Automating the Labor of Decision:
The Contradictions of Cost-Benefit Analysis

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Introduction

Over the decades (perhaps centuries) of its existence (Jiang and Marggraf, 2021), cost-benefit analysis (CBA) has become notorious among many popular movements. This is because capitalist states often use it to push through unpopular social policies or development projects including hydroelectric or nuclear plants, roads, airports, pipelines or high-speed railway lines, large-scale agriculture schemes, pension privatization, or deregulation of pesticides (Lohmann, 1999). "Are there drawbacks to Scheme X?" CBA reasoning goes. "Sure. We don't deny it. But if you translate all the pluses and minuses all across society into numbers and sum them, the benefit-to-cost ratio is more than one. Some people might lose out, but overall the gains will be greater. Therefore we should go forward with the scheme."

Social movements often contest particular CBA conclusions using the technique's own language. "Are you sure you want to talk about costs?" a standard objection goes. "Because in our reckoning the costs would include many things you haven't taken into account: resource depletion, impoverishment, social disintegration, loss of alternatives, more climate change and so on. Put these in your CBA and the number you get will be less than one, meaning that the costs outweigh the benefits, meaning the scheme should be stopped. You have used your technique incorrectly" (Bond, 2023; Paranjpye, 1988).

But movements also often argue that CBA itself constitutes a form of political violence perpetrated by haves against have-nots. "We are not going to sit still while you measure the destruction of our livelihoods, our community, and what is sacred to us using the same scale that you use to measure the financial benefits that you might derive from this policy or project. Let's not even start down that road, because that's not a reasonable way to have a dialogue about the social choices before us. From the beginning, CBA's procedures are biased against what we value. The problem is not that the technique is being used wrongly. The problem is that the technique itself is irrational" (Espeland, 1998; O'Neill, 1993; Lohmann, 1999).

In practice, the two arguments are often combined, as follows: "OK, fine, let's do a CBA. Let's try to calculate all the costs of your plan in monetary terms and see if they really can be 'compensated' for by the benefits. But if we're serious about doing this, we soon find that certain costs either approach infinity (for example, many members of our society say that they would not accept *any* monetary compensation for losing their forest, their homes or their children's health) or are so large that they would stop the project in its tracks (for example, the cost of securely absorbing the carbon dioxide emissions associated even a modest plan might run into the trillions of dollars). What's more, if a genuine attempt were made to use CBA to evaluate every policy or project, it would leave the project of capital accumulation (or economic growth) in the dust. If we are serious about using CBA, then, we are led inevitably to an anticapitalism that would reject not only your plan but also all similar ones. Which of course defeats the whole purpose of CBA."

In real-life political debate, these theoretical arguments, however valid they may be, don't engage CBA's proponents very effectively. This is because CBA is more than an isolated technique or

theory. It is an expression of something broader and deeper. The form of words "cost-benefit analysis," it is true, is a specifically 20th-century US coinage. It was first institutionalized only during the Great Depression and the New Deal, when the US Army Corps of Engineers, amid the "greatest expansion of government rulemaking in American history" (Erickson et al. 2013: 46), was forced to justify to critics and supplicants alike choices for investment in big water construction schemes that could span many jurisdictions. But the technique has evolved out of – and reinforces – a global hierarchy that has been centuries in the making, and by now has been applied tens of thousands of times across five continents in contexts of diverse conflicts over land, water, health, welfare and work (Jiang and Marggraf, 2021). Fighting CBA means also fighting something much bigger.

Thus conflict over CBA is not just a technical dispute over whether it "works" or not, or when, or for whom. It is also, for example, a struggle between different kinds of "common sense" rooted in enduring historical and cultural conflicts. One kind of common sense is frequently found (at certain times) among the middle class in the global North, especially among professionals, especially among those with some education in orthodox economics, especially among white men, and especially among technocrats, including on the left. This variety of common sense says that CBA is the basis not only for rational public policy but also for *all* rational choices that any individual or society might make, ever. Here are some samples of this "common sense," usually spoken in a masculine tone of voice that suggests that they are self-evident: "Every decision implies a monetary evaluation" (Barde and Pearce, 1991). "Measurement is essential, since trade-offs are inescapable" (World Bank, 1992). "I said into her ear: 'You are blessed with an education and the capacity for rational judgment. What you do is you put everything in one scale of the balance – job, husband, all that – and me in the other. See which goes down. Take the one that goes down'" (Buchan, 1995).

This species of "common sense" is powerful insofar as it stops arguments against CBA before they start. It tells us that we cannot oppose CBA because it is essential to every decision we make. It tells us that it would be irrational to refuse in principle to accept compensation in advance for damage that our forests, our community or our children may suffer at the hands of corporations or the state, because in reality we have all implicitly already calculated how much that compensation should amount to. As democrats, the idea goes, we are already prepared to make any trade-off that is necessary to make the average person in society better off. To oppose CBA in principle, on this view, would be to thwart compromise and yield to unreasoning emotion (Self, 1975). To object to CBA would be to object to being human. There is therefore no alternative.

