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A Strictly Beneficial Technology?

Why O'Neal and Medina would say it is impossible

When society creates new technologies to predict, manage, or identify societal trends, the ideal situation would be for this new technology to not create any drawbacks for any specific demographic. Furthermore, the converse would apply, where this technology would not benefit a specific demographic, but society as a whole. In simpler terms, society should aim to create this technology to be strictly beneficial. However, as seen through both Medina's *Cybernetic Revolutionaries* and O'Neal's *Weapons of Math Destruction*, this ideal situation is rarely achieved, with technological implementations aiming to benefit society resulting in serious negative consequences for specific demographics of society or society itself. However, both authors present interesting examples and possibilities for such technologies to strictly benefit society for the purpose they were influenced for: Medina does this more in theory, while O'Neal does this more with limited real-world examples. In turn, both authors make suggestions regarding how and whether a strictly beneficial piece of technology can be created for society. While both authors would agree that this technology would be theoretically possible, albeit under different circumstances for both authors, both authors would also agree that such a piece of

technology would be unrealistic due to the ever-lingering possibility of unintended use and consequences.

Medina's *Cybernetic Revoutionaries* only presents one example of a technological project failing to be strictly beneficial. However, the goals of the Cybersyn project were originally well-defined to attain strict benevolence. "Cybernetic management addressed a central challenge in the Popular Unity program, namely, raising production levels in Chilean industries, especially in the growing state-run sector of the national economy" [1]. Beer and Allende's government aimed to have this cybernetic management system aid in the development of Chile's economy, in order for society as a whole to benefit from a greater wealth in Chile. Furthermore, the new management system would also usher in a new form of socialism that the Popular Unity party was pushing, one based on sources of governmental power coming not only from the top, but also the bottom of the social hierarchy. "Both Beer and Popular Unity...wanted to find a balance between individual freedoms and top-down control, a balance that preserved autonomy but recognized that maintaining the stability of a state or company may require limiting freedom or sacrificing the needs of some to the needs of others" [1]. Therefore, as a side effect to the economic development, the project was also provided political benefit to the ruling party and Beer, and gave them intellectual and political investment into the project. While there may be naysayers, such as those who oppose the Popular Unity party's political stance and actions, the focus on economic development for everyone cements the intentions of Cybersyn as strictly beneficial. Thus, the Cybersyn project had good intentions when the project started: it aimed to wholly benefit society, not targeting any specific demographic, but engaging society as a whole

with the cybernetic management program to allow everyone to reap the benefits from a more developed national economy.

While *Cybernetic Revolutionaries* focuses on one technological project, O'Neal's *Weapons of Math Destruction* presents the development and effects of multiple technologies. However, not all of these technologies were developed to be strictly beneficial. Some technologies, like targeted advertising, fails to consider the situation of the customer. "The weakest part of his argument [for targeted advertising]...was its justification...that the coming avalanche of personalized advertising would be so useful and timely that customers would welcome it" [2]. While targeting ads at a customer's most vulnerable points may prove to be the most effective at gaining sales for the company, it results in exposing insecurity and disregarding the possible poor financial decisions of the customer. Thus, when examining the technologies that fail to be strictly beneficial, it is important to look at those that aimed to achieve strict benevolence, and then identify the technology's shortcomings.

However, between Medina's one example and O'Neal's many examples of technologies that failed to be strictly beneficial, both texts present examples that illustrate how technologies end up harming some area of society or failing to benefit society. One of these factors is the inability for computers and models to encompass all factors of a situation. Within Cybersyn, this was illustrated through the lack of ability to consider all parameters within the Chilean economy, which, from the outset of the project, was already ambitious. Early ideals posited that the simulator would be able to "acquire, by stages, dynamic understanding of systems with 10-100 variables," but by the end of the project, "the data management team had 26 indicators ready for the permanent suite," and finally, "as a mathematical model, [it] 'was a failure'" [1] While 26 is

within the range from 10-100, the difference between simple economic indicators and a "dynamic understanding of systems" is vast, and ultimately marks the inability for Cybersyn to fully encompass the nuances of a human economy, and thus, it fails to benefit society at all. This failure to encompass all variables is similar to the college ranking process explored by O'Neal. While ranking colleges to give prospective students opportunities to do the research into which schools are the best for their futures, while also giving exceptional colleges a chance to attract more students seems like a strictly beneficial pursuit, O'Neal argues that it goes haywire. She argues that this is due to the use of proxies, which fail to encompass the true nature of what a model is trying to measure. "When you create a model with proxies, it is far simpler to game it. This is because proxies are easier to manipulate that the complicated reality they represent" [2]. O'Neal identifies what U.S. News used for their metrics are mere proxies, and not a true measurement of collegiate prowess. She argues that "they picked proxies that seemed to correlate with success...[such as] SAT scores, student-teacher ratios, and acceptance rates" [2]. Even when picking these proxies, however, U.S. News failed to address the cost of tuition in their measurements. O'Neal argues that this was like "[handing] college presidents a gilded checkbook...if they raised prices, they'd have more resources for addressing the areas where they were being measured...Tuition has skyrocketed ever since" [2]. Thus, not only has the use of proxies allowed easier methodology for gaming the system, but the lack of a single proxy has given universities an easy way to game the system by abusing a metric not measured in the rankings. Thus, the college ranking formula fails to encompass the true nature of the concept that it is modeling, and students suffer as a result in the form of vastly increased tuition. Both technologies fail to be strictly beneficial: Cybersyn in its inability to factor in every variable, the

college rankings in its misuse of proxies as a substitute for measurable and possibly immeasurable metrics.

