Accelerating Economic Inequality and the Moral Responsibilities of Corporate-Employed Technologists

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Abstract

Corporate-employed technologists have a special moral responsibility to themselves and to others to help oppose the dynamics of accelerating inequality in the US and globally. They have distinctive capabilities in this respect and they are in a special position to do so. There exists a moral-responsibility-to-self in this context, involving meta-coherence and integrity. Responsibility-to-others can be enacted by attempting to inject scientific and ethical habits-of-thought into the global distributed governance process, but also by standing in opposition to corporate-level strategies and practices that make inequality worse.

1. Introduction

Many recent discussions of the ethical management and governance of the emerging technologies have focused upon technological risks (e.g. intrinsic controls, virus detection programs, suicide genes and pollution controls) and the practice of responsible innovation [7] [16] [21]. In such discussions there appears to have been a reluctance to acknowledge the ethical 'elephant in the room' that represents the problem of accelerating inequality in the US and globally. For example, in a 2013 conference on the "Governance of emerging technology: law, policy and ethics" just one paper out of sixty-four mentioned the issue [17]. It thus appears that many technologists and executives are assuming that the technologies can continue to be governed ethically within a system of hyper-competitive shareholder capitalism (i.e. business-as-usual). This assumption, however, conflicts directly with the recommendations of the US presidential commission [19] [21] on the ethics of biotechnology (and by implication other technologies), because these amounted to an outright endorsement of the global *stakeholder* model.

Given the existence of this fundamental moral-political conflict, one of the greatest risks that society now faces is that ethics committees, guidelines and reports that refer to technologies will be routinely deployed for three fundamentally *un*-ethical reasons, which are to:

(i) provide legal protection, to top management or the corporation.

(ii) self-aggrandize, implying that "at the top we are holier-than-*thou*", or

(iii) conduct compliance, even where the laws and practices complied with contribute to the acceleration of inequality.

Corporate employed technologists are in a special position to try to do something about this risk and to more generally stand in opposition to the dynamics of accelerating inequality. Technologists have special capabilities in this respect and special reasons to do act in this way, relating to their personal integrity and the philosophical concept of meta-coherence. Furthermore, their responsibility is heightened to the extent that the technologies have already contributed to increased levels of inequality.

The paper duly begins by pointing to the convergence of the "emerging" technologies and the general applicability of the various principles of ethical governance recommended by the US commission. Then (in section 3) the many dynamics of accelerating inequality in the US and globally are considered. The final section considers some of the cognitive and behavioral strategies that corporate-employed technologists can adopt if they want to exercise their moral and ethical responsibilities.

2. Convergence

Much of the literature on ethics and technology (e.g. [7] [21] [22]) focusses on one particular stream, such as artificial general intelligence (AGI), nanotechnology (NT) or synthetic biology (SB). In almost all such contributions, the posited principles of ethical governance are essentially the same (Figure 1). As a result, authoritative recommendations that appear to refer to one specific technology (say, NT) can also be applied to the other technologies (AGI, SB) without loss of any moral or scientific support.
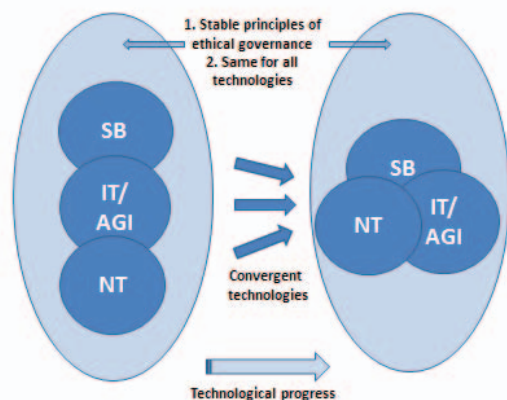
Figure 1. Stable governance principles for the convergent technologies

To give just a few illustrative examples:

(i) "On the optimistic side, there is the idea that the operation of many self-sustaining AGIs will somehow lead to overall good" [20]. This "idea" originally referred to AGI: Yet the same hope can also be expressed with reference to NT-enhanced or SB-enhanced *trans*-human entities

(ii) NT might have "the effect of forcing adjustments and compromises by the existing forces of global injustice and inequality [7] essentially because NT-related disasters will have major political consequences. Yet the same can be said of AI or SB.

(iii) "It is obvious that manufactured SB-entities have the potential to add to the total stock of the human goods" [19]. However, it is equally obvious that they can have catastrophic consequences [10]. The very same point applies to NT and to AGI's.