The other kind of common sense is as close as possible to the opposite. It can be found everywhere among ordinary people in the global South and is widespread at the local level and among many resistance movements in both North and South and among bureaucrats and neoclassical economists themselves in certain moods. According to this version of common sense, CBA perverts and distorts the way people actually make, and should make, collective decisions. In the words of Shalmali Guttal of Focus on the Global South, CBA is perceived as an "unreal" and profoundly "foreign" intrusion into the lives of, for example, many rural villagers in Asia, Africa and Latin America (quoted in Lohmann, 1999). It directly attacks their values, needs, knowledges and languages, leading to their disempowerment and the exclusion of their voices from public dialogue. In basing decisions on adding together monetary costs and benefits, it devalues societies and individuals who make choices instead by working collectively to see that complementary but plural and diverse non-monetary values are all respected (Temper and Martinez-Alier, 2013); or by being open to changing their goals in midstream as a result of new illuminations that emerge as a result of the decision-making process itself.

This variety of common sense is likewise powerful because it makes the technique itself, and the image of society that it projects, into a subject for political investigation. It turns the typical accusation made by CBA proponents that opponents are being stupid or undemocratic back on the accusers. And it enforces recognition that the basic assumptions of CBA, and not just the way it is carried out, are always going to be a target of popular resistance.

Nevertheless, these two varieties of common sense about CBA have remained at a rough standoff in various global arenas for at least 70 years. This reality underlines the depth of the political conflicts involved, suggesting a need for a fresh perspective to move things forward.

This chapter tries to take such an approach by backing up and starting again from a new place. Instead of taking CBA at face value, as a decontextualized bureaucratic procedure to be either taken up or rejected (or both simultaneously) by popular movements, it views struggle over CBA as forming one part of broader struggles over *labor* and *mechanization*. Once this perspective is fleshed out, the chapter argues, it may be possible to return to perennial debates about CBA with new eyes and see possibilities for new alliances among labor and other ecological movements.

The next section of this chapter introduces a double-barrelled vocabulary for analyzing labor, mechanization and rule-following under capitalism that will be useful later on for elucidating parallels between CBA and other forms of automation. The chapter then gives examples of the decision-making labor that CBA seeks to mechanize and outlines how CBA mechanizes it. The following section explains why the contradictory results can be seen as akin to familiar tensions afflicting capitalist automation. The chapter's conclusion touches on the possible strategic movement potential of this way of restating the nature of conflict over CBA.

Machines and Rules: From Marx to Wittgenstein

This chapter mobilizes two vocabularies about work that it treats as historical variations on each other. The first is Karl Marx's account of the contradiction between "dead" and "living" labor. Marx's account is very 19th century. It was formulated at a time when capital was enlisting so many big industrial machines to regiment, recruit, disempower and exploit human labor (Huber, 2009; Malm, 2016) that it seemed that workers were being reduced to having to "step to the side" of the thundering, clacking engines that now looked to be the driving force of production. Ultimately this process fed structural fantasies – still very much alive in today's era of artificial intelligence – that dead labor (machines) under the control of property owners might some day supplant living human activity entirely in capital accumulation.

Marx's response, of course, was that capital would never be able to eliminate – and would always have to struggle with – the living labor that it progressively degraded. The contradiction would endure indefinitely between industrial machine motion – enabled and powered by the huge monolith of thermodynamic energy that was painstakingly assembled over the 19th century (Daggett, 2019; Lohmann and Hildyard, 2014; Fiori, 2020; Lohmann, 2021) – and the human action that was necessary to "animate" it for capital: that is, between capitalist "value and the force that creates value" (Marx, 1977: 425; see also Caffentzis, 2013; Antunes 2013). This insight has been repeatedly confirmed over the past century and a half. Whenever today's machines break down, can't finish their jobs, fill their surroundings with unmanageable quantities of waste, or encounter circumstances that their builders never took into account, capital needs lots of human workers full of accumulated knowledge, creative fizz and what James C. Scott (1998) calls *metis* to adjust, fix, aid or clean up after them or find new ways of ensuring that they are kept supplied with what they

need. Yet in the attempt to cut costs, capital finds itself continually pushed to undermine workers' abilities to perform precisely these necessary services.

The second vocabulary comes from the following century and Ludwig Wittgenstein's critical work on rules (Wittgenstein, 1953). As Lorraine Daston (2022: 273) has recently pointed out, Wittgenstein's critique was very 20th century. It arose in an era in which industrial capitalist society had succeeded in cobbling together extensive "islands of imposed uniformity, stability, and predictability" of a type that had not been seen before. This archipelago consisted partly of the mechanized zones of factories and the monoculture plantations that fed them and on which they were partly modelled (Whittaker, 2023; Ortega, 2014; Rosenthal, 2018; Ouma and Premchander, 2022). But it also included islands where, say, ordinary people could have absolute confidence that the lights would go on when they flipped a switch, or that cars could deliver them to a destination 200 kilometers away by tomorrow (Luhmann,1990), or that a caramel wrapped in a package of a certain color and design would be qualitatively and quantitatively identical to billions of others, or that mechanical calculators could point them toward trustworthy approximations of square roots in a fraction of the time it would otherwise take them to find.

