

Toward a critical theory of management technologies: the ambivalence of technology, the Feenbergian framework, and the possibility of subversive rationalization

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Abstract

This article proposes a theoretical framework to understand and reframe technological and management knowledge in the light of the critical theory of technology proposed by Andrew Feenberg (1999, 2002). We discuss the possibility of management technologies on another ideological basis, bringing together the perspective of classic and contemporary authors. Subsequently, we present the central concepts of the critical theory of technology and their potential to reframe technological knowledge in organizations. The main concepts approached are the ambivalence of technology, the subversive rationalization, and the reifying and integrative moments of technical practice. To reinforce our argument, we present an example of management technology that could be considered critical – Dragon Dreaming. We conclude that Andrew Feenberg's theory can contribute to discussions on the critical practice of management as a technology. In addition, we point out the need to link management technologies with other liberating technological systems, integrating a broader political project.

Keywords: Critical theory of technology. Management technologies. Critical management technology.

Por uma teoria crítica das tecnologias de gestão: a ambivalência da tecnologia, a moldura Feenbergiana e a possibilidade da racionalização subversiva

Resumo

Nosso objetivo neste artigo é propor uma moldura teórica para compreender e ressignificar os conhecimentos tecnológicos de gestão à luz da teoria crítica da tecnologia proposta por Andrew Feenberg (1999, 2002). Discutimos a possibilidade de tecnologias de gestão por outra base ideológica, trazendo o posicionamento de autores clássicos e contemporâneos. Em seguida, são apresentados os conceitos centrais da teoria crítica da tecnologia, bem como as potencialidades desta visando à ressignificação dos conhecimentos tecnológicos nas organizações. Os principais conceitos trabalhados são: a tese da ambivalência da tecnologia, a racionalização subversiva e os momentos reificadores e integrativos da práxis tecnológica. Para reforçar nossa argumentação, apresentamos ao final um exemplo de tecnologia de gestão que poderia ser considerada crítica – o Dragon Dreaming. Concluímos que a teoria de Andrew Feenberg pode contribuir para avançar no pensamento sobre a práxis crítica da gestão enquanto tecnologia. Ademais, apontamos a necessidade de articulação das tecnologias no campo da gestão com outros sistemas tecnológicos libertadores, integrando um projeto político mais amplo.

Palavras-chave: Teoria crítica da tecnologia. Tecnologias de gestão. Tecnologia crítica de gestão.

Por una teoría crítica de las tecnologías de gestión: la ambivalencia de la tecnología, el marco teórico feenbergiano y la posibilidad de una racionalización subversiva

Resumen

Nuestro objetivo en este artículo es proponer un marco teórico para comprender y resignificar el conocimiento tecnológico de la gestión a partir de la teoría crítica de la tecnología propuesta por Andrew Feenberg (1999, 2002). En su curso, se discutió la posibilidad de las tecnologías de gestión desde otra base ideológica, acercando la posición de autores clásicos y contemporáneos. Luego, se presentan los conceptos centrales de la teoría crítica de la tecnología, así como el potencial de esta teoría con miras a la resignificación del conocimiento tecnológico en las organizaciones. Los principales conceptos trabajados son: la tesis de la ambivalencia de la tecnología, la racionalización subversiva y los momentos cosificantes e integradores de la praxis tecnológica. Para reforzar nuestro argumento, presentamos al final un ejemplo de tecnología de gestión que podría considerarse crítica: el Dragon Dreaming. Concluimos que la teoría de Andrew Feenberg puede contribuir al avance del pensamiento sobre la praxis crítica de la gestión como tecnología. Además, señalamos la necesidad de articular las tecnologías en el campo de la gestión con otros sistemas tecnológicos libertadores, integrando un proyecto político más amplio.

Palabras clave: Teoría crítica de la tecnología. Tecnologías de gestión. Tecnología crítica de gestión.

