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Is Critical Constructivism Critical Enough? Towards an Agonistic Philosophy of Technology

Introduction

This chapter builds on two hypotheses. The first one, discussed in the first section, is that Andrew Feenberg's critical constructivism represents a valid alternative to the empirical and ethically oriented attitude that dominates the field of philosophy of technology nowadays. Philosophy of technology needs to go beyond the empirical attitude that has characterized it in recent years. Yet, we think that the overcoming of this attitude cannot happen through an "ethical turn," but through a political turn. According to Jacques Rancière, ethics has as its ultimate goal consensus. And consensus, says the French philosopher, "properly means a mode of symbolic structuring of the community that excludes what makes up the heart of politics, namely dissensus (Rancière 2009, 115)." Put differently, ethics tends to cancel differences, not by indifference (this would in fact be an attitude not only un-ethical, but anti-ethical) but by absorption, inclusion, acceptance, and acceptability. Much of the work in ethics of technology consists in fact not in problematizing technology as such, but in making it acceptable, either by means of rhetorical actions, or by means of design actions. In both cases, however, what is excluded is the radical possibility of critique and dissensus, that which can come to trouble the very meaning of the technological process of innovation. Feenberg's critical constructivism has this double merit. From an ontological point of view, he defends the idea that technologies are always more than the sum of their material parts. From an ethical-political point of view, he suggests that technologies, as well as technological mediations or assemblages of human and non-human actors (to borrow, respectively, the language of postphenomenology and Actor-Network Theory [ANT]) are always taken within social dynamics of power, which most of the time are visible in terms of domination and exclusion.

Our second hypothesis, discussed in the second section, is that Feenberg's critical constructivism is nevertheless not critical enough. Although excluded from its theoretical premises, consensus is re-admitted in the practical applications of critical constructivism. We propose to translate this hypothesis in the following way: profoundly anti-Habermasian (Habermas, we will see, is the philosopher of consensus par excellence, and the philosopher par excellence on whom an ethics of the technique and technology of consensus has been built) in his theoretical premises, Feenberg turns out to be Habermasian in the practical outcomes of his thought. In particular, we are referring to the way he has proposed to put into practice the idea of "democratizing technology" (Feenberg 2001). For him, the democratization of technology depends on re-distributing power between "lay and expert, object and subject of technological action" (193). We argue that this is the continuation of the Habermasian ideal of transparent communication among equal and rational social actors or groups with other means.

In order to overcome this residue of Habermasian communicative rationality, in the third section we propose two “exit strategies.” The first is that, already suggested elsewhere (Romele 2020), of a re-appropriation of Pierre Bourdieu’s sociology within the philosophy of technology. The second, in our view even more radical, consists in the use of Chantal Mouffe’s (2013) agonistic approach – which not coincidentally closely resembles Rancière’s philosophical perspective. Our ultimate goal, of course, is not to eliminate critical constructivism, but, if anything, to complement it by offering a theory of practice that is ultimately coherent with its theoretical intentions.

1. The Philosophy of Technology Beyond the Empirical and Ethical Turn

In many ways, we could say that critical constructivism represents a “return to Marcuse,” to which elements from science and technology studies (STS), in particular social constructivism of technology (SCOT), are attached. Feenberg has always preferred Marcuse to Habermas. In *The Theory of Communicative Action*, Habermas famously distinguished between three worlds: the objective world of things, the social world of people, and the subjective world of feelings. Each of these worlds has its basic attitude, namely: an objectivating attitude which treats things; a norm-conformative attitude which views them in terms of moral obligation; and an expressive attitude which approaches them emotively (Feenberg 1996, 50).

For Habermas, only the first attitude has been developed in capitalistic societies. Moreover, this attitude has expanded beyond its proper world and colonized both the social world of people and the subjective world of feelings. Habermas’ efforts consist in criticizing this colonization and promoting an attitude proper to the social world of people in terms of communicative rationality. In separating between two worlds, realms, or spheres (the subjective sphere of sentiments is not considered in this context), he has also recognized their autonomy from each other. This is particularly helpful when it comes to defending the social world from the colonization of scientific-technical rationality and proposing a rationality proper to the social world; it becomes completely ineffective when one wants to problematize the way the scientific-technical rationality operates in what is supposed to be its proper domain, namely the objective world of things. The ideal-typical distinction between two worlds and two rationalities brings to neglect the continuous overlapping between them, at least from the side of the scientific-technological rationality.

