

Technology and (Dis)Empowerment: A Call to Technologists *

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* I henceforth refer to the book as ACT, an acronym for *A Call to Technologists*. Regular updates about articles and talks related to the book are being posted on this [link](#). Please drop me an email if you would like me to send an electronic version of the book text.

RATIONALE

Argument and objective

ACT is a call-to-action for technologists to collectivize and ensure that the outputs created through their labour do not amplify or create new structural injustices in society by disempowering the weak. By technologists, I refer to designers who conceptualize new computing technologies and information systems, scientists and engineers who build them, and product and project managers who steer their deployment and governance. I also include students who train for these roles in higher education institutions.

ACT anchors its argument in Marxist humanism that positive social relationships for technologists arise only if their labour fulfils genuine use-value for society. The goal of ACT is to provide tools and frameworks to technologists through which they can reason whether or not their labour is leading to such positive relationships. ACT further suggests methods including collective action and building public spheres for deliberation through which technologists can persuade the organizations in which they work, and the wider society to democratically debate the underlying values for technology governance, to avoid disempowerment through technology.

ACT draws attention to different reasons because of which technology often leads to disempowering effects. First, the political economy of technology which incentivises applications that lead to accumulation by dispossession, and an ideology of technology positivism that fuels this in contemporary systems of the state and markets. Second, the socio-technical interface where unforeseen technology governance challenges arise because of a mistaken belief in rationalist approaches to design. Third, the technology design itself where numerous issues such as datafication, privacy, algorithmic objectives, accessibility, etc. arise and ethics-based approaches to address them are not sufficient by themselves. ACT is a call to technologists to increase their awareness about these issues, burst the technology positivism bubble, build an ethos for taking greater responsibility in their work, collectivize to similarly shape the internal governance of their organizations, and engage with the rest of society to strengthen democracy and build an acceptance that the primary goal of technology projects should be to bring

equality by overturning unjust societal structures. I see ACT not just as a book, but as part of a movement for technologists to build this view and reclaim their humanism.

Uniqueness

ACT is a unique addition to the collection of books that discuss inevitable or unintended fallouts of technology, and methods to address these issues.

- Most books in this space however consider technology as the object that needs fixing, and do not speak to technologists as the change agents to do this. ACT instead is geared towards technologists and suggests actions which they can take, such as collective action within their organizations for responsible design of technologies, the use of intellectual property rights to restrict use of their innovations to the purpose of social good, and to connect more closely with the users of their technologies to understand the direct impact of their work.
- It highlights the importance of the political economy of the state and markets within which technology develops, and encourages technologists to partner with society to counter these entrenched social systems. Most other books especially for engineering students do not raise the importance of the political economy and restrict the solution search for responsible outcomes within technological domains only.
- It builds a comprehensive framework of various factors that influence the outcomes arising from technology, including the technology design, the management of its socio-technical interface, the ethics of the goals for which technology projects are conceptualized, and the relevance of democracy through which society can arrive at a consensus on these goals. Most other books on technology and ethics explore only some of these aspects in isolation.
- It highlights that technology design and management choices are driven by underlying values, and that consensus on these values needs to be democratically agreed upon by society. ACT thus links democracy with being able to ensure that responsible outcomes arise from technology. This requires public spheres for deliberation and ACT additionally identifies communication primitives required to build vibrant public spheres. Although this route for imposing social control over technology was discussed until some decades ago, recent books have not emphasized the link between democracy and public spheres with technology governance.
- ACT provides a critical view of the relationship between technology and social development, especially in the context of India, where the state and market are unified in their

propaganda of technology positivism. Not many books exist in this space and more voices are needed to counter the manipulative marketing of technology innovation in the name of development and helping the poor. This makes ACT relevant at the intersection of digitalization and development.

Motivation

My own inspiration to write ACT comes from the 15+ years of work I have done in the area of technology for social development. Alongside research, teaching and mentoring students in this space, I also co-founded in 2009 a social enterprise called Gram Vaani which now operates several voice-based community media networks across India that reach hundreds of thousands of users each year. All this work has been humbling for me and my team in helping us understand the challenges that arise to create meaningful impact through technology, and to build and scale it responsibly. It has therefore been frustrating for me to witness the hype of technology positivism and the irresponsibility that comes with it, demonstrated by many state-led and corporate-led technology projects. At the same time, many technologists who work for these organizations are known to me as personal friends and well-meaning ordinary individuals. ACT is therefore an effort to understand this paradox and to set a new direction for technologists to see through the fog in front of their eyes where a combined hype of technology positivism, entrepreneurship, economic growth and social development, and laissez-faire capitalist social systems, can cloud their morality and connection with society.