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INTRODUCTION

The aim of this article is to propose, in the light of the critical theory of technology of Andrew Feenberg (1999, 2002), a theoretical framework to understand and reframe technological management knowledge. The main purpose is the contribution to the elaboration of means so that critical organizational studies can get closer to **technological practice**, that is, the understanding, application, and proposition of knowledge capable of more concretely guide the creation of organizations aligned with self-managed, humanist, and sustainable ideals.

For such, first, we resort to the own concept of technology. According to Pinto (2005), technology is a set of techniques available to society at any historical stage of its development; it is a mean by which results are produced. Based on the studies of Feenberg (1999, 2002), in this article we understand management as a set of ideas and tools that bundle “management technologies” and that seek to obtain results within organizational contexts through the transformation of human work.

Considering the Habermasian typology, which acknowledges three types of knowledge (Habermas, 1982), we understand by management technology the technical knowledge that guides the action on the organizational reality in order to change it. To achieve such goal, reality is objectified and can be experienced by the individual who seeks to know it. This way, it becomes possible to abstractly organize the chaotic experience of organizations’ daily lives by objectifying facts that may be considered observable patterns or phenomena. In accordance with Feenberg (2002), we understand that the ordering and objectification of reality – advocated by technological knowledge – is neither neutral nor autonomous, but yet guided by values determined a priori, usually guided by the interests of more powerful social groups.

Historically, the mainstream of management technologies has been influenced by values associated with financial performance and competitiveness. The reality objectified by this type of technology is frequently configured through quantitative performance indicators and the naturalization of hierarchical relationships. In this context, Tenório (1998) describes strategic management – or traditional management – as a utilitarian social action in which the individual or group has some sort of formal authority over others, holding technical power unilaterally. The technocratic hegemony reifies the centralization of information and hierarchy of relationships.

It is important to point out that the word ‘reification’ derives from Latin *res* (“thing”) and *-fication* (“to make”). Thus, it refers to the idea of a materialized action that takes on a life of its own, to the perception of separation between the observer and the observed object, and to the objectified treatment (Bueno, 2013). In this article, we use the concept of reification in the same sense adopted by Feenberg (2002), which, despite basing on the classic conception spread by Georg Luckács, emphasizes it as only an apparent phenomenon, since subject and object are always interrelated and self-constituting, even if there is no awareness of it. Therefore, reification would be a distorted form of perception of reality and could be reconstructed through the reintegration of the object into its context.

To redefine technology based on a critical perspective, Feenberg (2002) proposes the concept of **ambivalence of technology**: it may be an instrument for reproducing the state of things; or it may contribute to modify the instrument. Thus, we make use herein of some of the author’s ideas to propose paths for reflection, construction, and application of critical management technologies. We take as basis assumptions and values of the critical theory so that a subversive organizational reality can be constituted through technological instruments. Therefore, it is necessary to objectify and order everyday experiences utilizing non-conventional parameters, such as equity, participation, and autonomy of individuals.

After this brief introduction, the paper organizes as follows. Over the next section, we briefly discuss the possibility of management technologies on different ideological basis, approaching the perspective from classic and contemporary authors. In the subsequent section, we cite the concepts of critical theory of technology presented by Feenberg (2002), emphasizing subversive rationalization and the reifying and integrative moments of technical practice. In the fourth section, we approach the potential of the critical theory of technology to reframe management technologies and present an example of this sort of technology – the Dragon Dreaming. In the final part, we present the final considerations, point out the main contributions of the article, and highlight the importance of a broader political-technological project.

THE POSSIBILITY OF A MANAGEMENT TECHNOLOGY ON A DIFFERENT IDEOLOGICAL BASIS

Tragtenberg (1971) approached the general administration theory as an ideological reflection of socioeconomic formations, indicating the dominant interests of each era. The author tracked back the origins of the categories of the current administration theory over a historical period prior to capitalism and the industrial revolution. According to him, the pattern of modern organizations would have its roots in ancient Asian Empires, when bureaucracy ceased to exercise technical coordination functions in order to assume the functions of exploration and monopoly of political power. Thus, the so-called “bureaucratic patrimonial domination” would have arisen, in other words, a sophisticated type of domination that occurs not from one individual over another, but from an individual who personifies a function over the community (Tragtenberg, 1971).

