma Proper arose. These questions were addressed through assertion of autonomy of ethnic nationalities and thus accession to the new state arose through ‘Panglong Agreement’ (Walton, 2008). Consistent with the ambitions of unification, a constitution was drafted on Westminster model, with bicameral legislature. The lower house being elected representatives whereas upper house balanced representational inequities between various ethnic nationalities (Egreteau, 2017). Secondly, any law had to pass through both chambers of legislature to be legislated. This bicameral chamber served as a mechanism to assuage the fears of minorities to be assimilated into a much larger Burman majority state. A further safeguard was that military was headed by a Karen ethnic minority member, Smith Dun. However, the constitution was abrogated in a military takeover of 1962 which had various lasting impacts on ethnic relations (Egreteau, 2016). Firstly, the bicameral legislature was abolished and instead a one party unicameral legislature was instituted (Taylor, 1979). In this manner, the constitutional safeguard provided to the minorities was naturally withdrawn paving the way for unceasing inter-ethnic disharmony. Secondly, instrumentalizing the concept of “taingyintha” to mean ethnic nationalities, simultaneously produced diabolical impact of subsuming the juridical project of a membership of political community namely Myanmar to that of ethnic nationality (Cheesman, 2017). Further constitutional developments in the new constitution of 2008 were clearly Praetorian according formal levers of state offices to Tatmadaw. (Egreteau, 2014)

These inter-ethnic hostilities played into the struggle for democratic restoration. For example, Aung Suu Kyi, the Nobel peace laureate and pioneering figure of democratic restoration in Burma encapsulates the dilemma of inter-ethnic relations and a juridical Union in the following words:

"Our ethnic nationalists still harbor a deep feeling of mistrust of the majority Burmese, a mistrust natural to those who have not been accorded justice and fair play. In trying to build up a strong union, our greatest challenge will be to win the confidence of those who have only known repression and discrimination." (Win, 2020)

The fractious nature of ethnic land scape is covered in scholarly literature of Centre-Periphery conflicts. This fractiousness had been a part and parcel of civic resistance against the Tatmadaw where mobilization was often fractured across ethnic lines (Ganesan, 2019). However, coup of February, 2021 saw a mass cross ethnic resistance & protest movement, comprised majorly of youth groups. It was different mainly in two respects. First, that this protest movement was cross ethnic & spontaneous without visible figurehead (Kyed, 2021) and second, it was comprised majorly of youth and creative in its expression of dissent ("Myanmar Coup: Mass Protests", 2021). Consequently, this recent paradox i.e. overcoming of interethnic hostilities to work collectively towards a shared destiny is hitherto unprecedented- the spontaneous nature of this mobilization and youthful composition of this movement is the focus of this article. I posit that changing information and communication landscape of Myanmar, democratization of information resources and evolving cultural repertoire are some of the factors driving this change. The article progresses by surveying the literature on information & communication technologies and collective action to situate the debate followed by Methodology section while leads us into the findings of how the informational and technological landscape in Burma is contributing and inhibiting collective action and evolving repertoire of activists and Tatmadaw. Finally, the concluding section encapsulates the significant ways in which the finding corresponds to research on informational landscape and collective action in differing contexts.

## 4.2. Literature Review

ICT has become a ubiquitous phenomenon in everyday life facilitating everyday activities from hedonistic pursuits (Eginli & Tas, 2018; Joyce et al., 2019; Petrič et al., 2011) to challenging ways of organized social life (Ang et al., 2014; Wilson & Corey, 2012; Earl et al., 2014). ICT's has lent itself to channelize dissent across the geographical sphere from United States to Africa (Brannan et al., 2020) and ideological spectrum from antifa (Klein, 2019) to ultra conservative (Li et al., 2022). ICT provides the latest link in the chain of advances in democratization of information resources (Holbert et al., 2002), with each epoch presenting different distribution of knowledge and normative resources for mass mobilization (Kertcher & Margalit, 2005). ICT is unique however, in that it is difficult to exercise classical top-down gatekeeping (Bostos et al., 2013) although other forms of information control on ICT exist (Gillespie, 2020).

As for any scholarly enterprise, the findings throw up irreconcilable findings as to effects of ICT for mass mobilization. Although majority of scholars agree about the temporal synchronicity of critical content on social media and mass mobilizations (Aday et al., 2010; Kavada & Poell, 2021), the underlying explanations differ. Some scholars argue that social media is only a medium to express discontent (Brancati, 2014) whereas other sees it as a conduit that channelizes mass discontent into collective action. Yet some scholars argue that ICTs can in fact serve as tool of mass surveillance and expansion of repertoire of suppression for hegemonic regimes, hitherto not possible (Keremoğlu & Weidmann, 2020). Some scholars have undertaken to bridge these disparate findings by focusing on reception of ICT generated information on propensity for collective action. Little (2016) argues that information circulated through ICT may sometimes reveal that regime is less unpopular and can actually dampen collective action and vice versa.