Marcuse represents a valid alternative to solve this issue. Indeed, for him, the idea of the neutrality of technology is an ideological illusion. In the article “Industrialization and Capitalism in the Work of Max Weber” (1991 [1965]) he admits that technical principles are formulated in abstraction from any content, interest, or ideology. He has also highlighted, however, that these are just abstractions, and that as soon as they enter reality, these principles take on a socially and historically specific content

(Feenberg 1996, 51). In other words, scientific-technological rationality is not neutral at all. This might sound like bad news, because the social and historical content of rationality in which the abstractions of technical principles are concretized are those of class society. However, this is potentially good news, because it means that another rationality, or another way of understanding and practicing the same scientific-technological reason, can be put into place.

Feenberg has not limited himself to rehabilitating Marcuse. He has also proposed to go a step forward, a step that has implied the insertion of reflections borrowed from STS. There is indeed in Marcuse's perspective a certain amount of romanticism, but also ignorance towards concrete technologies. In his reflections on STS, Feenberg mobilizes both ANT and SCOT, generally favoring the latter. The problem with ANT, at least in its Latourian version, is indeed that to give full credit to technologies, it has partially emptied humans of their intentions. Latour's ANT reduces humans and nonhumans to their actualities. This flat perspective is clearly in contradiction with Marcuse's bi-dimensional anthropology. In SCOT, another principle of symmetry applies, which is not between humans and nonhumans, but rather among concerned social groups, that is, social groups that for some reason are or should be involved in a specific process of technological innovation.

The assumption of this first section is that critical constructivism represents a valid alternative to the empirical and ethically oriented attitudes that dominate the field of the philosophy of technology. Let us consider postphenomenology, one of the most influential research programs in the field. Postphenomenology tends to be as "flat" and descriptive as ANT, perhaps even more so. Indeed, while ANT is engaged in descriptions of the multiple and two-dimensional relations among humans and nonhumans, postphenomenology has often limited its interest to the linear and one-dimensional I-technology-world relations. Ihde (1990) has famously distinguished among four kinds of these relations (embodied, hermeneutic, alterity, and background), a list that has been considerably expanded by scholars since. In this sense, we might say that Feenberg's critical constructivism paves the way to a third dimension to explore, one of the human intentions, expectations, desires, and generally potentialities.

It would be unfair to say that postphenomenology is entirely descriptive. An ethics of technology has become one of the privileged domains of application of postphenomenology, especially after the work of Verbeek (2011). However, there is an important difference between the "surplus of meaning" characterizing Verbeek and other postphenomenologists' ethics of technology, and the one of Feenberg's critical constructivism. While particularly attentive to the ways in which ethics might orient some technical choices, postphenomenologists, of course with some important exceptions,¹ tend to

¹ See, in particular, the work of Robert Rosenberger (2017).

ignore what lies ‘upstream’ and ‘downstream’ of these choices. Postphenomenology, like aspects of Husserl’s phenomenology, has given too much credit to the gesture of *epoche*. In fact, the *epoche* ends up rendering inoperative any consideration of the conditions of possibility and the modes of existence of a phenomenon such as an object or a technological mediation. In the words of Cressman (2020, 13), “while postphenomenology provides a philosophical framework that encourages careful consideration of the consequences and affordances of living with technology, an important aspect of living with technology is to ask *why* we have the technical artifacts and socio-technical relations that we do.”

An effective metaphor is that of the game, which is made up of rules and players, but also social and cultural conditions that allow for its existence and success. Some games, such as certain violent sports and games of chance, are accepted and played only to the extent that our societies and cultures accept a certain amount of harm to the individual and the community – physical violence to people or animals, psychological and emotional dependence, economic losses, etc. – which it would be important to be able to discuss to the point of questioning their *raison d’être*.