The flip side of this growing archipelago of mechanical predictability was a deepening ocean of degradation and chaos. For industrial machines to be able to continue running in reliable grooves, they had to be figuratively situated atop ever-moving colonial frontiers at the interface between the low entropy of fuels and other raw materials ("order" in the parlance of later 19th-century physics) and the high entropy of residual heat and other wastes ("disorder") (Rovelli, 2018; Hornborg, this volume; Lohmann, 2022). Factories and plantations were themselves split into offices where bosses could tabulate future outputs in orderly fashion and zones of fluid disintegration where workers' lives were progressively degraded and the ecological relations that nourished them "maxed out" (Moore, 2015). For example, the fossil-powered mechanical engines that figuratively "hummed inside the enslaved" (Baptist, 2014: 134) on early 19th-century US cotton plantations in order to augment profits also deprived the slaves of the minimum of what they needed to maintain the different and multiple rhythms that sustained their lives and health. In 21st-century factories, re-instituting slavery is not an option, but the integral vitality of working bodies is still being disordered by being "reordered" from above into just another part of a production machine (Linder and Nygaard, 1998). In Amazon warehouses, managers' use of digital automation to achieve simplified, predictable targets in picking and packing commodities for shipment often means making life and work *less* predictable and stable for workers, because they can no longer rely on their own discretion to pace themselves in diverse ways (Hong, 2023: 6-9; Delfanti, 2021). The point is generalizable in ecological terms. Globally, more living human abilities, low entropy and fertile land have to be "imported" to mechanized islands of rule-governed uniformity and repeatability than could ever be returned to their surroundings (Dorninger, Hornborg, Abson et al., 2021; Illich, 1974). Essential for accumulation, this dynamic, over time, also places fetter after fetter on it, at some point overwhelming it, as is happening with climate change.

This link between islands of capitalist "structure" and the deepening oceans of capitalist destruction and disorder surrounding them is concealed not only by the physical distances enabled by automation – between, say, Northern consumers and Southern peasants, between polluter and polluted, or between bosses and workers – but also through accounting systems, labor contracts, world money, and bourgeois economics (Poovey, 1998; Nelson, 2022; Hornborg, this volume). Such practices offer institutionalized assurances that exchanges of, for example, low for high entropy can be rendered "equal." The dream is that the entire universe might some day be converted into a frictionless perpetual-motion machine for capital accumulation: a "circular economy." The disastrous requirements and repercussions of maintaining zones of capitalist "ruliness" become

veiled through a mythology that says that, propelled by investment and technical knowledge, these "ruly" islands could someday expand to encompass the whole world. Obviously, however, this veiling can never be more than partial or temporary. So-called "externalities" such as biodiversity loss, the unpaid work of "women, colonies and nature" (Mies, 1986) and the profit-ensuring degradations of white supremacy (Wilson Gilmore, 2023; Blackmon, 2009) inevitably become subjects of debate not only among environmentalists, feminists and anti-racists, but among governing elites as well.

For close to a century, one of those elites' responses has been to propose transforming the destructive prerequisites and consequences of capital accumulation into "costs" and "internalizing" them via further impersonal rules into one more component of those tidy numerical tables on managers' desks. Through just a bit more "equal exchange," the idea goes, degradation, exploitation, and spiralling waste production can be in effect cancelled out via cash or its equivalent. Capital accumulation can then continue indefinitely without being overwhelmed by its "unruly" flip side. Of course, this gambit at best merely prolongs the debate. Serious efforts to "cost" climate change, for example, or women's housework, or five centuries of colonialism, would arguably cripple capital accumulation even if all possible cuts were made to wages before cutting profits and rents. In the words of investment banker Robert Monks, a successful corporation must never cease to be an "externalizing machine" that strives precisely to prevent as much "internalization" of costs as possible (quoted in Bakan, 2004: 70; see also Kapp, 1950; Spash, 2021). Markets themselves "would be impossible if people were made to account for every cost" (Mitchell, 2002: 290). Nor does the attempt to cost capitalist degradation at low, "token" figures provide an exit from the contradiction. That only provokes further popular resistance, further technocratic responses to that resistance, and so on.

Part and parcel of this ongoing dynamic of attempted containment and concealment of the permanently conflict-ridden trajectory of capital is a recurrent, half-articulated dream of "rules that follow themselves, everywhere, always" (Daston, 2022: 273) without the need for human work, the need to degrade it and its ecological supports, and the need to manage its resistance. Such rules, if they existed, would solve capital's problems with labor once and for all. Capital's difficulty, after all, has always been that while it needs its workers to do what it tells them, obedience always implies the possibility of disobedience. Lay down any rules for workers and they can usually find a way to subvert them by taking them too literally ("work to rule") or failing to provide the supplements, improvisation or discretion that the rules need to be effective. If capitalists have in mind a right way of doing things, there will also always be a wrong way that equally "follows the rules." In a never-ending dance, workers slyly reinterpret the rules that capitalists formulate; capitalists then angrily reinterpret the reinterpretations. Worse, it is precisely this potential for defiance that is the source of the creativity that capitalists need from their workers. Rules that followed themselves would be the ultimate way around this dilemma. They would disempower workers to the highest degree, deskilling them while centralizing all necessary knowledge in bosses. Laid down unilaterally from the top and formulated in a way that could anticipate all future contingencies, they would be followed by workers without cognition, friction, ambiguity or contestation. They would divorce planning from doing absolutely, so that all "mind" lay with bosses and none with laborers, who would become all "body" (Noble, 2011).

In that respect, the enticing fantasy of self-interpreting rules is kin to the perennial dream of total automation. Indeed, self-following rules might be seen as the imaginary end point toward which capitalist mechanization strives. After all, industrial capital's classic way of combatting workers' "wrong" interpretations of rules has been precisely energy-intensive mechanization coupled with ever-expanding global energy infrastructure. In addition to their other virtues, super-powerful

industrial or digital machines, with their relentlessly uniform motions and operations, would seem to be able to encode capital's rules in a way that makes them unreinterpretable. The idea that eventually the human interpretive labor that "mediates between rules and the unruly world could be kicked away like the scaffolding from a completed building" (Daston, 2022: 273) comes from the same mold as the capitalist hope that properly-constructed and -programmed mechanical or electro-mechanical devices might someday run themselves as well as running workers.