ACT brings together my extensive experience of working in the space of responsible technology, media, and development, both as a practitioner and as an academic. I explain through case studies mostly drawn from my own work of incidents of empowerment and disempowerment caused by technology, and situate them in relevant social sciences and design theories. I also contribute to new theory development especially in the modelling of power relationships between direct and indirect users of technology, and in the role of public spheres and democracy to deliberate upon essential values that should define acceptable and non-acceptable uses of technology. My hope therefore is that ACT will speak to a wide audience: to technologists, students, activists, researchers, and people working in social development.

SYNOPSIS

ACT provides technologists with several conceptualization tools and action steps which they can undertake to prevent an impending alienation if the output of their labour leads to harmful outcomes for society. It is a call for them to engage with the users of their technologies, and with society, to democratically evolve a new paradigm for technology design and management that can lead to equality. Building upon the foundations of Marxist humanism, Habermas' theories on the public sphere and deliberative democracy, and Foucault's analysis of power, ACT proposes new frameworks for technology design, management, and navigating the political economy of technology, which technologists should learn to master. Many examples cited in ACT are centred in India and open up a further dimension for a critical analysis of

technology in the different contexts of the Global North and the Global South.

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Excluding the Introduction and Conclusion chapters, ACT has eight chapters that build a comprehensive framework to understand the relationship between technology and its outcomes, and actions that technologists can take to ensure that responsible outcomes arise from their labour.

1. Introduction

The chapter builds the link with Marxist humanism as being derived from social relationships of production to fulfil genuine use-values for society, failing which technologists are bound to feel alienated from their labour. It cites recent events such as the formation of white-collar unions of technologists in the Silicon Valley, and the coming together of white-collar and blue-collar tech workers in the gig economy, as signs that technologists are not happy with having little control over how the output of their labour is put to use by their organizations and governments. This sets the stage for the rest of the chapters to build a strategy for technologists to regain control and ensure that their work leads to societal benefit.

2. Contemporary problems

The chapter aims to make technologists aware of the wider social system within which their technologies are put to use. Technologists, especially students who may have not yet stepped out into the industry, are often not aware of situating themselves in this larger context.

a. Apathy: Draws attention to the growing divide between the poor and the non-poor, which impedes the ability of especially the non-poor to empathize with the poor. Technologists often find themselves on the richer side of this divide, unaware and unable to understand how their technologies impact others.

b. Systems: Discusses problems with the prevailing systems of the state and markets, touching upon multiple aspects such as corporate influence over government policy, unaccounted negative and positive externalities in economic systems, media manipulation, systematic weakening of trade unions and labour movements, financialization of markets, and the use of technology to formalize markets and create new ones for greater exploitation and dispossession of the weak.

c. Society: The prevailing economic systems have shaped society, making it more individualistic, entrepreneurial, and accepting of an instrumental use of others, without due consideration given to humanist values such as freedom, dignity, cooperation, care, and equality.

d. Technology: Building upon the previous sections, this finally shows that technology itself is shaped by the wider social systems. This is demonstrated through the example of the Aadhaar unique digital identity platform in India which has facilitated easier corporate takeover of many public services, with little critical examination by the Indian mass-media, and a propaganda of technology positivism.

e. Answers: Emphasizes that the answers for technologists do not lie just in fixing the technology design, but that the wider social systems need to be fixed as well, and for which technologists need to participate in a societal scale revolution to embrace a new paradigm for technology. Only then can technologists re-acquire their humanism.

3. Understanding social good

After highlighting various social problems in the previous chapter, this chapter raises the question of what goals should be considered as being good for society, towards which technologists should build systems. The chapter aims to provide a framework to reason about what is social good.

a. Ambiguity: It starts with first cautioning against simplistic definitions of social good and how the term *social good* itself can be appropriated by corporations and the state to connote undemocratic or exploitative definitions.

b. Resolving through ethics-based methods: Various ethical theories are then introduced to expose technologists to the wide diversity of ways in which social good can be conceptualized, and how the scope of their own role as technology designers or managers is put into question if they are to ensure that their labour leads to social good.

c. Choosing values: Suitable ethical frameworks are identified to help technologists resolve these dilemmas, specifically frameworks which are able to distinguish between terminal values (end goals) and instrumental values (means and guardrails towards the goals). The importance of democracy is then highlighted as the only legitimate means through which society can debate which values to consider as promoting social good or not.