A more concrete example is that of the current status of the ethics of AI. This field has been for a long time dominated by the quest for general principles – beneficence, non-maleficence, transparency, trustworthiness, explicability, privacy, etc. – that can be implemented either “in the head” of the engineers or in the machines. Jobin, Jenca, and Vayena (2019) have observed that while among the several reports and guidelines about ethical AI a sort-of understanding about some of these principles is in place and disagreement arises when it comes to contextualizing them and putting them into practice. In general, one could say that there is still a lack of interest in the broader context in which a potentially unbiased, transparent, and trustworthy AI is implemented. These things are, of course, quickly evolving, but interestingly enough it is not much from the side of philosophy of technology, but rather from that of other disciplines like digital sociology and critical media studies that this is happening.² Among the many examples available, one can refer to Crawford and Paglen (2020) who analyze the way Image sets for machine learning training such as ImageNet reproduce classic social and cultural biases, such as the marginalization or exclusion of certain social categories or classes. However, one might wonder whether these studies really go far enough, that is, whether they are able to challenge the very reasons why we have such technologies and why our societies increasingly rely on them.³

² Again, there are of course exceptions in the philosophical sphere, such as attempts to apply to AI the reflections that have long been initiated in the field of intercultural information ethics (Capurro 2004).

³ Interestingly, many highly regarded critics of AI work for companies like Google and Microsoft, leading to the paradox that those who have the means to fund critical research are those that can most use these insights, but will probably ignore it.

The philosophy of AI and philosophy of technology *tout court* are less in need of an ethical turn than of a political turn. The ethical concern that characterizes many current discussions in the philosophy of technology has made of it a sort of *ancilla technologiae*. In part, this is the responsibility of the tech companies, the “hard” sciences, and all the public and private institutions that profit from the chronic lack of funding in humanities, and philosophy in particular. But this is also our fault, as philosophy scholars that have assumed a naïve positivistic attitude before our colleagues, incidentally in a historical moment in which the “positive” sciences had already started to question their “positive” nature. Ethics of technology is our version of voluntary servitude. In turning away from transcendental perspectives like that of Heidegger and Marcuse, the philosophy of technology has also turned away from the possibility of engaging in “thick descriptions” of the conditions of possibility, be they social, political, metaphysical, technical, etc., in which technological artifacts and mediations are always entangled.

Finally, the ethics of technology has, if not as an aim, at least as a result, that of favoring consensus towards a technical innovation that can only be perceived according to a TINA (There is no Alternative) logic. This is what Rancière (1999) says about consensus democracy:

According to the reigning idyll, consensus democracy is a reasonable agreement between individuals and social groups who have understood that knowing what is possible and negotiating between partners is a way for each party to obtain the optimal share that the objective givens of the situation allow them to hope for and which is preferable to conflict. But for parties to opt for discussion rather than a fight, they must first exist as parties who then have to choose between two ways of obtaining their share (p.102).

What happens, however, to all those groups or social classes that exclude themselves or are in principle excluded from the possibility of participation in dialogue and reason? This question is even more urgent when technological innovation is at stake, because it is precisely with the excuse that technological innovation has a reason of its own that a large part of the concerned groups is excluded from these processes. Feenberg’s critical constructivism represents a valid alternative. Feenberg himself has demonstrated that he is conscious of the differences between his work and postphenomenology. For instance, he has highlighted that despite several resemblances with his work, Ihde’s postphenomenology has focused on individuals rather than on society. Moreover, postphenomenology has excessively concentrated on technological mediations and their role in approaching the world rather than on the social, economic, and political conditions of possibility of these relations: “[i]nstruments make modern science possible and influence our interpretation of nature, even our interpretation of our own sense experience. [...] But unfortunately, our science-influenced perceptual culture has also been influenced by commercialism and masculinist ideology” (Feenberg 2015, Kindle Edition). This is the reason why in a more recent occasion, he has said: “were it [critical

constructivism] to be schematized as a human-technology-world relation it would look like this: Humans → (world-technology)” (Feenberg 2020, 29).