In addition to belonging to the same lineage as total automation, self-interpreting rules can be seen as encapsulating the ultimate ideals of many other capitalist adventures as well: Adam Smith's division of labor, monoculture slave plantations, the factory organization that Peter Kreidte and colleagues (2008) call "industrialization before industrialization," 19th-century industrial machines, Joseph Marie Jacquard's punch-card silk looms (Essinger, 2007), Gaspard de Prony's and Charles Babbage's technologies for fragmenting and dominating "mental" labor, and Frederick Winslow Taylor's "scientific management" (Whittaker, 2023). The phantasm of self-following rules also shimmers in the background of a number of 20th-century US-centered movements in digital computing, statistical analysis, game theory, organization theory, artificial intelligence and the commodification of uncertainty (Lohmann, 2010). In one way or another, all of these developments contain a vision of an asymptotic approach toward a point at which capital might be accumulated without its having to cope with the troublesome living labor of human decision-making. As will be argued below, CBA can be understood as yet one more manifestation of these strivings toward total mechanization and rules without interpreters.

In this connection, it's perhaps little wonder that imaginary, impersonal, self-following rules came over time to be identified with reason itself. During the Cold War in the US, for example, it was widely held that good reasoning had to "follow formal algorithms that optimize results and can be applied mechanically" (Erickson, Klein, Daston et al., 2013: 177). Rationality became understood as a matter of degree of submission to "explicit, exacting, unqualified, and unequivocal" rules (Daston, 2022: 273) from which messy, heterogeneous processes of human interpretive work could theoretically be subtracted. It was this tide of reification, which had been rising from the time of Babbage, that constituted the context for Wittgenstein's update of the Marxian point about living and dead labor. Wittgenstein's contribution was to demonstrate that "even the most apparently straightforward, unambiguous rules – algorithmic rules such as how to continue a numerical series" (272) – required human interpretive labor capacities rooted in very slow-developing social customs and institutions in order to function (Wittgenstein, 1953; Kripke, 1982). If factory machines needed living labor in order to be able to produce capitalist value, so too did any collection of rules marshalled by experts to exercise control over that very labor. Wittgenstein can thus be seen to have exposed yet more of the bedrock of contradictions that Marx had revealed to underlie capital accumulation.

In the interests of movement-building, the remainder of this chapter aims at fleshing out some of these contradictions as they manifest themselves in CBA. In particular, it seeks to show that CBA's attempt to "mechanize" the work of decision leads to much the same type of blowback and degradation as do the rest of capital's efforts toward its constitutive, partially self-defeating ideal of total automation and self-interpreting rules. But because the nature and dynamics of the species of labor process that CBA seeks to automate remain underexplored by the left, the chapter needs first to lay out some down-to-earth reminders of how rational choices are actually made in working life, including political and bureaucratic life. Then will it be in a better position to suggest ways of exploiting the contradictions that follow on from CBA's attempt to mechanize those choices.

The Work of Choice

How are good and bad decisions made in real life? Here are some concrete examples:

- Working on the production line, should I try to restart this rattling machine myself or lose time waiting for the mechanic to take a look first lest I disable it permanently? That depends on how expensive the machine is, what I think is wrong with it, how urgent it is to restart it, whether I trust the information I have about cost and urgency, how much I trust my own mechanical knowledge, how important it is to keep my job yet simultaneously to demonstrate my skills or initiative to management, what my relations with my supervisor are like, whether my possible failure with this machine would anger colleagues, or impel management to leave even less to my discretion in the future, and so on.

- As a motorcycle driver for the mobility platform Gojek, should I accept a job to deliver food to a huge mall in Jakarta? That depends on whether the drop-off point is in a zone where we online platform drivers have agreed not to compete with conventional motorbike taxis, and, if it is, how happy the customer is likely to be about having to pick up the order 500 feet away. Also, will I have to traverse a neighborhood where political demonstrations have closed off streets? Will construction in the area block GPS signals, yielding inaccurate geolocations? My personal relationships with local private security personnel also come into play, as well as the state of potholes in the zone, the length that local traffic signals tend to stay red, and my current bank balance (Qadri, 2023).

- As a slave diving for pearls in the Arabian Gulf of the early 20th century, when should I stop slicing and collecting oysters off the sea floor and pull on the rope around my waist to signal to my hauler in the boat above to pull me up? That depends on my understanding of the hauler's trustworthiness, my relations with him, my knowledge of my own current health, the depth of my dive, the magnitude of the swells that the hauler must take into account in retrieving me, my performance on previous days of the season, and my prediction of the reaction of the boat captain to my performance today and in the past, among other things (Hopper, 2015: 82-85).

- Which kind of cotton should I use to spin thread for my homemade fabric business? I might have to think about many things: cost, indebtedness, profit margins, strength, texture, compatibility with certain dyes, reactions of customers to the resulting products, future changes in customer profiles, the satisfaction I take in working with this or that raw material, the effect of different cotton varieties on my land, and other factors.

- In my coffee shop, should I try to stay on the good side of my tiresomely temperamental colleague at the cash register or is it just not worth the effort? That might depend on how badly their behaviour is affecting my own work, whether they might leave the firm soon, how irrevocable my decision would be should I start blanking them, and how that decision might look to other colleagues. And when is it actually rational to spend any time at all on such decisions, as opposed to acting immediately on the basis of, say, trusted procedural precedents or "animal spirits"?

