The Missing Clarity Between Ends and Means in the ACM Code of Ethics and Professional Conduct

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October 2022

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Consider these two questions that are often encountered when evaluating the ethics of a technology project.

- *Q1: Who is your product or service meant to benefit?*
- *Q2: Is somebody being harmed by your product or service?*

Each of these questions requires very different frameworks to answer them. The first question requires clarity on the objectives of the technology system and consequently helps understand whose needs these objectives are meant to serve. Answering the second question, however, does not require clarity on the goals of the system. If harms being caused by the system can be identified then mechanisms can possibly be built to avoid these harms, but understanding the goals of the system need not be a prerequisite for that.

The ACM Code of Ethics and Professional Conduct (referred to as ACEPC henceforth) largely focuses on the second question - of uncovering harm, avoiding harm, and speaking out against harm - but does not say much about defining the goals of systems built by computing professionals. ACEPC at best prescribes broad goals such as building systems for the "benefit of society", or slightly more specific goals such as "promoting fundamental human rights" or "protecting each individual's right to autonomy" but these are discussed very briefly without clarifying their importance.

Why is this a problem, when ethical considerations are placed on just the *means* and not the *ends* to which a technology project is deployed? Here are some examples of technology projects where the goals have been left ambiguous or are stated incompletely, and the projects have clearly led to unjust and undesirable outcomes, yet the current formulation of ACEPC is unable to flag such projects.

For instance, consider Facebook's news feed algorithm. The goal of the algorithm is left unspecified to the public but external observations by several studies have revealed that the curation algorithm seems to maximize user engagement, which leads the algorithm to amplify sensational or fake news and consolidate echo chambers [1]. This of course does not imply that Facebook's goals are unclear - their goal obviously is ad revenue maximization, which needs algorithms that recommend content to have users spend more time on the platform. The ethical concern, however, arises because of a conscious choice made to choose this goal, as opposed to a different goal, for example, for the genuine "benefit of society" by showing diverse content that may lead to pluralistic dialogue on the platform and strengthen democracy.

Another system whose goals may in fact be unjust but are projected as for the "benefit of society" is the Aadhaar biometric based unique identity system in India. The stated goals are to reduce leakage in the provisioning of social welfare benefits to the poor: authentication through a biometric based identity will reduce corruption in the distribution of welfare benefits. Many researchers have, however, challenged this problem identification and argue that leakages happen more prominently in ways other than identify fraud [2]. Further, such a tightening through technology-based authentication, without accounting for the risks of biometric failures or challenges faced by citizens in obtaining and maintaining an error-free digital identity, has resulted in many unfair denials of welfare benefits. These benefits are meant to be accessible to the poor as a right but placing accountability in the complex socio-technical system of Aadhaar has remained elusive. The ethical concern again arises on the choice of objective – should the priority rest on reducing inclusion errors or to eliminate exclusion errors?

Yet another example is the heavily VC-funded ecosystem of agri-tech startups. Many of these startups claim to exist to improve the livelihoods of farmers with increased productivity through better crop planning and precision agriculture, but they are also alleged to be data grabbing agents of surveillance capitalism designed to shape farmer behavior to eventually dispossess them [3]. Nudges for mono-culture cropping, commercialized production, and land consolidation, increases the precarity of farmers rather than to empower them. Such underlying unspoken goals of profiteering from farmers are of course not highlighted, and are cloaked with goals that appear to be for the "benefit of society".

Not only do these systems not state their true goals clearly or completely, lest the goals be questioned on their ethical merits, any harms that arise from their usage are further dismissed as "unforeseen" and "unintended" problems or "teething" issues. A focus on these harms has only led to minor tweaks being made retrospectively in the systems, such as the deployment of fact-checkers on Facebook, or in the case of Aadhaar the introduction of new intermediaries who help citizens cope with a complex technology infrastructure in return for a fees, or compliance with data sharing guidelines by agritech companies, but the goals of the systems are hardly ever questioned. Furthermore, operating in the realm of means without considering the ends of a technology project also makes it hard to place accountability for harms that may have arisen during the technology usage. This is because accountability requires the attribution of causation and fault, but intentionality to create fault can be evaded easily when the goals are not defined clearly since it helps the technology designers and managers to claim innocence because they did not look far ahead. This leads to the denial of deliberate wrongdoings, blaming harms on user capability, creating moral buffers between the technology and technologists, and to adopt insufficient solutions such as outsourcing of morality to regulatory institutions through simplistic compliance procedures.

This distinction between the ethics of ends and means is important to understand. Ethical principles focused only on the means,

such as "do no harm" guardrails, are not sufficient - like a ship without a compass to point it in the right direction. It could take the ship to many different destinations, not all of which may be desirable, whereas having clear end goals can help provide such a compass - a guiding light - to aim towards and to continuously steer decisions to meet these goals. This distinction has been highlighted in several domains. In the area of moral psychology and human values, Rokeach distinguishes between *instrumental values* and *terminal values* [4]: terminal values refer to desirable and end-states of existence, such as equality, a world at peace, freedom, and welfare of others; whereas instrumental values refer to preferable modes of behavior as a means to achieve the terminal values, and include honesty, politeness, responsibility, and sustainability. Terminal values are therefore clearly consequentialist, arguably more than the consequentialist considerations demanded by instrumental values.