To resolve the paradoxes in ICT and mass mobilization research, some scholars have examined the synergies and interactions between the extant organizational networks (Anderson, 2021), elite cues (Farrell, 2012), knowledge cascades and affordances of ICT for collective action. This research posits that although ICT bridge information asymmetries, the importance of extant physical networks, platform capacities of

established organizational structures and opportunistic appropriation of ICT affordances by elites cannot be underestimated. Based on the strength of such a priori effects and structures or lack thereof, many situational variations in research findings can be explained where in some cases ICT's promote mass mobilization while in others, it does not. Although, ICT affordances can under certain conditions encourage slacktivism (Levy, 2017), whereby dramaturgical participation in ICT networks gives the illusion of dispensing of ones' civil duty, there is accruing evidence that when ICT participation is embedded within established within existing organizational context, it reinforces the likelihood of translating virtual participation into mass mobilization.

Some research has focused on the perceptual dimensions of ICT for mass mobilization arguing that ICT may restrict the scope of mobilization within its platform affordance of liking, commenting upon or sharing content which may have little relevance to affective behaviour and mass mobilization (Morozov, 2011, p. 185). Such behaviours may encourage the illusion of mass participation. Similarly, the requirements of 24-hour news cycles and ever increasing competition for precious collective attention, leads to widespread coverage of protest and ICT content by traditional media, which does increase the visibility and salience of protests without the corresponding increase in mass mobilization, oftentimes outside the geographical locus of protest movements (Starbird & Palen, 2012).

Similarly, some scholarship has paid attention to interlinkages between temporal and spatial dimensions of ICT content generation, mass mobilization and internet diffusion to parse out efficacy of ICT for mass mobilization. Some evidence suggests that spikes in regime critical ICT content does not precede mass mobilization but instead materializes after mass mobilization has broken a barrier of saliency (Hu et. al, 2014; Aday et. al., 2010). Similarly, study of relationships between internet diffusion and protests reveal contradictory findings e.g. in some instances internet accessibility (and attendant ICT affordance) does not precipitate mass mobilization whereas in other it does (Stein, 2017). These apparent contradictions are resolved by proposing a finer differentiation of mass mobilization into two stages, initial mobilization and continuation

of protest movement. It is argued that although internet and ICT may not be effective in mobilizing protest, it does help in its perpetuation (Weidmann & Rød, 2019, p. 4).

Some researchers have focused on the issues posed by the immense concentration that ICT platforms exercise over generation and circulation of content, the implications of content moderation policies of ICT platforms, what kind of trade-offs does this entail for generation of social discourses and power dynamics about marginalization. Middlebrook (2020) finds that subjective experience of shadow banning overwhelmingly overlaps with marginalized identities. Opaque content moderation policies constitute skewed and new modality of governing power relations between click/gig labour and ICT platforms (Savolainen 2022; Cotter 2021), relegating them to digital purgatory with one stroke of a key. Although the dynamic tension between the content contributors/critics and ICT platforms exist as to the existence of such censorship, occasional truth points out that shadow banning is well and thriving (Rogan, 2022). Regardless, the ICT content moderation policies dictate behaviour of people, whereby it generates behaviour which is more amenable to algorithmic rationality instead of spontaneous discovery (Bucher, 2017).

Yet other scholars view technology from sociological perspective by positing that technology rarely remains within its instrumental and design logics as it is appropriated and adapted to diverse ends (Sclove, 1995, pp. 10). The question of technological impacts is therefore dependent on contest for appropriation of technological artefacts to constantly constitute and convene social facts. Combined with the lack of public fora to discursively examine the social, political and cultural impacts of technology, indicates that technology would operate within the logics of commerce and accounting cost-benefit analysis (Sclove, 1995, pp. 5).

Based on the review of literature, several gaps are identified. First, although there is plenty of scholarship regarding ICT technologies for civil capital and mass mobilization in democracies and autocracies, there is paucity in regards to impacts of ICT in societies with strong ethno-nationalist/linguistic cleavages. Secondly, some research indicates importance of organization structures to accentuate the effects of ICT, more research is required to examine when organizations/institutions are highly partisan

and fragmented with little priors of cooperation. Thirdly, there remains a need to explore cognitive and emotive pathways facilitated by ICT for mass mobilization in aforementioned contexts and lastly, since ICT popularization is very recent phenomenon, it is imperative to explore intergeneration differences especially in context where intergenerational digital divide is quite wide.

#### **4.3. Data & Methodology:**

The above literature review points us in the right direction to identify the scope, sample set and appropriate methodology for our enquiry. Since the enquiry is exploratory in scope i.e. to identify how ICT affordances interacts with mass mobilization in environment characterized by features such as ethno-nationalist/linguistic cleavages, distribution of organizational resources along partisan lines, the evolving repertoire of suppression by the military government in such environment and intergenerational differences mediated by ICT affordances.