- When I am composing music for an advertising spot, should I choose a theme that drops a minor third here or a perfect fourth there? Why or why not, given what I know about the musical tastes of potential customers? Which networks of metaphors should I then rely on to convince the players in my musical group to phrase the theme as, for example, "spiky" rather than "flowing" (Isenberg, 1949).

- After transferring my trade goods to a canoe to transport them through whitewater rapids to a market downstream, what position in the stream should I start from? That depends on where I will want the canoe to be situated later, so that I can call into play inculcated bodily reflexes or habits that will then make the right further choices "for" me (Suchman, 2006: 18-20, 72). It also depends on what reasons I have to trust those habits in these circumstances.

- As a bureaucrat laboring to coordinate, direct and regulate production, circulation and reproduction in a complex industrial society, how do I help justify my bosses' decision to re-regulate an industry to hamper employee bargaining and safeguard future profits? What reasons should I appeal to in order to persuade the public that alternatives have been considered and that the choice has been determined by a comprehensive, discretion-free technique for democratically weighing all societal costs and benefits against one another? To what extent should I try to anticipate how the public will react, or what further reasons I should give? How seriously should I take the possibility of future lawsuits? When should I simply set aside all those pages of CBA that my staff has put before me, and when should I quote them or behave as if I take them seriously?

Running through all these labor processes is reasoning about ends. There is probably no situation in the above examples in which my decision about what to do cannot be affected by a need to redescribe, elaborate, re-evaluate and revise creatively in midstream what I am trying to achieve, in accordance with what John Dewey (2008 [1939]; see also Richardson, 2000; Anderson 1997, 2023; Oakeshott, 1962) once called the "ends-means continuum," the constant need to give added direction to current action via collective innovation, and new knowledge about the prerequisites and hitherto unforeseen consequences of current action. For example, if a hydroelectric dam that my bosses need to build is revealed to be irredeemably uneconomic, then maybe I need to change how I describe its purpose. In addition to power production, the objectives will now include irrigation, flood control, scenic beauty, tourist income, new jobs, reservoir fisheries, or the like. And my arguments for the dam will shift accordingly. Similarly, as a commercial composer, I may remain undecided about which motif to use for my jingle until I hit upon one that immediately strikes me as right for what I only now realize is the target audience I want to create. To make their way in capitalist society, workers need to be able to switch on short notice from a more or less instrumental frame of mind, in which they focus on effective means to a provisional goal, to one in which they concentrate instead for a time on the "intelligent refashioning" (Richardson, 2000) or "deliberative specification" (Wiggins, 1987) of those goals. They also need to be sensitive to the incommensurability of the changing yet complementary goals that characterize real-life working communities and households (Heinzerling, 2021; Gudeman, 2016; Burgess, Clark and Harrison, 1995; Espeland, 1998; O'Neill, 1993, 1997, 2017; Nussbaum, 2000). For workers to be able continually to acquire fresh reasons for doing what they do and for changing what they do and to understand that different choices may need to be evaluated according to different nets of criteria is one of the surest signs that they know their jobs.

Spaces of Reasons

What does this tiny collection of everyday examples tell us about the living labor of decision on which capital accumulation depends?

The main lesson should be obvious. But it bears repeating because it is routinely ignored in academic discussions, particularly in the orthodox economics of the 20th and 21st centuries, and particularly in the literature supporting and elucidating CBA. This is that all of the (good and bad) decision-making processes canvassed above are *rational*. By that I mean that they are embedded, constituted and conducted in complex social spaces consisting of diverse, changing, slowly-acquired practices of reason-giving carried out in contexts in which human beings have to rub along together in wildly varying situations without resort to crippling types and degrees of violence (Graeber, 2012: 117). All the workers mentioned above, when asked, have to be able to give recognizable reasons to others for their decisions in contexts in which some of their material interactions with other humans and nonhumans are open to public view (Davidson, 2001, 2004; Shanker, 1998), and to argue about those reasons.

Second, these reasons are not homogeneous. Many of the reasons for decisions mentioned above are beliefs, some of them about objects, others about what other people think, still others about oneself and one's abilities. Other reasons take the form of desires, hints, metaphors, narrative contexts and so on. All of these are essential at various times to the ability of labor to "go on" (Wittgenstein, 1953) in the reasoned and creative ways required for capital accumulation.

Third, surrounding and constituting each of these reasons is a vast, acquired, yet constantly-changing infrastructure of *other* beliefs, desires, narrative elements, potentials for further hints and metaphors, and so on. As the Wittgensteinian tradition has emphasized, it is impossible to hold just one belief or desire (Davidson 2001, 2004). Each belief, for example, is defined by being connected to countless others through relations of inference inculcated over long years of social experience of a diverse and often unpredictable human and nonhuman world. Capital's workers have to be prepared to countenance and argue over not only criticisms of their justifications for one decision, but also about diverse millions of other reasons that form part of the same discursive universe. Living labor power is exercised in what the philosopher Wilfrid Sellars (2007, 1997 [1956]) called a "space of reasons" – or, in terms explored long ago by Georg Lukacs (1980: 38), a "space for decision" defined by an intrinsically social "complex of being." As recent experience with artificial intelligence has clarified, this space is exceedingly large and diverse. Recent remarks by Rodney Brooks (2023), a legendary MIT roboticist, go straight to the point:

> "Suppose a person tells us that a particular photo is of people playing Frisbee in the park, then we naturally assume that they can answer questions like "what is the shape of a Frisbee?", "roughly how far can a person throw a Frisbee?", "can a person eat a Frisbee?", "roughly how many people play Frisbee at once?", "can a 3 month old person play Frisbee?", "is today's weather suitable for playing Frisbee?"