It is also apparent that concerns with (the classical) human goods (HGs) such as freedom, justice, health and wealth remain central to almost all expert deliberations on ethics in the private and public sectors. For example, US Presidential commission (2010) posited a set of *ethical* principles, as follows:

(i) *Public beneficence*: According to this principle, synthetic biology ought to benefit the "public".

(ii) *Responsible stewardship:* This refers to the stewardship of both financial and biological resources;
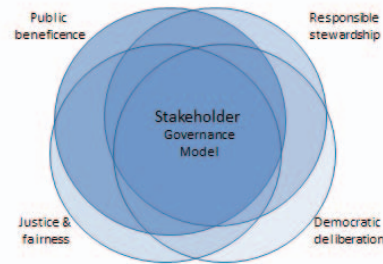

Figure 2. Ethical principles and the stakeholder model

(iii) *Democratic deliberation* was then upheld as the best way of deciding how to manage the governance of technology ethically (see section 4 of the paper).

A fourth principle of *justice and fairness* involves distributive justice (inequality) and hence the fair distribution of burdens *and* benefits associated with the technologies. These four principles overlap (Figure 2) but they are also very prominent in *political* discourse. They have all been deployed to underpin and to justify the global stakeholder model (GSM) in its legislated or voluntary forms [1] [5] [19] and to provide ethical critiques of business-as-usual.

3. Inequality

Currently, the level of inequality in the US and globally is *accelerating* (i.e. a positive second-derivative) and this is a cause for ethical (and economic) concern [4] [9] [10] [14] [20]. Furthermore there are plenty of reasons to expect the intensity of poverty "in the basement" to get worse due to the vulnerability of local populations [10]. Globally, the total numbers rising out of poverty seems to be increasing [24] yet there are many localities (arguably including the US) where the absolute number falling into poverty appears to be increasing. These trends are depicted in Figure 3.

A recent discussion of inequality by Joseph Stiglitz [20] was confined to economic categories. Inequality can be expected to accelerate because many of the identified dynamics of inequality are self-reinforcing or mutually supporting. Yet it is also true that every one of the standard macro-environmental categories used in strategic analysis (i.e. not only economic but also ecological, technological, social and political)

harbors self-reinforcing dynamics that tend to accelerate inequality, whilst other dynamics have a supporting or amplifying role. For example:

(i) *Technological*: the AI systems or "non-human like intelligences" described in [10] are approaching a hard-takeoff point where they will work upon themselves and on each other (*auto*-evolution) and can be expected to co-create new entities (programs, robots, *trans*-humans, etc.) that may well neglect ordinary humans (hence the *trans*-human divide depicted in Figure 3).
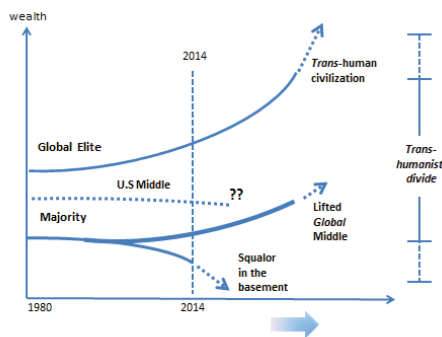

Figure 3. Accelerating inequality and poverty in the basement

(ii) *Ecological*: global warming is subject to positive feedback loops such as methane release. Yet global warming is also expected to give more to the rich due to increased total crop production, but increase poverty in areas where heat stress gets worse [2].

(iii) *Sociological*: as people respond to the evolving technology, social values are likely to change; but this may very well be in the direction of a reduced concern about various forms of poverty

Additional self-reinforcing dynamics operate primarily within the *political-economic* sphere [4] [14] [20] as follows:

(iv) *Winner-takes-most*: Digital technologies enable global winner-take-most-markets, particularly in the media industry. These contribute to wealth at the top and reduce opportunities lower down. The same media can also convey global political propaganda that builds social acceptance of yet further re-distribution.
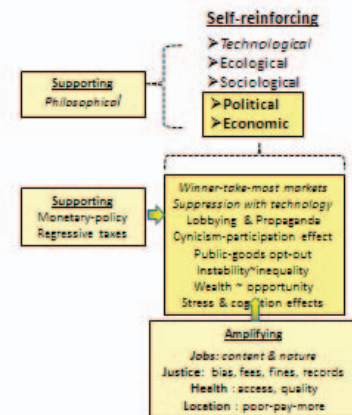

Figure 4.   A classification of factors affecting inequality

(v) *Suppression:* The *auto*-evolving technologies can be deployed by elites or regimes to more effectively suppress political movements but this includes movements that favor downward re-distributions [16].