The appropriate methodological choice is in-depth interviews that enables exploration of how ICT affordances interacts with the environmental characteristics described above. It enables to construct how ICT constrains or enables certain practices, how utility and meaning of ICT is symbolized in such settings, how ICT enables, constitutes & convenes social understanding and means of recreating it in the digital sphere. All these research aims further resolves the characteristics of desired sample which is activists involved in civil resistance to the military regime in Myanmar, with two major considerations. Firstly, the sample of activists should have diversity of ethno nationalities to identify the impact of ICT in partisan environments. Secondly, the sample should have diversity of age distribution so that disparate impact of ICT in environment of significant digital divide can be identified.

A total of 12 civic resistance activists were interviewed over six-month period from March-September, 2022. The sampling technique employed was purposive sampling largely because the sample had to cater to multiple research needs namely



participation in civic resistance, ethnic/linguistic diversity and digital literacy. Sample was further complemented by snow ball sampling method, because referrals were required for resistance activists to be amenable to talk openly about their methods and activities. These scholars were in voluntary exile in Thailand largely owed to their activities pertaining to civic resistance. The emergent themes out of thematic analysis conducted are reported below.

The interview followed a loosely structured open ended format that allowed for exploration of important digressions, subjective expressions and evaluations of the situation. The length of interviews varied depending on the communication style of each participant but overall each interview lasted in excess of an hour. Some of the important questions are narrated below to give the feel of the interview process.

Introduction to the objective of the interview, questions related to demographic profile (e.g. ethnicity, membership in ethnic resistance organizations, age etc.), details about participation in civic resistance activities, reflections on historic genesis of military interventionism in Burmese politics, Information consumption habits related to political developments (I.C.T or conventional media), I.C.T utilization habits unrelated to political developments, Subscriptions to social media channels, Pivotal moment of decision to become part of resistance, Examples of I.C.T utilization for resistance related activities, Network members and basis of introduction to them, cross-ethnic collaboration and process of vetting whom to trust and how, Examples of digital harassment or perceptions thereof, Imageries of desired future for Burma, Place of ones' respective ethnicity in preferred imagery of Future etc.

#### **4.4. Analysis & Findings**

##### **i. Norm Convergence:**

A relatively large number of responds reported that youth and social media platforms interact in interesting ways which has facilitated norm convergence across disparate ethno-linguistic youth in Myanmar. The primary technological pathway which

has facilitated this convergence is exposure to alternative ideas, imagery and global landscape of practices that has enabled youth to visualize an alternative reality, one that is divergent from the dominant frames & narratives steeped in ethno-national centrism, particularly prevalent among older citizens. Such exposure has broadened the cognitive horizon of the youth by facilitating the understanding that difference does not necessitate conflict, peaceable co-existence is possible among hitherto antagonist groups.

This norm convergence was quite evident in the communicative styles of various generations of activists. The repertoires of rationality and justifications invoked by younger generation of activists is more cosmopolitan and universalist whereas repertoire of less ICT oriented activists is based on past histories of inter-ethnic relations, institutional narratives, authority figures or personal experiences. Both these tendencies represent different heuristics to evaluate existing opportunities and risks structures e.g. ignoring ground realities or too rooted in the past to move on etc.

## **ii. Pre-existing Communities of Interest:**

Another interesting facilitating by the boundary spanning qualities of digital information & communication artefacts is that it allows for communities of interest, which are networks of netizens organized around occupational, social, leisure driven objectives. These digital spaces facilitate sharing of information & experiences around hedonistic aims of the group member, which foments friendships that often translate into network formation in physical world. These network effects of communities of interest provided an important impetus for cross ethnic resistance especially among the youth. A major impediment that these networks enables to overcome is that pre-existing stereotypes and biases which are enforced through within group narratives and propaganda to promote groups solidarity is diluted on such platforms because the engagement is entirely about non-political aims and more importantly without access to information about ethnicity. These factors enable people to evaluate each other on the intrinsic merit of their participation or congruence to one's interest and past experiences. Thus, the trust generated through such networks is leveraged to participation in socio-

political causes as well. Predictably, the membership audience and digital literacy limits these effects to youth as compared to non-youth.

An important aspect in this regard is the evolving capabilities of ICT platforms where historically, they exercised merely as bulletin board. But now, they present various opportunities for thought leadership which probably work as elite cues to utilize weak social media ties to generate physical participation. This theme is explored further in “Digital Influencer Effects”.

### **iii. Digital Influencer Effects:**

An effect similar to norm convergence/communities of interest showcasing the boundary spanning qualities of ICT platforms is digital influencer effects, mediated by the rise of a phenomenon “Digital Influencer”. Digital influencer A digital influencer is an individual who has a dedicated social following and possesses social influence over his/her followers (Lou & Yuan, 2019). Digital influencers include bloggers, vloggers, social media stars, internet celebrities, and so on (Hughes, Swaminathan, & Brooks, 2019; Kapitan & Silvera, 2015; Lou & Yuan, 2019). These social media influencers command a formidable following and digital communities based upon a two-way symbiotic process. For the influencer, many platform allows for monetization of the content whereas followers gain cognitive benefits through wishful identification or learning through the influencer. An important finding in the context of cross ethnic and largely youth oriented cooperation in Myanmar is mediated through digital influencers. Similar to aspects of norm convergence and communities of interest, digital influencers have following which is largely ethnically diverse & tech savvy youth. Owing to the diverse composition of the following that digital influencers have, influencers tend to aspire to globalist values that emphasize self-determination and liberal outlook. Also, in some cases influencers feel compelled to make a statement to this effect, as importance of positive persona is most important aspect of para social relationships. There have been few reported cases of digital influencers impacting youth in a meaning way to form a cross ethnic democratic front in Myanmar.