The author reports the recurrence of this type of domination in several historical contexts. However, it was in capitalism that patrimonial bureaucracy flourished most rigorously, moving from the public to the private sphere. In this context, Tragtenberg (1971) points out the emergence of the modern general administration theory, going from Taylor to Mayo and reaching the systemism. The author shows that each one of these theories was historically determined by specific needs of the social system, and yet always based on the bureaucratic-patrimonial domination model. Thus, the author concludes that the general administration theory is ideological because it brings the basic ambiguity of the ideological process, since (i) such ambiguity is linked to real social determinations as a technique (industrial, administrative, commercial work) through mediation of work, and at the same time (ii) moves away from those real determinations, turning into a systematic, organized universe and reflecting a distorted reality, as an ideology (Tragtenberg, 1971).

Tragtenberg (1971) understands the theories of administration as ideological, but at the same time sees in them technical aspects related to real determinations of work. As a result, the author affirms that bureaucracy arose from technical necessities of work organization and only later it became an instrument of domination. Tragtenberg dedicated most part of his work to analyze self-managed organizational formats and horizontalized social relations (Misoczky, Flores, & Goulart, 2015; Paes de Paula, 2008). We observe herein, therefore, an ambivalent conception of management, since we perceive an opening of the author to possibilities of diverse management technologies based on different values for a more egalitarian social context.

A little later, Guerreiro Ramos (1989) also took on the challenge of formulating a new theory of administration based on values different from those of the market and premises different from those of the natural sciences. Accordingly, the author criticized the Human Relations Movement as a cognitive policy due to a false concern with human factors in work organization, whose purpose was to expand the submission of happy, job-holder individuals (Ramos, 1989, p. 98). However, Guerreiro Ramos (1989, p. 82) recognized in scientific administration theorists – from F. Taylor to L. Gulick – some basic points considered permanent in administrative science, namely: i) work and productivity as systematic objects of scientific study, aiming to increase productivity through knowledge, not sweat; ii) technical norms to measure and assess the outcomes of work; iii) technically planned functions or tasks considering the physiological and psychological condition of individuals; iv) technical and experimentation instruments to detect human potentialities, since these would not be intuitively obvious; and v) systematic training for an efficient organization and improvement in the performance of tasks; in other words, technical training does not necessarily eliminate or stifle individual differences, but rather accentuates them (Guerreiro Ramos, 1989, p. 82).

We also notice in the work of Guerreiro Ramos (1989) an ambivalent conception of management as technology: on the one hand, an instrument of ideological domination; on the other, a technique capable of improving the harmony in the organization of human work. Guerreiro Ramos (1989) proposed to modify such dichotomy through a process of instrumentalization of new values and social delimitations. The author understands that the above-mentioned points of technical administration – free from cognitive politics – should be limited to economic production, in which formal, bureaucratic organizations should operate. However, in other spheres of human life, other models of organization and management – based on different criteria and values – should prevail.

Despite the pioneering position of these important Brazilian critical authors, it seems that the ambivalent character of the technique and management has not been considered by other recent, critical authors in organizational studies, such as Misoczky et al. (2015). Assuming an anti-management position, these authors claim that management is a set of technical knowledge, whose aims are only the maximization of performance and the maintenance of the current relationships of domination.

Misoczky et al. (2015) continue to advocate the separation between organizational studies and administration, since the former would be doomed to the subordination to management, which is the dominant knowledge in administration. The authors recognize the importance of the criticisms made by Brazilian authors (Guerreiro Ramos, Maurício Tragtenberg, Prestes Motta, and José Henrique de Faria) in terms of negatively denounce the pitfalls of managerial discourse, but they believe that their positive efforts to think of new forms of management were invalid. This is because even the concept of self-management cannot be considered critical, as it refers to the reification of organizations and does not break with management. Ultimately, management would be always related to the instrumental economic rationalization of capitalism and could only be heteromanagement.