Similar to Rokeach, Amartya Sen distinguishes between *constitutive freedoms* and *instrumental freedoms* for development[5]. Constitutive freedoms are those that need no further justification, i.e. they are constitutive of development itself and therefore are end-goals, such as freedom from starvation, from illiteracy, and freedom for political participation. Instrumental freedoms are the means to achieve constitutive freedoms, such as the freedom to participate in economic markets, live a healthy life, and have the freedom to scrutinize and criticize authorities. This is also the basis of Sen's criticism of John Rawls' theory of justice as fairness [6]. The Rawlsian framework is somewhat restrictive in maintaining a distinction between ends and means. It does allow some end-goals to be specified as basic liberties that should be available equally to everybody, such as several human rights, but only demands equity based fairness guarantees in terms of some specific aspects, mostly related to the possession of material resources. To this, Sen responds that ensuring fairness alone on some metrics is not sufficient to specify what outcomes or social realizations will finally emerge. The situation is similar to that of a market, where simply having the freedom to participate and transact on equal grounds, and further impose equity measures like progressive taxation on inequalities that may emerge regardless, does not say anything about what the market would be used for or where it will take the world. Further, markets, and the world, are not level playing grounds, and Rawls' concept of the *veil of ignorance* which is meant to ignore the current position in the world of the decision maker therefore imposes an unnecessary informational restriction to improve equity and justice. Iris Marion Young adds to these limitations by further arguing that ensuring distributive equality on material resources is not sufficient to fix structural injustice in the world - the end goals that humanity should strive for is to remove the underlying processes of discrimination that create structural injustice in the first place [7].

Coming back to the subject of ACEPC, it is divided into three sections: ethical principles, professional responsibilities, and leadership principles. All points in the first section, other than 1.1 ("contribute to society and to human well-being, acknowledging that all people are stakeholders in computing"), are clearly addressed at the means, such as to avoid harm, be honest, be fair, and respect privacy and confidentiality. The second section on professional responsibilities similarly is addressed at means too, to produce high quality work,

acknowledge the work of others, provide reviews, carefully evaluate performance and correctness, assess risks, and foster public awareness. The third section for those professionals in leadership positions essentially builds upon the earlier sections, by emphasizing the responsibility of leaders to create an environment conducive for their teams to adhere to the various principles. Principle 3.7 also draws special attention to systems that become integrated into the infrastructure of society. Without a clear emphasis on the end goals of computing, however, and potentially even identifying specific goals that computing professionals should work towards to define what is to the "benefit of society" and what is not, is limiting, as has been argued above.

The importance of thinking about the end goals of technology is not a new observation. Norbert Wiener in his open letter *A Scientists Rebels* refused to share details of his technology design with militarists for fear that they may use his work towards irresponsible ends [8]. He went further to illustrate how totalitarian governments or profit-seeking capitalists ignore genuine human welfare and asked scientists to not be naïve and to take responsibility for their inventions to not be used for unethical private or political gain. Brian Arthur explains that technology rarely evolves from accidental or serendipitous discovery, and is rather shaped by conceptualizations in the minds of the innovators which reflect their values and beliefs, and that of the funding bodies which support the research and development [9]. Similarly, there is wide literature by Marxists like Harry Braverman [10] or technology historians like David Noble [11] or science and science and technology researchers like Langdon Winner [12] who document the processes through which technology is often developed to serve the agendas of the powerful. More recent movements such as Ethical Source licenses[1] are similarly grounded in defining acceptable and unacceptable goals towards which free and open source software may be used.

I argue in my recent book *Technology and (Dis)Empowerment: A Call to Technologists* that computing professionals need to clearly define the purpose of their innovations, and to especially determine which goals should be considered unambiguously as meant for the "benefit of society" [13]. Not doing this stands the risk of having concepts such as social good get co-opted by current systems of the state and markets and thereby lose their meaning and distinctiveness. I further argue, building upon the thinking of people such as Tim Unwin [14], that the purpose of technology should be to overturn unjust social structures and bring about power-based equality. If this is not the goal, then technology often tends to reproduce inequalities - being wielded more easily by those who can gain access to it, or design it for their own agendas.

Given the large and intersecting challenges that humanity faces today of environmental collapse, inequality, exploitation, healthcare, and poverty, among others, and the double edged nature of technology that often renders it as a tool in the hands of the powerful to improve their situation at the cost of the poor and marginalized, it is imperative for computing as a discipline to move beyond narrow values of cost and time efficiency. Terminal values of equality and the welfare of others, and instrumental values of plurality, should form a core element of how computing professionals conceptualize research and development problems. Ethics codes such

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[1]https://ethicalsource.dev/licenses/

as ACEPC can contribute towards building such an ethic for the entire computing discipline.

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