#### **iv. Triangulation of social cues:**

An important affordance of the ICT socio-technical assemblage is that it allows for the people to triangulate social cues to either confirm their conforming perception or investigate further a dissonant cognition. This effect is mediated by the mass appeal & reach of the medium along with almost zero cost of information dissemination in real time. In past coup d'état the distinguishing factor has been virtual media blackout and media censor which is virtually not possible on current ICT platforms.

In the present case, the synergetic effects of pre-existing networks to circulate information generated by citizen journalism, persuasion by digital influencers, inability of the junta to suppress voice of dissident activists and political leaders, the personal experiences of disruption faced by citizens has all collectively created a proof of burden which is too heavy to obfuscate. In such a climate blatant repression is very hard to ignore, especially give the convergence of norms that are also partly off shoot of democratization of digital resources. Classically, the cost of information generation and sharing has been very steep in case of tradition media and ICT has reversed the matrix by exacting a steep price for information censorship.

All these effects in concert have eliminated the incentives for “rational ignorance”- a problem that given the negligible likelihood for one individual to effect the course of events, it is rational for the individual to stay ignorant. However, intergenerational differences persist in what platforms individuals use to triangulate cues with younger generation paying more attention to social influencers and their communities of interest whereas older generations prefer the cues from preferred organization or political leadership and content curated by respective ethnonational groups vs. citizen generated content.

#### **v. Gate-keeper free Citizen Journalism:**

Citizen journalism is defined as activities including but not limited to blogging or eye witness testimonies about current events, photo and video sharing by ordinary citizens (Goode L, 2009). Citizen Journalism contributed a significant deal to crystalizing

broad cross ethnic coalition against the coup. One of the major cognitive pathways is that it enabled to broad cast brutal violence and repression directly, without any kind of editorial sanitization of such content. This raw imagery sparked the innate humanism by laying bare the vicious persecution, its tactics and methodologies to the public eyes. Such persecution is practiced often but remains hidden from the public eye mostly due to lack of access, ability to document & means to circulate such material, notwithstanding the degree of personal risk required to do so.

It is precisely the boundary spanning characteristics of two related technological artefacts, namely the mobile imbedded cameras and information & communication platforms that allows for the possibilities to document and circulate or even in few instance broadcast repression as it takes place. This allows for materialization of abstract conception that people may have about repression of their regimes and presents them with a conundrum in form of cognitive dissonance, even for regime apologists, to reconcile irrefutable evidence generated thorough assemblage of information & communication platforms, cellular embedded recording devices and civil journalism. Interestingly, there is strong inter-generational variation for acceptability of evidence generated through citizen journalism whereby younger generation seem to be more amenable to challenge their mental frames by confronting this evidence. In can be stated that prior interaction with technology predicates its affordance to challenge cognitive frames and beliefs.

#### **vi. Indivisibility of Security:**

Another important cognitive pathway mediated by ICT in forging a broad cross ethnic collaboration for democratic movement is based on its affordance to act as digital agora, a communicative platform for exchange of interest articulation. An important realization that this affordance evolves is that individual interest articulation is not possible within a juristic entity. This principle is akin to maxim of “Indivisibility of security”, which means that security of one ethno nationalist group within a framework of non-democratic governance is not practicable, workable or enforceable. For example,

few activists indicate that a major tool of a non-democratic hegemonic power is to ply various ethno nationalist groups vis-à-vis each other, by employing a vast repertoire of tactics. More importantly, these tactics include compartmentalizing negotiations by using negotiations as a competitive leverage to demobilize various groups by conferring selective benefits. These compartmentalized negotiations and conferral of benefits amount to salami tactics by which individual groups are one by one demobilized and compartmentalized, with the resulting detriment to a cohesive mass movement for democratization reforms. The only result being the perpetuation of hegemonic control, eventual regress and revocation of commitments made to the various ethnonationalities gradually.

#### **vii. Politics of Memory:**

An important observation arises that underlies the intergenerational differences with respect to cross ethnic cooperation & how it interacts with the platform affordances of ICT in the course of broad based mass mobilization. There are salient intergenerational differences in patterns of searching for information, consumption of information and the heuristics to evaluate & incorporate the same into existing world views & frames of reference and finally, to influence ones' decision to participate or not in processes of civil capital formation. The Younger generation (typified as gen Y and henceforth) tend to search and retrieve information through digital platforms, in the process exposing them to alternative perspective created by citizen journalist. Similarly, the same group is more likely to join digital groups with broad cross-ethnic membership and willing to engage in collective action more readily.