The history behind this capacity, Brooks implies, is too long and multilayered to be replicated by building machines that do nothing more than use big data, fast, energy-hungry processors, algorithms and statistics to make virtuoso predictions of the binary matches that humans might make between a particular word and a particular thing, or between an image and a phrase, or between one sentence and another. Today's advanced image-labelling systems, for instance,

> "cannot answer questions at all, they have no idea what a person is, that parks are usually outside, that people have ages, that weather is anything more than how it makes a photo look, etc., etc."

As Wittgenstein himself observed almost a century ago, apparently to the great consternation of Alan Turing, machines cannot by themselves perform even relatively "simple" rational acts like adding, subtracting and multiplying (Bloor. 1985; Shanker, 1998; Collins, 1990). Because machine "decisions" are not (yet) carried out in evolved spaces of reasons, they are not even (yet) decisions. Artificial intelligence machines are useful to capital today not because they *replace* human decision labor skills but because, like power looms, they automate and accelerate certain isolated fragments of human behavior in ways that, when rounded out by the proper complement of living human labor, can extend capitalist discipline and increase the "productivity" of certain activities on Daston's (2022) "islands" of repeatability while strewing disorder, entropy and waste where they cannot become a "cost" to capital. What Brooks calls the broad, plural human "competence" that capital needs for this process, from that of the lowliest Amazon warehouse "associate" to that of the oil company boardroom exec, cannot be made more rational or useful to capital by trying to remove it from the contingent mess comprising various long-evolved socionatural spaces of reasons; quite the reverse. As Hamid Ekbia and Bonnie Nardi (2017) argue, what has traditionally been termed

"automation" should really be called "heteromation" in acknowledgement of this unbreakable living labor-dead labor conjunction under capitalism (see also Gray and Suri, 2019).

Fourth, the "spaces of reasons" that define living labor power are profoundly material and ecological, rooted in the human and more-than-human commons that form the "constitutive outside" of capital (Laclau, 1990; Fraser, 2014). One way to demonstrate this is to examine the defining first leap in small children's learning to make rational decisions, and thus eventually to become workers. This first leap is not to learn to give good reasons for an action but to learn to give any reasons at all. As a three-year-old, I might decide to pour water into my mother's shoes. I quickly learn that unpleasant consequences that might otherwise flow from such decisions can often be avoided by trying to explain or give reasons for them. At first any reasons will do. "The cat told me to do it," I claim. Or: "It was a *accident*!" I come to understand that almost any gambit essaying connections between my action and a wider, human-permeated world is likely to favor relatively peaceful, possibly fun engagements over reprimands or slaps and will work far better than silence in improving my ability to conceptualize and find the reasons I will ultimately want to give for my actions and the place that I will come to want to occupy in that world. Simultaneously, I learn to avoid actions for which I sense that I will not be able to give approved reasons. Through play, I become a being more and more of whose actions are definable by encircling webs of reasons that can be recognized as such by others. Whatever happens in the rest of my lifetime intellectual development may well turn out to be interesting and important, but will always be derivative of this moment. If, as a later supplement to the basic step of learning how to give reasons, I also learn to do quantum physics, plant maize correctly, interpret Mozart, or build AIs, that will amount, at most, to a microscopically thin layer on top of the more fundamental, massive, long-evolved achievement of ordinary worldly human linguistic activity.

Two related characteristics of childrens' relations with their environments that carry over into mature decision-making are of special importance. First, spaces of reasons are constructed out in the open, where children's "causal connections with the rest of the world" (Davidson 2004: 84) as well as with a variety of adult models and other companions and creatures can be observed by a community over long time periods. Decision-making labor, like all labor, is embedded in the earth. Second, the heterogeneity of spaces of reasons that has been emphasized above is just what would be expected for beings that in the course of evolution have had to cope with a bewildering patchwork of material situations – a "dappled world" (Cartwright, 1999) – in which varying, partly conflicting, yet often complementary types of justifications for action have to be given at different times. The bricolaged competences associated with living labor are fed from myriad springs in biological and social evolution and reproduction, reflecting many different temporalities, whether evolutionary, species, childhood, cultural, bodily, or conversational. While concrete human activities must be framed as abstract labor in order to produce capitalist value, at no point in the process can this living history be erased. Rather, it must always be present as one pole of a "contradictory unity" (Harvey, 2015) or "struggling entity" (Martineau, 2015). For example, one reason that job interviews are useful is that employers are entitled to infer that if applicants can perform one task, they will also be able to handle many others that may be completely unrelated. With artificial intelligence machines, this inference is generally unwarranted.

CBA in Spaces of Reasons

Cost-benefit analysis is inserted into socionatural spaces of reasons much as industrial machines are, in similar ways and for similar purposes. Just as capitalist mechanization aims to discipline, disempower, control and extract the maximum value from labor, CBA's attempted automation of political decision-making processes aims at disciplining, smoothing out and disempowering the

restive modern public to make it more productive for capital accumulation. The results are contradictory in much the same way that capitalist mechanization is.