(vi) *Lobbying & propaganda*. A wealthy elite can afford ideological advertising and lobbying to legalize yet further types of exploitation of the known limitations of market-based systems [14][19].

(vii) *Cynicism & participation*. A psychological sense of political and economic exploitation creates cynicism amongst the less well off and this tends to reduce their subsequent political participation, in turn enabling yet further exploitation" [20].

(viii) *Public-goods opt-out*: Numerous contributions (e.g. [9] [14] [20]) have noted that the more divided a society becomes, the more likely it is that the wealthy will opt-out of paying for public goods, including education, health and foreign aid. This, in turn, creates even greater inequality and poverty.

(ix) *Wealth & opportunity*. As the "opt-out" gains momentum, opportunities for education and health- improvement also become increasingly unequally distributed. This in turn tends to increase future inequalities of wealth [20].

(x) *Instability & inequality*: inequality within a jurisdiction tends to increase its social and political instability (and "country risk") but that in turn contributes to yet further inequality and poverty [20].

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As indicated above (Figure 4), several additional social or economic factors have an amplifying (but not necessarily a self-reinforcing) effect on inequality. They involve:

(i) *Jobs*: technology has had a role in reducing the content and nature of many jobs (technological under-employment).

(ii) *Justice*: the unfair functioning of the relevant justice system (prejudices, fees, fines and the effects of criminal records);

(iii) *Health:* the differences in access, quality of care creates stress, which in turn reduces the quality of personal economic decisions [20]

(iv) *Location-effects:* the poor pay-more due *inter alia* to more difficult physical access to goods.

Several other factors affecting inequality are more like policy-levers that might be moved (by governments) at any time in either direction. They can increase or reduce inequality depending on their setting. They include monetary-policy (high interest rates favor the wealthy) and tax policy (regressive taxes).

There is yet another significant supporting dynamic that operates at a philosophical level: it is the dynamic of change in moral philosophy itself. Traditional theories of ethics in business are currently giving way to various alternatives, notably "classical" pragmatism [23]. Under pragmatism, whenever the essential nature of an actor (a moral agent) changes, the very *meaning* of "ethics" is itself also subject to change, as well as the qualities and *norms* of what is considered to be ethical behavior (i.e. the above-mentioned sociological dynamic). Accordingly, in a future society populated and possibly governed in part by *trans*-human entities and AGI systems, there is no guarantee that the newly-evolved understandings of ethics and morality will incorporate any imperative for to care about traditional (un-enhanced) humans, let alone those who live in squalor in the basement [19].

4. Solutions

As indicated at the outset, the self-reinforcing nature of the dynamics of inequality, combined with the several amplifying and supporting factors, confers a particular urgency and importance to any attempt to co-create some opposing dynamics. Most documented prescriptions to this effect are at the level of policy and strategy: 'We' as a society should do this, or governments, corporations or even AGI

systems ought to do that, and so on [8], [10], [14], [20]. Corporate-employed technologists, however, are usually *not* in a position to select and implement such ethical policies. Nonetheless, they might be in a good position to influence them and so they have a rather distinctive responsibility in this regard. Furthermore, their moral responsibilities (as individuals and as a professional class) are heightened to the extent that these emergent technologies have already had a role in strengthening the dynamics of inequality (e.g. *nature of jobs* and *winner take-most markets)* and they are likely to continue to do so (e.g. *suppression, new meanings and norms of ethics* etc.).

One way of exercising the special responsibility is to support community-based 'movements' that champion social justice and uphold the same ethical principles that lie at the normative core of the GSM [6] [14]. For example, there are millions of civil-society organizations and technology businesses around the world that promote and enact GSM-type "activities ranging from agro-ecology to watershed management and sustainable community building" [6]. Technologists typically have a high capability in, or potential to contribute to, these kinds of activities. Another way to discharge their heightened responsibility is to publically justify voting for political parties whose policies are credible and consistent with the GSM.
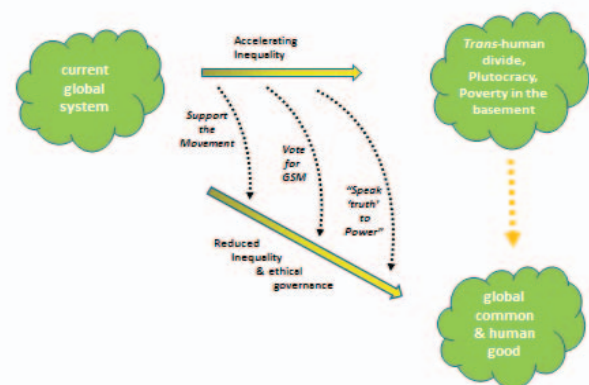