The older generation (Typified as gen X & preceding) tend to rely on formal media. Interestingly, even in the case of activists belonging to this group, they tend to rely on digital content curated by their respective ethnic-national group. Similarly, the heuristic employed to evaluate the information and incorporate in existing world view is dominated by what can be termed as “politics of memory” i.e. contextualized understanding of content interpreted through lens of long history of cross-ethnic

relations. This contingent understanding of information, also impact the choices of collective action which is undertaken through officialised channels of ethno-national representative organizations.

#### **viii. Dual Aspects of ICT Assemblage:**

ICT assemblage and its resulting redistribution of normative resources e.g. through mechanisms of norms convergence, citizen journalism, providing a priori basis of trust through communities of interest etc. tends to favour civil activists however, it paves way for interplay of both despotic and activist entrepreneurships in equal measure.

One major despotic innovation in response to civil innovation on ICT is what can be termed as cognitive infiltration and how it creates peculiar new challenges. Classically, the hegemonic authority tended to infiltrate civil resistance groups physically, which created many opportunities for civil entrepreneurs to identify such infiltrators and change their strategies. However, ICT assemblage provides ample opportunities for cognitive infiltration without detection. Similarly, dual use surveillance technologies combined with artificial intelligence capabilities to sift hitherto impossible amount of digital data creates additional challenges. Similarly, hegemonic entrepreneurship has also evolved its techniques to digital world and employing digital harassment, the favoured technique being e-doxing. Currently, leading civil entrepreneurs' digital devices and accounts are hacked to obtain any material about them which can compromise their public image or shame them into withdrawal.

Alternatively, as interesting observation emerges regarding how manoeuvres in the digital realm spills over to the opportunist use of events in the physical world. Many activists report that Corona virus pandemic has been a godsend to their cause-as it allows that to conceal their identity without raising a suspicion due to face mask protocols.

### **ix. Juridical Vs. Ethnic Citizenship-A paradox:**

A broad based cross ethnic mobilization mediated by platform affordances of ICT assemblage presents many opportunities for collective action however, it is not without its paradoxes. One of the important paradoxes are the anxieties about the future of ethnic nationalities in a juridical entity. The responses to this conundrum, is again mediated by intergenerational differences in selecting & searching for information, heuristics employed to synthesize it into existing worldviews underscored by past experience and politics of memory.

Intergenerational differences play a large part in deriving these differences and their rationalizations and justifications. Older generations tend to underscore dystopia that over assimilation may result in a complete forgetfulness of modes and means of ethnic life, the basic unit of identity and realization of mutual hopes. Younger generations tend to embody techno optimism underscored by the realization that in the fulfilment of juridical project, ethno nationalities would eventually be better off. The justification provided is that various mechanisms of under representing minorities in census and other instruments of state as well as constant state of strife in effect undermine ethno nationalist identities to a greater extent than the fear of assimilation and eventual melting pot of a larger juridical entity. There divergent sensibilities highlight the important observation how information is incorporated by pre-existing heuristics in existing world views and this ontologically contingency of knowledge can drive conflicting conclusions.

### **x. Digital Hierarchies of Importance:**

Digital spaces are not exempt from the considerations that permeate our physical spaces. In fact, digital spaces provide an interesting study of how hierarchies in physical world are transmuted to digital space. Digital activism and civic activity in Myanmar provides an interesting case of this phenomenon, even prior to the current coup d'état.

The civic disturbances that began with the excesses against Rohingya community acted as the precursor to the present coup d'état. Multiple activists submitted requests to social media platforms, most notably Facebook, to limit the circulation of hateful content



against the Rohingya community. All such requests were met with a wall of silence, vanishing into the digital purgatory. It was only after the congressional investigations into the Cambridge Analytics scandal that Facebook finally found its voice to explain its inaction and pledge for better response. The reason offered was that Facebook lack the linguistic proficiency to filter content in Burmese language and its algorithm is not geared to the Burmese writing script. This episode provides a rare vantage point of how commercial logics of ICT platforms create digital hierarchies, sometimes with pernicious consequences.

A related matter of note regarding how this ties into the current milieu is that linguistic and ethnic diversity of language still poses a considerable challenge with many local dialects and native notational scripts. This virtual silence may have encouraged the Tatmadaw to escape virtual scrutiny and enabled it to carry out its coup d'état however, the question of such tacit considerations cannot be estimated with reliability. The civil activists however, assume it to be carrying considerable weight.