Without making use of the term management, Misoczky et al. (2015) propose the study of social movements instead of the organization as unit of analysis. Organization should be understood as a locus of study, a space for learning through experimentation of liberating organizational practices. However, the authors reconsidered instrumental rationality based on the concept of critical-instrumental reasoning, by E. Dussel.

By not recognizing the ambivalence of management as technology, Misoczky et al. (2015) take a radical position in relation to the concepts and assumptions of Administration. Nevertheless, despite denying the terms management and organization while acknowledging the importance of practice at the same time, the authors end up assuming the relevance of rescuing the debate on instrumental rationality, since this ends up being inherent to the act of organizing. Despite valid, the efforts made by Misoczky et al. (2015) may end up being ineffective, as management as technology, according to Feenberg (2002), is a field of social struggle. We believe that to simply relegate it in favor of the use of new terms and isolation in intellectual territories is not a good strategy.

The recent trajectory of a group of authors linked to Critical Management Studies (CMS) in the international context seems to go in the opposite direction to that of Misoczky et al. (2015), as they seek to expand the dialogue with other management approaches and with management practice (Spicer, Alvesson, & Karreman, 2009, 2016). Spicer et al. (2009) criticize the excessively negative, deconstructive, and antiperformance position of CMS authors, as their discourses fail to produce concrete changes in the world of management, considering they close in hermetic discussions detached from reality.

Thus, the authors propose the critical performativity as a more constructive way to accomplish research through active and subversive intervention in practices and managerial discourses. A few years later, Spicer et al. (2016) better elaborated such concept in order to propose the combination between abstract ends (emancipation, autonomy, equity, and justice) aiming at more immediately specific and identifiable effects, balancing the negative thinking with a positive proposition of changes through the use of dialogue and practices.

The intended effects would be: i) (in a negative context) to remove harmful, misleading or obsolete ideas that permeate the discourse and the current practice of management; ii) (in a constructive and positive context) to propose alternatives while progressively reimagining the social arrangements of the future based on the Foucauldian concept of heterotopy; and iii) to deliberately create spaces for discussion and testing of proposals, involving researchers with different perspectives, as well as management practitioners in organizations (Spicer et al., 2016).

While Misoczky's et al. (2015) proposal would be to achieve changes in the organizational practice, placing itself outside the administration, Spicer's et al. (2016) propose changes within the managerial universe, reducing criticisms and expanding the dialogue. These efforts seem valid, as they propose more concrete forms of acting instead of only promoting criticisms. However, when giving up the concept of utopia, there is a risk in loosening criticisms, since they could be mischaracterized and turned into an engaged managerialism (Paes de Paula, Maranhão, & Barros, 2009).

The position taken by us in this article shares a little with each of the aforementioned authors, considering that none of them abandoned the attempt to rethink instrumental or technical rationality; instead, they added to it values, limitations, and different proposals from those imbued in hegemonic management. However, the proposal defended herein is a little different, since we based our research on the critical theory of technology (Feenberg, 2002) to reframe the possibilities of management technologies. The purpose was to enable a closer dialogue with the practice of alternative technical management systems, as we believe that scientific knowledge may contribute to a broader reflection about them. Based on the critical theory of technology, we believe it is possible to create technical management systems based on different assumptions. In the upcoming section, we will address the main concepts of such theory.

CRITICAL THEORY OF TECHNOLOGY

Feenberg (1999, 2002) handles technical management systems basically with two different connotations: the democratic management is pointed out as an instrument to achieve new forms of technological design; and management is understood as a technology whose transformational object is human work itself. In this section, we will address the author's thinking by relating it to management technologies based on the second connotation.

Throughout the 20th century, we experienced both the benefits and the harms of scientific development and technological improvement, which may lead to dichotomous views on the matter. Optimists see technology as a neutral instrument that serves human needs. Pessimists, on the other hand, consider technology autonomous in relation to social control, permeated by capitalist interests and values, having become a threat to human freedom (Feenberg, 2002, 2010a). In order to overcome such expectations, Feenberg (2002) has formulated the **critical theory of technology**. With a Frankfurtian perspective, the author considers the conceptions of Theodor Adorno, Max Horkheimer, and Jürgen Habermas, and the discussions on instrumental rationality. His thinking is driven by Herbert Marcuse's ideas on the role of technology in modern capitalism.