2. A Critique of Critical Constructivism

As noted above, our second assumption is that Feenberg’s critical constructivism is not critical enough. In this context, the term “critique” must be understood as the possibility of radically questioning any preconception that might be a source of domination or exclusion. To be precise, our idea is that Feenberg’s critical constructivism contains a residue of Habermasian trust in communicative reason, not so much in its theoretical assumptions, but in its practical applications, in particular, the practice of “democratizing technology.” Certainly, such an idea is *per se* coherent with the theoretical premises of critical constructivism. According to Feenberg (2001, 179), “the worst problem with the social contract is [...] theoretical. The contract is an imaginary agreement between individuals abstracted from all concrete social relations.” One cannot but think of Habermas’ transparent communication – which is not only an ideal but also a condition for democratic deliberation – as an heir of the social contractualism. Rather, the problem concerns the way Feenberg has proposed ways to apply these theoretical assumptions.

In Feenberg (1999), he presents three sorts of practices that might lead, if opportunely promoted, to a democratization of technology: controversies, innovative dialogue, and creative appropriations. Let us focus on creative appropriations and, in particular, on one of Feenberg’s favorite examples, the French Minitel. By distributing terminals that could access a nationwide electronic directory of telephone and address information, the French national telephone and post company (PPT) hoped to increase the use of the country’s 23 million phone lines and reduce the costs of printing phone books and employing directory assistant personnel. According to Feenberg (1999, 126) the Minitel quickly underwent a reconfiguration, since the users started to resort to it “for anonymous on-line chatting with other users in the search for amusement, companionship, and sex. Users ‘hacked’ the network in which they were inserted and altered its functioning introducing human communication where only the centralized distribution of information had been planned.” We contend that there is a naïve optimism here.

First, it should be considered that there are several appropriations of techniques and technologies by consumers that are certainly not for the better. Think of the appropriation of Fentanyl patches in the US. Second, it should be considered that if users and consumers are not passive before the designed uses and ways of consumption, producers are also not passive before the multiple reappropriations. Sometimes there is a sort of dialogue between these two macro-subjects, but more often strategists

have the means to absorb tactics.⁴ For Boltanski and Chiapello (1999), the new spirit of capitalism has consisted, from the mid-1970s on, in abandoning the hierarchical Fordist work structure and developing a new network-based form of organization founded on employee initiative and autonomy in the workplace. In other words, strategists have absorbed the demands and tactics of those who criticized them and have thus transformed that criticism into an additional force. Think of Facebook, which in 2014, after much criticism, launched fifty gender options for the users – which allowed it to not only to make peace with the LGBT+ community but also to collect more basic data on the users of the platform.

The Minitel case itself is less a case of “hacking,” as Feenberg has put it, than of negotiation and absorption. When users’ behaviors began to differ from those initially thought of by the French telephone and post company, the company began to adapt to them to eventually make them economically beneficial. The Minitel soon became an infrastructure for other companies to provide service – from which the company made a constant profit. Amusement, companionship, sex, and many other things became paid services, just as we now pay, often with our data, for friendship on Facebook, public recognition on Twitter, and love and sex on Tinder. Consider, for example, that *messageries roses* (“pink messages,” adult chat services hosted by operators purporting to be receptive women) were very popular. Widespread street advertising marketed services such as “3615 Sextel,” “Jane,” “kiss,” “3615 penthouse,” and “men,” embarrassing government officials who preferred to discuss growing business usage of messaging.⁵

Feenberg believes that citizens’ tactics can pave the way to broader participation in technology and that more participation would bring more democracy. But public participation in technology is not in itself a guarantee of democratization. Nothing omits that the same logic of exclusion that often characterizes, for instance, the technical personnel, becomes the common practice of the formerly excluded groups. Feenberg is aware of this problem and has resorted to “collegiality,” a concept he has borrowed from Habermas, in a context in which he has also espoused Habermas’ idea of participatory administration: “Refined and generalized, collegiality might be part of a strategy for reducing the

⁴ On the distinction between strategies and tactics, see De Certeau (1984). Feenberg refers to De Certeau in Feenberg 2002 (83-85).