#### **4.5. Conclusions**

The preceding discussion brings forth some important points regarding ICT affordances for collective action in environments characterized by partisanship and deep differences in digital literacy. The findings resolve some persistent contradictions regarding ambiguous role of ICT to crystallize civic resistance in some instances by exploring some causal pathways as to how it happened in Burmese case. Collective action and protest theory has paid significant attention to opportunity structure of protest movements. An important component of opportunity structure is elite fragmentation that allows opportunities for various disenfranchised interests for co-option by antagonistic elite fragments (Burton, 1984; Kelly Garrett, 2006, Yun, 1997, Brockett, 1991). However, this paper contributes to the understanding of opportunity structure in environment characterized by fragmentation along ethnic nationhood. Such deep divisions had hitherto precluded evolution of broad based mass movement by

employment of salami tactics by keeping the ethnic representation divided. The affordances of ICT however, allows for evolution of mass movements in such environments by promoting alternative imageries of desired futures, a more cosmopolitan cognitive heuristic rather than one reliant on entrenched ethno-narratives based on ethnic trauma, affording opportunity to politically and ethnically neutral social media influencers to provide thought leadership which is effective precisely because of being apolitical. Coupled with the thought leadership provided by apolitical digital influencers, it paves the way for providing digitally literate but politically disenfranchised youth to buy into civil resistance who are distraught with fragmentation of existing political platforms along ethnic lines. Thus, ICT affordances can crystallize weak social ties on such platforms into tangible collective action under certain pre-existing conditions most notably digitally literate class which feels disenfranchised by fragmented ethno politics and perceive it to be an impediment to a broad based movement.

ICT has been credited with allowing for greater elite accountability (Asongu & Odhiambo, 2019; Gibson & Ward, 1999; Kelly Garrett, 2007) which has specific implications for the Burmese case. Elite political representation fragmented across ethnic lines allows for accountability in a nuanced manner i.e. it brings to the fore realization in the digitally empowered yet politically disenfranchised youth that separate peace (negotiated for separately by each ethnic representative organization) would always be a fragile peace or no peace. Coupled with lead taken by hitherto apolitical social media influencers encourages participation in horizontally organized headless youth groups which want to participate in a juridical as opposed to an ethnic platform.

While ICT increases youth engagement with social movements, some scholars highlight anxieties regarding its role in rise of populism (Gonawela et. al., 2018; Ragragio, 2022; Vogt, 2016). This has specific implications for Burmese political landscape which is fragmented along ethnic divisions. Although in reaction to coup d'état ICT did facilitate newer possibilities and alternative imageries especially for ICT savvy activists, these alternative imageries can be used both for collective action or become a tool into hands of populist pandering. The evolved heuristics employed by youth to make

sense of developments in their landscape which is divorced from long trajectories of inter-ethnic relation and histories can be beneficial for forging new consensus, but it also predisposes use of ICT for populist pandering.

Another important aspect is how digital spaces and platforms dictated by the logics of commerce enact and transpose the hierarchies of importance extant in physical world to digital world. A Burmese case study present a very interesting example of this dynamic. The size of Burmese market rendered it impracticable to develop content moderation capabilities and artificial intelligence based solutions to moderate Pali script based content on Facebook. This unfiltered circulation of content played a role in Rohingya crisis and possibly emboldened Tatmadaw regarding the possibilities of what it can get away.

Based on the preceding discussion, it can be stated that differing trajectories of national histories, organization structures and resources, social-ethnic composition of societies determine if and how the ICT landscape is utilized for collective action and to what effect.



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## CHAPTER 5

### Conclusions, Implications, and Limitations

#### 5.1 Conclusions & Discussion

This research project set for itself the aim of examining the sociological implications of technology from the socio-technical perspective, more conspicuously ICT & Algorithms, the possibility of normative guidance for technological innovation and an empirical case of how ICT is redistributing the power resources and evolving repertoire of techniques.

ICT & Algorithms are the latest manifestation of an overarching quantitative episteme which in itself has generated substantive scholarly enterprise. Algorithms possess numerous advantages like freedom from capacity deficits and inherent biases in human cognition, but the essential question remains i.e. is it so? Research indicates that algorithms during development phases are subject to same subjective factors of social sense making and rationalizing process to ascertain if their predictions are proximate to what we/developers/experts would assume. Another purported advantage is that algorithms advance social discourses but enabling commensurability of arguments. Interestingly, this is throwback to the classical philosophical dilemma first proposed by sophists that two arguments are never really comparable. The jury is out on if algorithms have solved this problem but research is accruing that indicates that maybe algorithms “overconforms” the social discourses to its data & decision logics. The social discourses then, instead of being a fora of articulating better social solutions, ends up being conformance to better compliance with algorithmic logics. This precludes “Out of Model” solutions for social problems, with complete blind spot for black swan events.