Feenberg (2002) understands that technology is not neutral, but denies its autonomy in relation to social control, as it is the result of human creation – *poiesis*. At this point lies the particularity of his proposal: values underlying the technological apparatus should be discussed to be reconstructed and enriched with other values, which would have been repressed or forgotten during the design of technical codes.

The central idea is to show the relativity of technical alternatives, leading to a reflection on technological pluralism: technology would not progress linearly, several alternatives are possible, depending on the diverse values incorporated into the project (Feenberg, 1999). Thus, defining technology only in the capitalist context, whose primary objectives are productivity and profitability, is ethnocentric. In this way, many other technological practices used in the past are excluded, in addition to other contexts that could have been essential for our future development (Feenberg, 1999).

If technology can follow plural paths, the choice for one of them should be put into democratic discussion. Feenberg's (2002) criticism precisely demands such democratization and questions the hegemony of the masters of technical systems, who currently are responsible for decisions (leaders of corporations, military, professional associations, among others). Due to the lack of regular systems of consultation and democratic participation between these masters and the population, decisions are made obscurely, and information is disseminated in a distorted way, according to particular interests.

Hence, Feenberg (2010b) proposes the subversive or democratic rationalization, which in our view challenges the dichotomy between instrumental and substantive rationality. According to the author, it would be possible to reframe the technological apparatus of industrial societies in order to democratize it and ensure that it meets broader human and environmental needs. This indicates, therefore, an alternative application of instrumental rationality in society, without leading us to the "iron cage" of a technocratic social hierarchy. The subversive rationalization would be based on responsibility for the human and natural contexts of technical action (Feenberg, 2010a).

To reframe technology from a critical perspective, Feenberg (2002) defends the **ambivalence of technology**, which is to be summarized into two principles:

- a) principle of the conservation of hierarchy: social hierarchy can generally be preserved and reproduced throughout technological development;
- b) principle of subversive rationalization: new technology can undermine social hierarchy or introduce needs that had been previously ignored.

In this sense, technology is ambivalent: on the one hand, it can be an instrument to reproduce the state of things; and on the other, it can contribute to modify it. To revert the assessment biases of current technical systems, it would be necessary to consider how instrumental rationality presents itself in the daily routine of these systems, seeking to reveal which values and interests are underlying them. Feenberg (1999, p. 11) tries to open the “black box” of technical codes, that is, to understand the details of the construction process of technical systems.

Technical codes define the object in strictly technical terms in accordance with the social meaning it has acquired. These codes are usually invisible because, like culture itself, they appear self-evident. [...]. Technological regimes reflect this social decision unthinkingly, as is normal, and only social scientific investigation can uncover the source of the standards in which it is embodied (Feenberg, 1999, p. 88).

In theory, anyone could decompose a technical object and analyze each of its elements in terms of costs and benefits, safety, speed, reliability, pollution levels, etc., but in practice no one is interested in opening this “black box”, since its content seems self-evident. However, the current technical codes reflect interests of social groups to which we delegate the power to define where and how we live, how we eat, communicate, have fun, are healed, work, etc. (Feenberg, 1999).

Furthermore, the technical codes influence the specialization of professionals in the field, who do not own the rational autonomy they seem to have. Their choices are guided by the kind of training they had. Such training results from specific interests, which were incorporated into the technical code at some point in the past (Feenberg, 1999).

By seeking to understand how technical codes are incorporated into the process of construction of technical systems, Feenberg (2002) distinguishes between primary and secondary instrumentalizations. Both are merged in the same technological object in their respective productive system. In the primary instrumentalization, only the middle-end relationship of the object and the material possibilities of its reproduction are prioritized, considering only the values of those who conceive and produce the objects. The secondary is focused on this object and takes place as it is implemented in society, avoiding negative deviations and dimensions forgotten in the original project.