⁵ In Feenberg (2017, 89-111), he speaks of the Internet and arrives at a similar optimistic conclusions. For him, the future of the Internet depends on which actors determine its technical code. In particular, he has opposed two models of the Internet, the community and the business-oriented, and praised for the former over the latter. However, Feenberg seems in this way to forget, first, the capacity, already largely in place, of the business-oriented Internet to profit from the communities online and their interests. Social interactions are constantly transformed into data structures, and these data structures represent the base of the business-oriented Internet. The more social relations, the more money for the big tech companies. Second, and most importantly, there is no evidence that an Internet of the communities (by the way, all communities, one community, some communities, which communities and communities’ rules? Such questioning is not without consequences) would be necessarily better than the Internet we have today.

operational autonomy of management and creating systematic openings for democratic rationalizations. The recovery of collegial forms would be a significant step toward democratizing modern technically based societies” (Feenberg 1999, 145). We argue that this collegiality implies the same belief in transparent communication among rational beings that characterizes Habermas’ perspective. “Collegiality” derives from the Latin *collegium*, which means “a partnership among equals sharing power.” Habermas, who was expelled from Feenberg’s theoretical reflections, has been somehow readmitted in his practical conclusions.

On another occasion, Feenberg (1992) has spoken of “subversive rationalization.” In our societies, he says, rationalization is strictly related to a specific definition of technology as a means to the goal of profit and power. However, “[a] broader understanding of technology suggests a very different notion of rationalization, based on responsibility for the human and natural context of technical action.” For sure, this a very different form of rationalization of the technological milieu, but still is a form of rationality. A rationality in which every concerned group listens to the others and is listened to by the others. A rationality in which every concerned group sacrifice or at least partially renounces to its interests before those of the others, and in which all the concerned groups renounce to their interests before those of nature. In this respect, one should not forget that the notion of responsibility has to do with “responsiveness,” and that being “responsive” implies both the capacity and the will to listen, to welcome one’s interests and intentions, to make room for them. Rationality, be it subversive or not, implies a certain form of transparency. “Subversive rationality” is a contradictory concept that implies, first, a confrontation among well-intended groups, that is, a certain dose of rational politeness; second, it suggests that any form of conflict represents just a historical phase towards a rationalized technological action, in which dominants and dominee are equally involved in the name of superior rationality, namely the one that should orient our behaviors towards nature.

3. Philosophy of Technology: An Agonistic Approach

The question now arises if there is a way to both maintain the theoretical and ontological advantages of Feenberg's critical constructivism while avoiding the residuum of a naïve communicative rationality that haunts his practical conclusions. In this third section, we propose two “exit strategies.”

The first strategy consists in importing Pierre Bourdieu’s social theory to the philosophy of technology. Like critical constructivism, a Bourdieusian philosophy of technology refuses to reduce technology to its most immediate and material parts. In particular, a Bourdieusian philosophy of technology is concerned by the social conditions of possibility in which technological artifacts and mediations are entangled both in their design and possible uses. We have fully developed this point elsewhere (Romele 2020).

The second interesting aspect of a Bourdieusian philosophy of technology is that it refuses to rely on any form of naïve rationalization. Like Feenberg, Bourdieu has denounced the fallacy of social contractualism. And yet, the way Bourdieu has renounced the rationalization of social reality and its dynamics is, in our opinion, more radical and more critical than Feenberg's critical constructivism. Bourdieu has heavily criticized Habermas in the *Pascalian Meditations* (2000). For him, Habermas' theoretical universalization has brought to fictitious universalism that forgets the social and economic conditions of possibility to access the universal. In particular, Habermas has neglected the social and economic conditions of possibility that must be fulfilled "in order to allow the public deliberation capable of leading to a rational consensus" (65).