The ethical gold standard for algorithms has been Accountability, Transparency (including explainability) and Privacy. However, they seem to be quite an elusive ideal, much easier said than done. Accountability is elusive often because of business secrets

privacy clauses in procurements procedures which makes the process of ascertaining the decision rules of statistical discovery or underlying data opaque. Notwithstanding the ethical challenges embedded in applying group level characteristics to individual level behavior. For example, if underlying data is adjusted or weighted for correcting for social-historic patterns of biases, the normative questions on two levels arise. First, what would be the appropriate weight to correct the socio-historic bias. And Two, what would be its implications from perspective of intergenerational justice? Similarly, the ideal of Transparency is problematic to attain. Firstly, the self-learning algorithms are opaque by design because they evolve their decision rules based on changing dynamic of input information. Similarly, the process of complex algorithms development is non-linear, cumulative, recursive & compartmentalized where most people work on need-to-know basis, often with no one with complete understanding of multiple cogs and how it all hangs together. Additionally, the continuous upgradation and tinkering leaves the documentation trail lagging far behind the operational complexity of the algorithms. Another important peril of transparency is obfuscation by information i.e. too much and too jargon laden information to render substantive evaluation of such information meaningless. Similarly, Privacy is a value ideal however, it ignores some important aspects. Firstly, algorithms catalyze changes in society which shift the norms by creating segregated incentive structures for broadcasting personal information. For example, web crawling algorithms that can track individual health related information can be utilized to adjust health premiums thereby providing incentive to people with good health to make their information public, without breaching any law. Similarly, with technological episteme reigning supreme, utilization of algorithms for human resource function based on business necessity is gaining widespread acceptance. The problem with algorithms in human resource function is that it discounts the disparate impact doctrine which is the main source of offense of disenfranchised communities.

Another vastly important facet of technological episteme is symbiosis between machine and human agency made possible by quantum advances in computation capacity, machine readable data, fiscal pressures of austerity and prudence, and evolving expectation of citizens with respect to state-citizen relationship as epitomized in co-design provision of public service with option for voluntary opt-in. These all changes

suggest increased technological solutions with their attendant perils. It is important, therefore, to have a normative benchmark to evaluate these technological solutions. A theory of Justice is proposed as one such criteria. It progresses by way of proposing that a technological choice or innovation can be justified on based of enhanced welfare argument, provided that it justifies how it enhances collective welfare despite it creates atomistic residualizations. Secondly, there should be venues and mechanisms to bring such realizations to the fore, propose changes, resolution and will to undertake changes, in short a mechanism for continued social validation of technological choices and innovations.

The three scenarios in order of increasing machine autonomy progresses by way of data based solutions within the ambit of human supervision, data enabled machine autonomy albeit auditable and traceable decision rules and complete machine agency with learning and evolving decision rules, resource allocation and underlying programmable infrastructure. The leading insight is that *a priori* decision rules and justifications about why a particular technological choice enhances collective welfare provides a way for resolving social conflicts which arises with the resulting redistributions of costs & benefits that technological choices entails. The problem, however, is that to bring fore the normative claims of adverse impacts by individuals or groups require existence of communicative or deliberative fora for vindication of technological choices.

For such communicative or deliberative fora to exist dictate certain decision rules with respect to rules of access to these forums, decision rules regarding costs of mobilization and bring forth a claim of adverse impact, decision rules for admissibility and evaluation of evidence. The problem with communicative venues for the social validation of technological choices is what has been characterized as “Collingridge Dilemma”. Effects of technology cannot be ascertained before its implementation but after being implemented, it becomes entrenched in significant ways to undo it. A related problem is the proof of work required for public procurement of technological solutions. A technological solutions contracting is dependent of outputs i.e. a technological artefact instead of outcomes i.e. successful resolution of a particular social problem. Although there is good reason e.g. need of technological workers’ compensation for proof of work,

it creates solutions which often have vast impacts beyond the social of intended solutions.

The promulgation of ICT technologies has inspired similarities with the SAMIZDAT with much accolades for its ability to strategically alter the costs involved in creation and circulation of information. ICT has been appropriated by the civic and political activists for the promulgation of their world view with some success however, some persistent dilemmas persists regarding conditions under which it generates successful civic entrepreneurship and vice versa. Also, the exploration of conditions under which ICT based weak social ties transform into civic action, role of traditional organization structures of civic enterprise in ICT age, Intergeneration and ethnic divisions in age of ICT based civic entrepreneurship remains some persistent questions.

The preceding questions are explored with the empirical case of use of ICT in Burma by civic activists. The key takeaways are that ICT transforms the cognitive heuristics and sense making activities by providing wide frame of reference to compare, benchmark and measure events. Predictably, intergenerational variations exist whereby traditional heuristic involved individual and group memory and albeit a great vessel for historic continuity, acts a barrier to alternative imageries of future. The findings also suggest with respect to possibility of weak social ties transforming into actionable activism works in Burmese case because of social media influencers providing thought leadership combined with their fan base which was comprised of communities based on interests acting as safe social space generating interpersonal trust across ethnic loyalties and comradery. The role of existing ethnic organizational resources remains important but their effects differ intergenerationally among ICT and non ICT users.

However, ICT creates new technological scripts as well in new ways. Instead of acting as a neutral venue, the hierarchies of importance in physical world transpose themselves and persist in interesting way in the digital world. It is especially important in case of Burma where years of abuse of ICT has perpetrated violence against ethnic minorities with no response from global ICT corporations and protestation by civil activists virtually met by a wall of silence. Simply because it was not commercially viable to moderate content or develop algorithmic capabilities for the Pali script because it was probably a commercially unviable preposition owing to considerations of market size. It is one important example how commercial logics act in superimposing the extant

hierarchical structures into modes of new innovations.