While the primary instrumentalization reifies the middle-end relationship of technology, the secondary contextualizes its applications, reintegrating it into society. The **reframing of technology** would occur through the dialectic between **reifying** and **integrative moments**. What would differentiate critical technologies would be the prioritization of integrative moments. Feenberg (1999, 2002) emphasizes **four pairs of moments** that establish relationships between technology’s subject and object, proposing a theoretical framework that may serve as an analytical reference in concrete experiences. In the particular case of management technologies, the subject would be the one who has technical knowledge and the power to apply it; the object would be the one who participates in managerial practices instituted by the applied technology.

- a) **Decontextualization and systematization** – while the first consists of the separation of the technical object from its immediate context, the second connects decontextualized objects among themselves with users and with nature to set up devices and technical organizations. The capitalist technology is based on the reified decontextualization of objects. Thus, such as with abstract objects, they may be employed in several situations, reinforcing hegemonic interests. This process harmonizes with the fragmented and authoritarian division of work because it is based on decontextualized practice. According to Feenberg (2002), socialist societies would have made the same mistake made by capitalist societies by not presenting any alternatives. Greater attention to the systematization operated by secondary instrumentalization can bring back relevant aspects have been mutilated by decontextualization. This is the possibility to reconnect technology to social and environmental issues.

- b) **Reductionism and mediation** – while the first focuses on the reduction of the object to its useful aspects, the latter incorporates aesthetic and ethical qualities into the design of the technical device. The technical means become more abstract when complex totalities inherent to them are subtracted, reducing them to the elements by which external control can be exercised (formal abstraction). These elements are called by Feenberg (2002) “primary qualities”. The formal abstraction reduces and decontextualizes the individuals inserted in technical management systems. Therefore, in a compensatory way, secondary qualities correspond to the other elements pertaining to the objects, which were not considered essential in its technical project. These elements contextualize and enrich the object, adapting it to its environment.
- c) **Autonomization and vocation** – due to the separation subject-object, the technical actor becomes autonomous in relation to the immediate consequences of its actions. The actor is not proportionally affected by the object through which it acts. It occurs because the technical action delays the feedback from the object of action to the actor. Conforming to Feenberg (2002), such delay or dissipation in the reaction experienced by the actor in relation to the effect of his/her action is what distinguishes an activity as technical. The technical control is extended as far as possible to isolate the subject from his/her actions. Thus, in a compensatory way, the technical subject requires a vocational investment to be shaped as a person whose occupation is the technical actions in which he/she engages. Vocation is, therefore, the integrative moment that would precede and relativize the autonomization. In a formative process to accomplish a technical managerial action, the subject would no longer be isolated from the other participants; he/she would also be transformed by his/her own relationship with them. “This relation exceeds passive contemplation or external manipulation and involves the worker as bodily subject and member of a community” (Feenberg, 2002, p. 182).
- d) **Positioning and initiative** – based on the concepts of Certeau (1994), Feenberg (2002) understands that the subject of technical action positions itself strategically among objects in order to have more control over them. He/she is situated above social processes, positioning him/herself in an advantageous way in relation to other things. Thus, operational autonomy is acquired and may occupy a strategic position in relation to a reified reality. Accordingly, objects or subordinated human beings, workers or consumers may enjoy a certain tactical freedom. Feenberg (2002) envisions the possibility of increasing spaces for tactical maneuvers, which would lead to work disalienation and conscious and voluntary cooperation. Then, the strategic position of subjects holding the technique could be better balanced through tactical maneuvers of those to whom the technical action applies.

While the primary instrumentalization would be considered the technical orientation for an objectified and reified reality, secondary instrumentalization would be the technical orientation for a broader social and environmental context. The subversive rationality would be a movement of reification towards reintegration. Unlike the hegemonic vision, which tends to prioritize primary and decontextualized aspects of technology, the critical theory of technology tries to analyze the two levels of instrumentalization, demonstrating their interdependency. Thus, the technique is comprehended in a dialectic way. This view takes on a challenging path between utopia and resignation, going beyond the traditional negative assessment of Frankfurtians on technology. While validating positive elements in the existing technological apparatus, it proposes the redesign of technology to adapt to the needs of a more free, fair, and harmonious society (Feenberg, 2002).