On the same page, Bourdieu asks himself: "How indeed can it be ignored that [...] cognitive interests are rooted in strategic or instrumental interests, that the force of arguments counts for little against the argument of force [...], and that domination is never absent from social relations of communications?" Several arguments are contained in this sentence: (1) First, the idea that language, and hence communication, is not autonomous, but always depends on social dynamics of recognition, domination, and exclusion; (2) Second, this means that the force of the argument, for instance when it comes to "democratic" debate to deliberation, does not exclusively rely on the argument itself, but also, and in particular, on the social status of those who advance that specific argument; (3) Third, those who have a stronger argument are probably also those who designed the rules of the argumentation, the accepted way of talking, debating, etc. Inclusion and exclusion from the possibility of participating in debate and deliberation is already embedded in these rules; (4) Fourth, those who are at the margins or excluded from debate and deliberation are also probably those who are less interested in participating; (5) Fifth, there is no reason to believe that the inclusion of the excluded ones would coincide with a more democratic debate and deliberation. It seems more legitimate to suppose that, if the excluded were included, other strategic and instrumental interests would take the upper hand in determining the rules of acceptable debate and deliberation.

Our hypothesis is that if points 1-3 unite Feenberg and Bourdieu, points 4-5 represent the step forward of a Bourdieusian philosophy of technology from critical constructivism. The problem of Habermas is that "he throws the political back onto the terrain of ethics. He reduces political power relations to relations of [ethical] communication" (Bourdieu 2000, p.66). His communicative ethics is nothing but the re-actualization of the Kantian principle of the universalization of the moral judgment. These reflections strongly recall what we have said in the first section about the present status of the philosophy of technology that understands itself in terms of empirically oriented ethics of technology.

Feenberg has certainly understood this major issue, and his critical constructivism can be legitimately considered a strong response to it. Bourdieu and Feenberg agree on the fact that there is

no contradiction in “fighting *at the same time* against the mystificatory hypocrisy of abstract universalism *and for* universal access to the conditions of access to the universal [...]” (Bourdieu 2000, p.71). However, they differ in the way that they practically propose to implement such universal access. In Feenberg, this passes through a certain degree of rationalization of social reality, in particular when it comes to communication among concerned groups and deliberation. The moment of subversion exists, but soon or later must be domesticated. In Bourdieu, the universal access to the conditions of access to the universal passes through a total renunciation of rationalizing the social dynamics of prestige, recognition, inclusion, and exclusion. In other words, universal access depends on the universal recognition of the legitimacy of the non-universal interests that orient the intentions and behaviors of the social actors or groups.

From Bourdieu’s perspective, we can therefore appreciate above all the unromantic way of describing social reality. Social groups and classes, whether dominant or dominated, are driven by *habitus* and particular interests. The only difference between dominant and dominated is that the former has managed to impose their worldview on the latter.

Yet, we realize today that there is a non-negligible limitation in the Bourdieusian perspective. At the core of the previous reflections has been the idea that while Feenberg has, in the end, rationalized society, Bourdieu has rather accepted its interests-oriented nature. This is however only partially true. Indeed, while for Bourdieu social reality is not rational, it can be rationalized. The rationalization of the irrational society is delegated to the scientific work of sociologists – see, in particular, Bourdieu (2004), where he discusses the capacity for self-reflexivity amongst social scientists. Bourdieu’s sociology thus turns out to be scientific and, one could say, even elitist: that rationality that is refused to social actors is instead attributed to the social scientist. The social scientist would then make a gift (in the sense of *kharis* and *gratia*) of rational analyses to social groups and institutions. This perspective is then not very different from the reliance on engineers and scientists that characterizes our societies, as well as much contemporary work in the philosophy of technology.