A second factor that brought failure for technologies between both examples is the failure to maintain transparent and communicate technologies to the end-user. For *Weapons of Math Destruction*, this error manifests in the computerized implementation of the job application process. This seems like a strictly beneficial task: computerizing the job application process would allow companies to search through more job applicants for the most qualified person, all the while increasing the volume of applications to give more people opportunities to get a job. However, this becomes an issue as the criteria for rejection is completely opaque, and applicants rarely know why they were rejected, and whether they were rejected by a human or a computer. O'Neal presents an especially frustrating example, where an applicant was denied, unknowingly, based on a personality test given by the computerized process [2]. Another frustrating example is the tailoring of resumes for a computer to look at, where "images...are useless...fancy fonts do nothing but confuse the machines...And forget about symbols such as arrows...those with money and resources to prepare their resumes [accordingly] come out on top. Those who don't take these steps may never know that they're sending their resumes into a black hole" [2]. Both of these common implementations of computerizing the job application process fail to articulate the ramifications of the computerization of the process, and how the process differs from a human-based implementation. As a result, people with certain personality traits or simply people who do not realize that their resume is not read by a human are turned away without any knowledge of why they were turned away, even if the solution was as simple as turning the resume into plain text. Cybersyn presents this failure to interact with the end-user in a slightly

different context, when trying to implement the technology in the factories. As the end-user of Cybersyn involves the economy of Chile, the first point of contact are the factory interventors who relay data to the management program. The problem arises when these first points of contact do not value the computerized system, and therefore, do not prioritize sending data. “The following anecdote explains why...An interventor from a cement factory discovered a serious coal shortage in his factory...He traveled to the coal mine, personally spoke to the miners, and explained the importance of maintaining the coal supply. He then created a log to show when trains were available...Several days after the interventor returned to his cement factory, he received a notice from Project Cybersyn telling him of a potential shortage of coal” [1]. Not only did Project Cybersyn arrive with its message of a coal shortage several days after the interventor took all the steps himself to solve the problem, but it only suggested that there may be a coal shortage. This kind of delay, combined with only the suggestion that there was a coal shortage when there was a serious shortage already discovered, compounds the apparent uselessness of submitting data to Cybersyn, and represents another problem with communication with the end-user. Perhaps if the importance of relaying the data were explained to all factory interventors, the data would be prioritized, but this again would represent another lack of communication. Nonetheless, both examples highlight a lack of communication with the end-user that causes the technological projects to stray from their initial goals of strictly benefitting society.

The two prior examples, however, can be solved relatively easily. One could create a technology that is so strict in its scope that it is able to encompass its variables to accurately model the concept, and effectively and transparently communicate with its end-users. However,

what makes such a strictly beneficial technology impossible is the unintended consequences that a technology could have. The technology that meets the former criteria exists, and O'Neal's presentation of the credit score system highlights each of these points. "The FICO score was fed by a formula that looked only at a borrower's finances—mostly her debt load and bill-paying record...The credit scores are also relatively transparent. FICO's website, for example, offers simple instructions on how to improve your score" [2]. The criteria for the score is limited and encompasses all variables of a person's finances, and provides transparency and communication to the end-user. It also benefits society by allowing anyone to get a fair, objective judge on creditworthiness when applying for loans or making purchases. However, this algorithm can still be tainted by the unintended consequence of using credit score as a judge for someone's character. "Creditworthiness has become an all-too-easy stand-in for other virtues. Conversely, bad credit has grown to signal a host of sins and shortcomings...all sorts of companies turn credit reports into their own version of credit scores and use them as proxies" [2]. The unforeseen extension of credit scores, a relatively strictly benevolent technology, into a proxy of character shows that even if a technology tries to remain impartial, it can still be used against people in areas such as job applications, where a low credit score might reflect on someone's perceived character while a missed payment or more credit cards does not encompass someone's personality, thus causing harm onto poorer job applicants who may have no choice but to occasionally miss a payment. In Cybersyn's case, the somewhat inevitable October Strike caused the unintended consequences for the outlook of the project. It highlighted the telex system that was used to coordinate strike resistance, almost separating it and putting it in a completely different context from the rest of Cybersyn [1]. Furthermore, the strike caused Beer to

extrapolate the possibilities of Cybersyn to include a form of propaganda, the management of distribution, and a greater role for the workers in the project [1]. These unintended consequences combined drove a rift in the management's interpretation of the goals of the project, leading to overall confusion and eventual failure of the project. It is this possibility of unintended consequences and outcomes that would make both O'Neal and Medina argue that creating such a strictly beneficial technology is impossible.

While technologies may often fail to be strictly beneficial due to a failure to truly encompass all parts of the phenomenon they model or fail to communicate transparently with the end-user, the true unknown factor that makes technologies eventually disparage one demographic or society as a whole is the ingrained possibility of unforeseen use and consequences of a technology. While these unforeseen uses and consequences can sometimes be managed and contained, it is unrealistic to believe that is it possible to completely eliminate the possibility, and therefore, even mostly beneficial institutions like the credit score can be improperly utilized. Both Medina's and O'Neal's texts provide examples covering each of these phenomena, however, O'Neal's various examples in different facets of society present a more compelling argument regarding this topic, giving a clear insight on how these problems individually can cause a single demographic or group of people to be disparaged. Nonetheless, the ability for Cybersyn to represent each pitfall of strictly benevolent technology within a single project represents how the combination of these problems can lead to the project failing as a whole and not benefitting society at all, as was the fate of Cybersyn.

References

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