This chapter thus establishes the foundational framework for ACT that democracy is needed to arrive at the fundamental values which define social good, and that technologists need to (a) support systems for democracy through which the notion of social good itself can be determined, and (b) build systems which are then founded on these values of social good. Only then can technologists build a new utopia of humanism for themselves and in the world.

4. Ethics based foundations

This chapter describes an ethics-based framework to diagnose whether a particular technology project is internally consistent in terms of the stated values that govern its goals, its design elements, and its management practices.

a. Ethical frameworks to examine technology: A comprehensive survey is provided of several elements in the design and management of technology projects where ethical questions arise. The user-interface design can have undesirable persuasive elements. Techniques to preserve data privacy can prove insufficient in some contexts. Datafication itself can be biased or restrictive and simplistic. Algorithmic objectives, including fairness definitions, can embody a wide range of politics that may not align with the underlying values of the project. Data-based biases can impact how well data-driven algorithms are able to adhere to the underlying values. Technology projects may shape power relationships between

the different direct and indirect users who interact with the technology. Issues may arise at any of these elements and will require constant monitoring and strategic management to re-align the project with its underlying values.

b. An ethical consistency test for technology: A series of case-studies are then used to demonstrate this framework to uncover the exhibited values of the different design and management elements in a technology project, and how the framework can be used to evaluate whether or not the values are consistent with one another and the stated project goals.

5. The limits of design

This chapter builds upon the previous one that being able to establish a value-alignment in the technology design is alone not sufficient. When projects are deployed then unanticipated challenges are bound to arise at its socio-technical interface, and addressing them will require the same underlying values to also shape ongoing management of the project.

a. What is design: Discusses the limitations with commonly proposed ethics-by-design approaches, especially in AI (Artificial Intelligence), and highlights that rationalist pre-planned design is not sufficient in itself.

b. Case-study of Mobile Vaani: Discusses from personal experience several aspects of the socio-technical interface of Mobile Vaani, the flagship community media programme of Gram Vaani, which had to be carefully managed despite choosing an inclusive and participatory design of the technology. This includes the need to create technology literacy among marginalized citizen groups to ensure that the project does not exacerbate existing inequalities any further, community embeddedness by providing spaces to users for freedom and innovation, yet to do this while ensuring strong internal accountability, as well as to handle and respond to issues of misuse of the platform that impact sustained and meaningful participation, and to build positive social and institutional credibility of the platform itself in meeting the social good goals that it set out to address.

c. Managing the socio-technical interface: Draws learning from the case-study to list several socio-technical aspects where ongoing project management is needed to ensure that the technology project continues to adhere to its values.

6. Ensuring power-based equality

This further builds upon the previous chapters by arguing that technology projects are spaces which intermediate or shape the interactions between different users, and are able to influence the power relationships between these users. This is especially true for technology platforms such as Facebook, Uber, Aadhaar, etc. which are sites of multi-sided “markets” between different types of users, including the platform providers themselves too. Technology projects can be socially good only if they can ensure that unequal power relationships entrenched in society do not become more unequal when technology begins to intermediate.

Aiming for power-based equality among its users should therefore be a core value for technology projects if they are to benefit society. The chapter provides a modelling framework

through which project designers and managers can make legible the power relationships between various stakeholders, and then aim to make them more equal through their projects.

a. What is power: Discusses various theoretical concepts of power, such as different types of power – power-to, power-over, power-with, power-within; levels of power – access to resources that contribute to power, rules that shape the distribution of these resources, and the ability to shape the rules themselves; and methods of collectivism to overcome power differentials between entities.

b. Power and social good: Discusses through examples how power differentials can impede social good goals. Examples are discussed from three domains: projects geared towards meeting the SDGs (UN Social Development Goals), civic projects for citizen-government engagement, and projects trying to counter or alter capitalist and rationalist ideologies by trying to build greater cooperation among people.

c. Infrastructures of power: Examples are presented of how technology provides infrastructures through which power operates, and hence consideration of power-based equality as a principle is important to ensure that technology does not further worsen already existing inequalities.

d. Modelling power relationships: A modelling framework that draws from ANT (Actor Network Theory) and cybernetics is proposed to describe various actors in a project, activities between these actors that are intermediated by technology, and how the activities alter the network of power relationships between the actors. Several demonstrations are then provided with visuals.