Figure 5. Avenues whereby ethical technologists can promote the common good

Thirdly, corporate-employed technologists are in a particularly good position to "speak 'truth' to power": that is, to the top management or the board, in order to try to bring corporate policies and strategies into line with GSM and hence to promote the global common good (Figure 3).

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With regard to 'power':

(i) technologists are quite often in a relatively strong bargaining position to negotiate with top management on matters of policy, and (ii)

(ii) In so doing the can make use of (a) generic strategies for employees to "manage-up" as well as (b) generic justifications for the GSM.

With regard to 'truth' (itself a contentious notion) many technologists have distinctive and very well-developed *habits of thought*. It then becomes a matter of personal moral integrity and authenticity to strive for *meta*-coherence: that is, to apply those same habits to the political and economic spheres.

4.1. Meta-coherence

Technical, scientific and mathematical habits of thought can be deployed to support or authenticate the GSM. Suppose an ethical technologist thinks about what it might take to co-program an artificial moral agent (AGI), perhaps even one that runs a corporation in the future, to help solve the problem of accelerating inequality. They would begin by identifying and recording what is already known about the relevant system. For example:

(i) "when asked to choose between two income distributions shown on a pie chart, a representative sample of U.S. citizens "actually chose (the) one that represented the distribution in Sweden over that in the US", *by 92% to 8%* (reported in [12] and cited in [20]), and that…

(ii) "on the basis of the economy-wide 'response of savings' …the top tax rate should be in excess of *70%*. [13].

These kinds of facts are 'known' in exactly the same sense that a military technician (who is co-programming an ethical-robot to avoid friendly fire) 'knows' facts about battle theatres; or aircraft engineers 'know' facts about wing-design. (As Dawkins [3] implied, one may be free to believe whatever one wants; but then one's aircraft won't fly).

A meta-coherent programmer "thinking" about ethics and economic inequality might include lines of code to represent the fact that "there is a very low probability that any single human being (such as the CEO of a health insurance company) would ever spend an annual remuneration package of $107million in a single year".
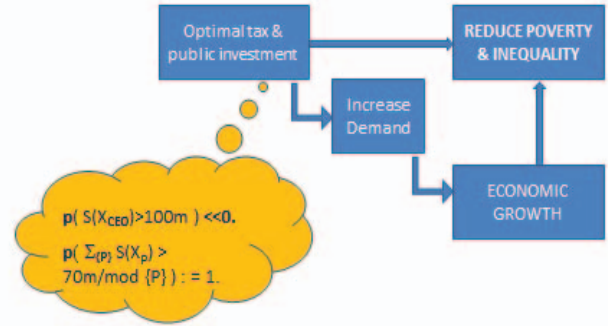

Figure 6. Modeling a dynamic of poverty reduction.

Another line of code might then represent the fact that "if that $107m were taxed by good government at about 70% and the proceeds re-distributed across the set of people in poverty {P}, almost all of the money would be spent very quickly". Suppose that we let S(X) refer to the amount *spent* by any individual X in a year, we might then write:

Line 1. $p(S(X_{CEO}) > 107m$

Line 2. $p(\Sigma_{\{P\}} S(X_p) > 75m/\text{mod } P) : = 1$.

When a technologist represents the outcomes of GSM-related policies in this way they are demonstrating *meta*-coherence, whilst further endorsing the kinds of policies and strategies that reduce poverty and extremes of inequality. Thus, the proper meaning of "the ethical governance of technology" is quite obvious, as are the many of the things that "we" have to do now to avoid mega-catastrophes in the future [10] [19]. As Krugman [9] put it, influential actors in this context should maintain "intellectual clarity and political will" [8].