CBA arrives in society not as a small, self-contained, plug-and-play module for streamlining and improving public choice while leaving everything else untouched. Rather, like a successful industrial machine, it lives or dies through enforced material and political connections to distant locations. It demands that the world upend itself in order to supply particular sorts of simplified inputs and the means of extracting or producing them. It requires new infrastructure to transport those inputs to itself. And it needs that its environment be rejiggered still further in order to accommodate the novel outputs that it produces. This comprehensive backward and forward socionatural re-engineering, like that required by industrial machines, is, in various complex and subtle ways, undemocratic and violent.

As with industrial machines, much of this violence paradoxically undermines the very same capacities of living labor described above – the same rationality – that capital cannot do without. CBA is not (as it is sometimes presented) a commonsense component of good housekeeping that confines itself to collecting information about and taking into careful account, as one set of reasons among many, the possible costs and benefits of various choices and comparing them with those associated with other possible courses of action. If that is all CBA were, it would not ignite the profound political conflict that has always surrounded it. Instead, CBA purports to set up a "general standard" for public decision-making (Richardson, 2000) – a mechanical routine that, "once set in motion by appropriate value judgments on the part of those politically responsible and accountable," is supposed smoothly to "run its course without further interference from the top" (Sen, Das Gupta, and Marglin, 1972, cited in Porter, 1995: 150). It is designed to automate the work of public choice, make it more "ruly" (Daston, 2022: 273) and in particular to remove from it the messy, dilatory species of living labor sometimes called "discretion." To do so, it is forced to try to replace much of the complex living labor of reason-giving described in the concrete examples above with simplified price comparisons, which, it implies, can be conducted mechanically with a minimum of troublesome resistance. That is, it aspires to replace those Sellarsian (2007) "spaces of reasons" with quasi-markets that, according to a venerable 20th-century fantasy of orthodox economics, can be modeled as machines (Mirowski, 2001). Just as Industrial Revolution machines were used to isolate physical fragments of meaningful, reason-permeated activities like weaving or automaking and energize them on such a huge and intimidating scale that they came to be identified with production itself, so too CBA isolates a tiny fragment of the reason-permeated activity of decision-making – comparison of the monetary costs and benefits of actions – and expands and mechanizes its application in such a way that it takes on the aura of being capable of taking over the whole burden of reasoned decision-making from a flawed and limited humanity. In so doing, it embraces and augments all the mystifications of "equal exchange" embodied in money and contract that have been touched on above (Hornborg, this volume), glossing over the realities of appropriation, exploitation and entropy flows and frontiers and provoking repeated crises of degradation.

"Upstream" of the CBA machine, then, the choices made by the isolated individuals that CBA takes to be constitutive of society must be reformatted as economic "preferences," or welfare-commensurated-with-money, if they are to serve as inputs into the device. Only via this unprecedented, relatively ungrounded expansion of pricing practices can winners' gains and losers' losses be commensurated at the machine's location in order to make plausible a "hypothetical costless lump-sum redistribution from winners to losers" in the world of a proposed policy or project, so that everybody would rate that world as equally or more desirable than the status quo (Adler and Posner, 2001: 270-273). Only by ignoring most of the living, reason-giving labor

process that individuals employ when arriving at opinions on a proposed policy or project can CBA construe those opinions as quantities of money that can then be aggregated with one another. Only by taking a broken, primitive fragment of the space of reasons in which people operate, isolating it and attempting to reproduce it again and again, can the CBA machine do its job. Only by doing violence to the reasoned processes through which people formulate and reformulate choices in real life can the procedure fulfil its bogus conception of democracy by giving what it interprets as their "choices" equal weight.

For example, the CBA machine can accept as raw materials only those individual "choices" that are not understood to be dependent on a continuing process of conversation and collective deliberation (Sen, 1977, 2001; Richardson, 2000). Rather than being tentative or open to correction, the individual preferences mined by CBA must be construed as final, excluding the possibility of future information that the individuals themselves might consider relevant and before any collective decision has been made about what sort of information will count as relevant. They must be treated as constitutionally immune to revisions that their holders might want to make once they see the outcome of the policy or project being evaulated (Adler and Posner, 2001: 278, 284–285).

In addition, the raw materials to be fed into the CBA machine must consist of numbers. They cannot be choices constituted by the context of the variegated (non-numerical) nets of reasons given for them, but must be, so to speak, primitive experiences of price differences. That is, the preferences on which CBA operates can at best be only tiny fragments broken off the decisions on which they are based. They are required to lack the rationality of those decisions – that is to say, their embeddedness in larger spaces of reasons. Just as the power loom can know nothing of the cloth that it weaves – its nature or purposes, what you can do with it, how it feels, why it is important – so too the CBA machine can know nothing of the web of reasons that supports balanced decision-making. Thus it is not merely that CBA cannot take into consideration the kind of practical reasoning engaged in collectively by communities who do not share common adjudication procedures when looking at the same set of alternatives. It cannot take into consideration, represent, or replace *any* types of practical reasoning, including those laid out in the eight examples above (Adler and Posner, 2001, pp. 276–277, 290–291).