In the rest of this section, we would like to discuss another "exit strategy" that is more radical and therefore more critical. This is the agonistic approach in political philosophy theorized by Chantal Mouffe (2013) that we propose importing to the philosophy of technology. It is interesting to note that the starting point of her reflections is a critique of the contractualism and rationalism that characterize many modern theories of political philosophy. Habermas is, for that matter, like for Bourdieu and Feenberg, one of Mouffe’s favorite targets. However, her basic idea consists not only in the acceptance of the interest-oriented nature of society but also in her positive view of it. In Bourdieu’s perspective, society is a battlefield from which only the sociologist, precisely by abstaining or making an abstraction

from it, can emerge victoriously. For Mouffe, this battlefield that is society is not to be abandoned or transcended, but to be accepted and promoted.

What Mouffe accepts is the conflictual nature of social reality. It is a matter for her to make of this nature (or at least to see in it) not a destructive but rather a creative element. This naturally has a cost, which consists of being able to see and eventually transform antagonism into agonism. There is a difference between antagonism, which does not recognize the other and whose purpose is precisely to annihilate the other, and agonism, in which the other is a contender who enjoys the same rights to participate in the competition or game. Agonistic democracy is one in which these rights are accorded to all contenders, whatever their methods and approaches to the contending matter are. The only rule of the game is to recognize the other as a legitimate contender. The rationality of the social is certainly not eliminated. After all, agreeing on the legitimacy of the dispute, that is, on the agonistic and not the antagonistic nature of participation, already implies postulating a horizon of comprehensibility. Yet, this horizon is minimized and so the room for critique is maximized. We could also say that Mouffe touches, in this way, the limit of the all possible critique, that also in its radicality must not be criticism at all costs, otherwise it risks to fall in the pure negativity or, still worse, in mere neutrality.⁶

The democracy of Mouffe is not a poor democracy, but rather one that is much richer than that proposed in theories that end up, willingly or unwillingly, domesticating and therefore submitting its participants to the rationality of the dominant participants. Of particular interest is how Mouffe's theories have already been applied to the fields of science and technology. For example, Rey (2017) has criticized the deliberative reading of scientific controversies, resorting to Mouffe's antagonism. According to her, "the deliberative analysis [dominant] model [...], should be replaced by a model which would allow [scientific] controversies to be conceived of beyond the scope of an inevitable collapse back into rational consensus" (47). This would pave the way to an "adversarial-model' in which pluralism supposes the legitimate coexistence of divergences without presupposing their resolution, while framing these divergences within a common symbolic space where their conflict is played out" (Ibid.).

In the field of technology, a similar position has recently been proposed by Popa, Blok, and Wessenlink (2020). According to them, the dominant approaches to the issue of technological conflict are oriented towards establishing (or re-establishing) consensus, either in the form of a resolution of the conflict or in the form of an "agree-to-disagree" standstill between the stakeholders. The authors

⁶ On this point, see Esposito (2018), who distinguishes (1) the Negativity of German Philosophy, in particular the Frankfurt School; (2) the Neutrality of the French Theory, in particular deconstruction, and (3) the Affirmativeness of the Italian Thought, in particular a tradition that goes from Machiavelli to Negri and Agamben. There is no room of a detailed reflection on this here, but it can be said that Mouffe is theoretically close to (3).

distinguish between two dominant perspectives. The first is the conciliatory approach, which sees conflict as a danger and even a disease or deviant activity. The second is the constructive approach. The merit of this approach is that it considers conflict as necessary. Yet, according to the authors, the practices set up by those who follow this approach often seem to be mere theoretical exercises – for example listening to the narratives of the other – without any guarantee that these exercises will have any effect in practice – a change in the actions. In response to these two approaches, Popa, Blok, and Wessenlink (2020, np.) propose importing the agonistic approach in the debate on technological conflicts:

From an agonistic perspective, conflict is to be sought and agonistic respect must take the form of being responsive to the other party's ethical demand. Concretely, this will mean that Greenpeace and Shell [this is one of the examples they resort to in the article] must seek conflict with each other not because of the possibility of an ideal agreement, or a comfortable 'agree-to-disagree' standstill, but rather to continually restate and reinterpret each other's ethical demands and translate these demands into responsive behavior. A resolution or a standstill, in agonistic thinking at least, would be bad news for both organizations.