4.2 Generic strategies

A second aspect of "speaking the truth to power" involves the idea of influencing corporate-level policy and strategy. First of all, if a technologist is *promoted* to the corporate level they ought to resist the powerful temptation to "go along and get along" [11]. They should instead take a stand against business-as-usual (hyper-competitive shareholder capitalism) because it represents habits of thinking and management practices that fail the meta-coherence test, are inconsistent with the GSM, and make inequality worse. Promoted technologists

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ought instead to maintain their scientific habits of thought and hence attempt to negotiate a GSM-consensus at the corporate level (See arrow-1 in Figure 11).
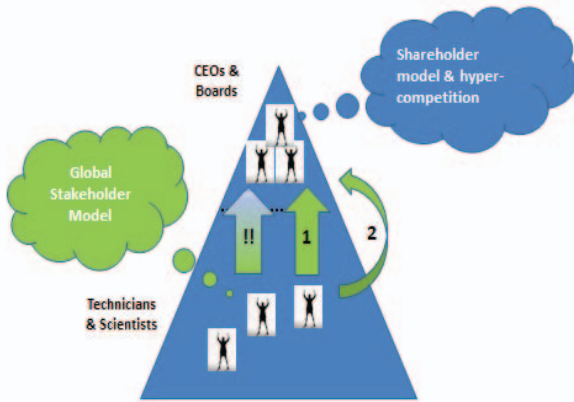

Figure 7. Negotiating ethics from the middle-up

For technologists who remain in the corporate middle several generic-strategies are available for "managing-up" (Arrow-2 in Figure 11). They can "go-along and get-along", or else quit, or else similarly try to negotiating and build consensus for change [11]. Each option has its costs and benefits (Table 1). For example, if someone decides to "go along" they will probably be able to continue their career unimpeded, although this can "slowly bleed the conscience dry" [11]. In addition, the corporation is at risk in the long run (as demonstrated in the banking crisis). Meanwhile, corporate level managers continue to get away with it and some global stakeholders continue to suffer. On the other hand, if the technologist decides to quit, they suffer temporary loss of employment but retain authenticity (Unfortunately, the employee might be replaced with someone less ethical).

	CONSEQUENCES FOR…			
	Self (scientist)		**Others**	
Generic strategy	*Adv.*	*Disadv.*	*Adv.*	*Disadv.*
Go along	Continue career	Bad conscience Orgn. fails	Top gets away with it	Harms continue
Quit	authentic	Loss of job	New employee	unethical
Negotiate & build consensus	career, meta-co, reputat^n solns.	Might get some retaliation	Might reduce harms	Top might make conessions

Table 1. Three of Nielsen's generic strategies with consequences.

The strategy of negotiation and consensus-building (i.e. around GSM-endorsed corporate level strategies and policies) has many advantages [11]: the concerned technologist keeps their job; but also benefits personally and psychologically by upholding meta-coherence (consistency and coherence in habits of thought) but also by developing a personal habit and reputation of consensus building. Of course, in any given episode an individual might be ignored or suffer retaliation; but there is always a chance that top management might make moral concessions or find win-win solutions (i.e. a generative discourse).

4.3 Generic Justifications

In negotiations on this issue, many standard ethical and economic arguments can be deployed. Elements of standard moral theories can be invoked to support the GSM, including (i) contractarian theories [15]; (ii) utilitarianism-with-a-justice-constraint, (iii) deontology, (iv) an ethic-of-care, and (v) the expressive aspects of ethical egoism. These can be supplemented by numerous economic arguments (including those already mentioned) that support stakeholder management and the GSM [19], involving, for example, *efficiency, justice* and the idea of *compensating* for some of the known limitations of market based systems. One might also make the moral-political point that negative freedom, which is an important human-good championed by the political right, involves not only freedom from constraints imposed by governments (states), but also from constraints imposed on stakeholders by private actors (e.g. corporations co-creating technologies that make inequality worse).

5. Conclusion

Currently, there is a great need to inject scientific and ethical habits of thought into all levels of the global distributed governance process. Ethics committees, guidelines and reports (and even conferences) that focus on the emerging technologies should not be taken seriously unless they specify recommendations that stand in opposition to the dynamics of accelerating inequality. Corporate-employed technologists have special responsibilities in this regard. They have the capabilities to understand the problem and take action; but they might also have some culpability arising from the effects of technology in the recent past. All capable individuals who are in a position to do so should at least consider the expected benefits to themselves and to others of engaging in negotiation and consensus building around this issue. This HICSS-47 paper is merely one example of such engagement.

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