These imperatives are materially embodied in the very procedures used for extracting raw materials for processing and transport to the CBA machine. The economic technique of *hedonic pricing*, for example, uses statistical techniques to mine people's "preferences" from observable market behavior. For example, preferences for workplace safety might be inferred by comparing wage levels of various jobs with their work-related injury rates. At no point is the nature of these preferences allowed to be influenced by the reasons subjects might give for them. The technique of *contingent valuation*, by contrast, does involve direct contact with the public from whom preferences are to be extracted. But this contact takes place only in interview rooms or on questionnaire sheets. One by one, subjects are asked how much money they would accept to compensate for losses suffered as a result of a proposed policy or project, or how much they would pay to defend some aspect of the status quo against it. Here preferences are extracted and processed into a machine-friendly form in several steps. First, any refusals by subjects to cite monetary figures are either suppressed or converted into processable numbers more or less arbitrarily chosen by the preference miners (Clark, Burgess, and Harrison, 2000). Second, any hints of tentativeness, uncertainty, frustration, gaming or resistance impelled by CBA's methodological disregard for the reasons that might be given for a decision are removed. Commensuration becomes a "system for discarding information and organizing what remains into new forms" (Espeland and Stevens, 1998: 317), and thus for disempowering and disciplining members of the public attempting to use their powers of reasoning. Popular opposition is often met by CBA specialists' insisting that they are only

passively “reading off” the decisions that their objects of study have already made (e.g., Fankhauser, 1995: 167). But this tactic typically only kindles further class struggle, partly because it formats the public as stupid and economists deploying CBA as arrogant.

Downstream from the CBA machine, meanwhile, where the numbers it produces are consumed, a complementary dynamic takes hold. Figures greater than unity (say, 1.09) are supposed to be mapped directly onto implementation of the proposed policy or project, while figures less than one (say, 0. 65) are supposed to preclude it. When presented as “facts” by experts or politicians, favorable numbers then often take on a life of their own, creating a “bandwagon effect” that hardens support for the initiative in question among certain intellectual elites at the expense of much of the rest of the public. Only rarely is new knowledge about a proposed policy or project regarded as a justification for starting up the CBA machine again with new raw material that might yield a different result. This dynamic, obviously, is more likely to provoke further resistance than to eliminate it.

Both upstream and downstream, the mechanization of decision-making essayed by CBA is “deskilling” in something like the sense used in Harry Braverman’s (1974) classic work on automation, except that CBA impoverishes the intelligence of many officials and experts as well as ordinary people. Its “interpretation of what people want” is designed to be incorrect and it necessarily presents a false picture even of the subject that it is advertised to advance, namely the “wise use of limited resources and of careful instrumental reasoning in pursuit of one’s projects” (Richardson, 2000). It is constructed to obscure and sideline the physical, public, earthly forums in which reason is actually cultivated and exercised, feigning to replace them with fanciful automated techniques for extracting and processing subjectivity operated by economists and their patrons. Like the audit procedures described by Michael Power (1999), CBA is structured in a way that brings about a “loss of social thinking,” that is to say thinking *tout court*.

But, as with industrial and digital machines, there is a certain cunning to CBA’s promotion of stupidity. The more that the living work of choosing collective paths forward can be challenged by the figure of a self-following mechanical process, the rosier the prospects may seem for pushing the frontiers of capitalist plunder outward and inward. The catch, as always, is that far from replacing living labour, machines only increase industrial capital’s overall desperate need for it – as well as its exposure to deep, ever-shifting wellsprings of resistance. The more that capital invokes the image of a self-interpreting, automatic procedure, the more clumsily it has to maneuver to hide the living class politics that accompanies it. In practice, a “utopia of bosses” able to “drive out everything that does not fit” their own particular interpretations of their rules would ultimately prove “asphyxiating” (Alkhatib, 2021) not only for labor, but ultimately also for capital itself.

Strategic Postscript

The lessons for social movements of the way of looking at cost-benefit analysis that this chapter has presented are easily summarized. Movements that successfully cope with CBA will not confine themselves to trying either to “eliminate” it, or to “use” it, or to “refine” it.

First, “eliminating” CBA is unsuitable as an isolated campaign objective because CBA is an integral part of the history of something bigger. This article has itemized some of the other parts of this “something bigger”: capital’s unending efforts to overcome the contradiction between living and dead labor; its resort to the venerable ideologies of total automation and self-interpreting rules; the energetic structure of capitalist mechanization, including digitalization; the mystification of “equal exchange”; and so forth. Just as Luddite struggles were not “against machines” in isolation from

other phenomena, but involved class conflict more generally (Merchant, 2023), so too struggles over CBA should not be conceived as being "against CBA" in isolation, but must put the technique in its wider political context. This is not to suggest that even broader, even more abstract ideals such as "anticapitalism" are of any greater practical use in fighting the battles in which CBA implicates social movements. Rather, it is to advocate constant mutual reinterpretation among different movements of the specific, concrete struggles that each is engaged in at particular moments with an eye to building binding loyalties and more effective collective action.

Second, "using" CBA, whether by reducing it to absurdity or by invoking it in discussions with political elites, is a much more complex tactic than the phrase may suggest. For example, any social movement concerned about its relations with others will have to take care that its provisional "adoption" of CBA does not undermine struggles against CBA elsewhere, or even its own advocacy for grassroots power. As this chapter has argued, CBA's interference with living, democratic social reasoning at the community, group and family level is intrinsic to the procedure. Its class bias against workers and peasants is built-in.

Third, efforts to "refine" CBA, to the extent that they imply that the issues with the procedure are not rooted in the fundamental contradictions of capitalism, may also hamper movement-building. To propose that current CBA be replaced with some better plug-and-play alternative is to miss the technique's structural hostility to the most basic skill possessed by labor worldwide: the use of reason in making decisions. Resistance to CBA's assault on workers' cognition is not temporary, and attempts to "fix" the procedure will tend ultimately to take the side of their enemies. By lending support to movements eager to make alliances with business elites, CBA reform attempts are likely only to provoke opposition among other movements committed to preventing capital's depredations in the life-spaces of struggling communities.

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