The need to find mutually acceptable decision rules between the ICT platforms and information regulators out of the gridlock that ICT are platforms and thus not accountable to the information or the consequences of such information is pivotal to enhance the exponential reduction in costs of information generation and transmission that these technological innovations has brought forth.

## 5.2 Limitations

It appears customary to highlight limitations in the work that one has undertaken over course of few years. Perhaps, it serves the purpose of attaining epistemic humility. Thus, I elaborate upon the limitations of this thesis.

The first paper that examines the role of algorithms and artificially intelligent artefacts in knowledge and power reprioritizations has certain limitations. Firstly, the question can always be asked why algorithms or artificially intelligent solutions. Secondly, the paper could be written from a narrower topical focus on one particular domain e.g. healthcare or transportation policy etc. Thirdly, the final sample set of thirty articles for the topic at hand appear to be a little over parsed.

The second paper adopts the ethical framework of John Rawls' Theory of Justice to ethics of technological Futures/Innovation. Firstly, the question can always be asked in a world of frameworks, why specifically choose John Rawls Theory of Justice. Secondly, a question about ethics of technological innovation as a topic of study can always be asked (As a side note, to the uninitiated, the topic appears to a case of infatuation with the movie "Terminator"-The infatuation actually was with the movie "Snow Piercer (2013)" and I do take it seriously).

The third paper examines the role of ICT in youth led civic activism against the coup d'état in 2021. A multiple set of limitations manifest themselves immediately with this one. An urgent limitation can be that why I choose to highlight the various effects of colonial paradigms and their results in ethnic fragmentation for a coup d'état that happens seventy years down the line. Secondly, a limitation can be highlighted as to the paper



does not conform with the structure of the thesis whereby the two preceding pieces are of theoretical nature whereas this is an empirical one. Why this change of tenor so close to the finishing line.

### **5.3 Future Research Ideas**

The proposal for future research direction is a custom that is tacit acknowledgement of continuing down the same road of scholarly enterprise. I propose some research direction which I developed during multiple phases of fruitful enrolment into a PhD program.

I am interested in exploring the questions of how ICT changes knowledge consumption habits and what kind of gatekeeping functions does these platforms have with what kind of justifications. ICT technology is pivotal information dissemination and strategically alters the costs of communication for independent activists. However, there is increasing concerns about content moderation policies of big tech platforms. These content moderation policies generally work through use of artificially intelligent algorithms that prioritize or deprioritize certain content over other. It is important from the perspective of informational justice that rationality of such content moderation be subjected to public scrutiny. I intend to conduct a netnographic research on the topic by engaging with content creators based on their self-perception of shadow banning.

I am interested in study of gig economy from perspective of distributive justice. As the saying goes, Data is the new oil. Given the rise of data based economy, it is pivotal to pay close attention to the revenue sharing models of the big tech platforms. Some important research questions in this regard are what kind of economic justifications underlying the varying rates of compensation for content creators, based on geographic affiliation of the viewership or content creator. It is important area of study for the perspective of distributional equity in area which is going to be, if not already, one of the most important revenue stream for a very large workforce.

Thirdly, I am interested in studying the adoption of artificially intelligent solutions in Thai public workforce and examine it holistically from perspective of ethics.

The analysis proceeds by way of multi-ordered analysis. First, examining the adequacy of guidelines for responsible use of artificial intelligence and then seeing if practice conforms to the guidelines established for this purpose.

#### **5.4 A Story & A Parable**

To cap it all up, there would be no better goodbye than a true story and a parable that sums it all up, the gravitas of profound effects that technological adoptions have for the relation of humans to humans, their environment and even to themselves.

“It is the story of a small village frozen in time, named Ibieca. Running water was installed in the village in the 70’s. It made redundant the social practices of need like fetching the water from the village fountain and gathering at the village washbasins. The families bought washing machines. But it changed the social life of Ibieca-the fountain and the washbasins became deserted and fell silent. The men started losing their sense of familiarity with the children and the donkeys that helped them haul water. The women stopped congregating at the village washbasins to share politically empowering gossip about the village life. One farmer, compelled to sell his beloved but now useless donkey, withered into permanent silence. In the end, the installation of running water helped break down the Ibiecans’ strong bonds with one another, with their animals and with the land, which had knit them together as a community.”

“Imagine-every citizen in a nation gather together nightly in their dreams, assemble solemnly in a glistening moonlight glade, and there debate and ratify a new constitution. Awakening afterwards with no memory of what had happened, they nonetheless mysteriously comply with the nocturnally revolutionized document in its every word and letter. Such a world, in which unconscious collective technological decisions govern waking reality, is the world that now exists.

It is as if a family shared its home with a temperamental elephant. Yet Never discussed or somehow even noticed, the elephants pervasive influence on every facet of their lives.”

The villagers of Ibieca had no tradition of asking such question, but if they had asked: If our desired form of society is to adopt one set of technologies, instead of the other.....

I hope I have tried to ask and answer some of these questions with this thesis.



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