The agonistic approach in philosophy of technology certainly poses some problems with regard to the *description* of the dynamics of technological innovation. For example, one could ask if the agonism in the field of technological innovation, where the clash is often between big companies and small concerned groups – sometimes supported by national and international institutions – is not in fact a disguised form of antagonism. This antagonism would be similar to a slow and positional war in which the final winner is the one who manages to exhaust the other's resources – and we know well that the resources of some large companies are practically infinite. One might also wonder, in the context of technological innovation, how long agonism can really last. After all, is it not right at the heart of technological innovation that something must finally be created and produced? And is it not true that this product can satisfy some but will inevitably end up excluding others?

However, the competitive approach may prove fruitful in *prescriptions* related to technological innovation. If we take the first example above, we could say that an agonistic perspective (an agonistic technological democracy, to join Feenberg and Mouffe) would consist in the effort to guarantee equal resources to all contenders. If we take the second example, we could say that an agonistic perspective would consist in ensuring that technological innovation processes are represented not by one, but by multiple cycles. These are elements that we find in embryo in critical constructivism already but that, in our opinion, are not translated into a theory of practice.

Conclusion

In this chapter, we discussed the value of Feenberg's critical constructivism for overcoming the limitations of the dominant empirical and ethical approaches in the field of philosophy of technology. In the first section, we have shown the advantages of critical constructivism. From an ontological point of view, it suggests that technologies are always more than the sum of their material parts. In fact, technologies are entangled with (and help reconfigure) specific forms of life and worldviews. From an ethical-political perspective, critical constructivism suggests that these forms of life or worldviews are often crystallizations of forms of domination. In the second section, we discussed the limitations of critical constructivism, which lie not so much in its theoretical elements as in its practical propositions. In particular, we discussed the residue of Habermasian rationalism in the way Feenberg proposes to implement technological democracy. In the third section, we proposed two "exit strategies," namely, Bourdieu's sociology and Mouffe's agonistic approach. The first has the merit of renouncing any form of rationality in the behaviors of social groups; however, he recovers it, in a scientist and elitist manner, from the side of the social scientist. The second has the merit of making the struggle between social groups and classes a real resource for democracy – on the condition, minimal but necessary, that antagonism be transformed into agonism. It is precisely this resource that we propose to apply to the field of the philosophy of technology. The philosophies of technology of the empirical turn want to be extremely concrete; yet, the way their ethical applications are mostly based on rationalizing perspectives à la Habermas, they prove to be paradoxically abstract. The opposite is true of an agonistic approach that, however abstract, or extreme and radical, it may seem, has as its starting point the concreteness of social reality, which is not always as "smooth" as reason. In this context, we are not yet able to go beyond a mere theory of the antagonistic practice. We can however, in conclusion, suggest a brief example.

Take the case of AI ethics. We have said that consensus is, in the end, the disappearance of politics in favor of what Rancière (1999) calls the police, "an order of bodies that defines the allocation of ways of doing, ways of being, and ways of saying [...]; it is an order of the visible and sayable that sees that a particular activity is visible and another is not, that this speech is understood as discourse, and another is noise (p.29)." The police establish and maintains a *status quo* that for Rancière has to do with the "distribution of the sensible," that is, with the allocation of spaces and places, the attribution (or interdiction) of the right to speak, to see and to be seen. Politics is the radical possibility of subverting this *status quo*. The police annihilate any possibility of disagreement, and, with it, one could say of true agonism. Not only the classical universalism in AI ethics, but also current efforts to include marginalized individuals in the processes of innovation can be understood as forms of domestication of the true agonism. Indeed, they mostly lead to an account, but with no definite results, of the voices being heard, or to an absorption of the critique itself into a process of technological innovation that is

not critiqued as such. An agonistic ethics of AI would then be a perspective in which the purpose of AI, or at least its horizon, would be neither that of a general consensus on norms and values, nor that of an equally consensual promotion of certain virtues. Its purpose would be to promote, rather than anesthetize, agonism. An agonistic AI policy would be more radical, however, insofar as it the very processes of AI-related technological innovation on a global scale would be openly questioned.

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