7. Constraining structures and ideologies

This chapter describes challenges at the organizational and political economy level, which constrain the volition of technologists to ensure that their labour leads to social good.

a. Structures and ideologies that constrain: Three structural issues are discussed. First, the role played by the division of labour within organizations and across production value chains, which restricts the visibility of technologists to understanding how the products of their labour are used by society. This also creates a moral buffer which technologists use to shield themselves from taking responsibility of how their work is put to use in practice. Second, the accepted rationalist practices to design which fail to acknowledge uncertainty, history, and the autonomy of people. This ideology gives an illusion of thoughtful work, but often leads to a disempowerment of the people whom the projects were meant to benefit. Third, the contemporary political economy of technology where technological innovation is used as an instrument by capitalism to perpetuate itself, with little regard given to any underlying values to guide the direction of technology innovation, and further shielded from resistance by corrupting democratic institutions to govern the state and markets. These together create an ideology of technology positivism that misguides technologists and divides them.

b. Alienation: Marxist techniques of workers' inquiry and Gramsci's calls for organic intellectuals are introduced as

being necessary for technologists to see through the ideological fog that persists to control them and use them as instruments for the gain of capitalists while dispossessing and exploiting the poor even further.

8. Overcoming paradigms that disempower

This chapter chalks out an agenda for technologists through which they can overcome the shackles that bind their labour within paradigms of technology development and use which often disempower people rather than empower them.

a. Changing the status quo: A list of ten methods is suggested for technologists to do this. This includes: a realization about the complexity of doing social good and the insufficiency of rationalist planned design, the importance of situating themselves in the context of the users of their technologies to understand the impact of their work, the need for public spheres through which they can interact with the users, the requirement for an ethos of respecting underlying values in their day to day practice rather than to simply outsource their morality to regulations and legal compliances, the need for collectivism to persuade their organizations to be more responsible and to enforce values of social good among upstream and downstream value chain partners as well, and to leverage intellectual property laws to restrict use of the output of their labour from values that do not agree with social good. Finally, the need is highlighted for technologists to build democratic systems for societal participation to define social good, and to uphold democracy itself through which these values can be translated into law.

b. The future of technology for social good: A number of examples are given of initiatives and movements which are working in these directions, such as platform cooperatives, the creation of digital commons, venture communism, concepts of information ethics and dual-use regulation of computing technologies, the cypherpunks community, the Lucas Plan of 1976, co-determination in having worker control on organizational governance, and recent renewed calls for technologists to become more politically aware and involved. A set of questions is provided for technologists to introspect their scope of collectivizing to affect change.

9. Societal participation

This chapter reinforces the importance of deliberative democracy as being a morally legitimate process for society to learn from one another, respect plurality, and arrive at a consensus of what values should define social good, which can thereby shape law and various institutions of the state and markets, regulations for organizations that operate within them, and practices of technologists who work in them.

a. Media and deliberation: Theories by Jürgen Habermas and Carlos Santiago Nino are used to highlight the need for participatory communication platforms for deliberation and translation into law. Reasons are then outlined of how the public sphere has been compromised through capitalist owned mass-media and badly governed social-media.

b. Building blocks for successful deliberation: Gordon Pask's conversation theory, and prior work with my own

collaborators on information evolution as it flows through social networks of people, are then used to highlight the need for pluralism and to build methods that can circumvent structural inequalities in communication processes. Examples are presented of successful models of pluralist media consumption, participation, and deliberation.

c. From deliberation to public action: The field of community media, including Gram Vaani's own example, is used to illustrate challenges and successes in building federated public spheres that provide pluralist spaces for discussion and debate, and to network citizens with institutions of the state and markets. The future to build societal participatory communication systems may lie with fostering such community media spaces.

10. Conclusions

This chapter summarizes the arguments and then applies them to a few recent projects to further demonstrate how a different paradigm to think about technology for social good can influence the shape and form that projects take. Whether to conceptualize individualistic or collective systems, those that operate within the given structures or are designed to challenge the structures, which users are considered and which ones are rendered invisible, whether values of equality should guide the design and deployment, are some differences in choices that the frameworks proposed in ACT are able to successfully articulate to justify their applicability.