Despite acknowledging the hegemony of the masters of technical systems, Feenberg (2010a) identifies the increase of possibility for metachoices – i.e., choices that determine which values must be incorporated into the technical structure of our lives. The author believes that the contradictions of the ideology that stands for progress and efficiency as basis for the development have become more and more evident, making way for social demands for greater democratization of technical standards. Hence, technology should be seen as a field of social struggles, in which instrumental rationality would be under constant judgement through the pluralistic perspectives of society.

Feenberg (1999) understands that the **subversive rationalization theory** continues the tradition of Frankfurt school, placing new emphasis on agency possibility in the technical sphere. The focus remains on the fight against technocracy and its exclusive monopoly on rationality. The proposed solution would be to find new ways to politicize the debate on technical systems. The change of these systems – from authoritarian to democratic – would be paramount and would trigger improvements in the society as a whole.

The movement is not in the sense of returning to nature, but of progressing towards nature, towards a conscious totality composed of a greater range of concerns and needs. The critical concept of totality helps to understand the contingency of the existing technological system, indicating what must be integrated into new values and purposes. No social system can be natural, but it is necessary to at least acknowledge the interdependency with the environment that characterizes every and any living being. This would be, then, an advance in the integration between humanity and nature (Feenberg, 2002).

The proposal presented by Feenberg (2002, 2010b) is therefore a relevant attempt to reconcile extremist opinions on technology. Through his discourse, the author seeks to make way for new forms of thinking about the relationship between technology and democratization. Thus, he emphasizes the need to make way for discussion and reflections involving ethical values, without denying the possibility of technical and useful knowledge in society and, more specifically, in the management of organizations.

For the technological reframing of management

As previously discussed, classic and contemporary authors in the field of administration and organizational studies have been engaged in similar issues in different ways, aiming at possibilities to reframe the organizational practice through critical thinking. This way, Feenberg's (2002) critical theory of technology may contribute – conceptually – to this debate by proposing the ambivalence of technology and overcoming the dichotomy between instrumental and substantive rationality through subversive rationalization.

By seeking to reframe management through several ways, we understand that the authors cited in this article aim at emphasizing the secondary instrumentalization process of management technologies. Their criticisms open the “black box” of management practices, highlighting their technical codes and their constitutive elements in terms of values, priorities, and interests. Based on such deconstruction, radical alterations in management technologies are proposed to incorporate broader social perspectives. Thus, we notice the ambivalence of management technologies and the application possibilities of subversive rationalization.

Therefore, by applying Feenberg's (2002) thinking into management technologies, the importance of decomposing technical systems becomes clearer, observing which values are present in the design of tools and technical codes, which allows their redesign through new purposes. Accordingly, we can undertake both deconstruction and reconstruction of management technologies in the pursuit of their reframing.

Considering that reframing a technology requires its interaction with and response from the environment, retaining the results of such interaction in a given group guarantees the control and influence over the other members of society. According to Feenberg (2010a), management acts technically on persons, extending the hierarchy of technical subject and object into human relations in pursuit of efficiency. To democratize this knowledge and allow the participation of new individuals in the (re)construction of management technologies end up disassembling this power relation and may promote a change in its design.

We do understand that the **reification and integration moments** are necessary to develop any technological management knowledge, since they allow the abstraction of particular experiences and the orientation of future technical actions. With reification, technical knowledge becomes viable and replicable in different times and spaces. With integration, such knowledge becomes effectively useful and beneficial in a given context. Such opposing phenomena must emerge in a dialectical manner. The comprehension and reflection on integrative moments can come from critical reflections and evaluations after the application, adding to technological knowledge perspectives, criteria, and new values.

To construct and apply critical management technologies, we believe that the dynamics between reifying and integrative moments occur through the definition of objective limits to the involved subjectivities and, at the same time, through the possibility of their equitable manifestation so that a collective decision making is possible, combining efficiency and broad participation. In this scenario, Netto, Ferreira, Novaes, and Neiva (2016) affirm that it would be necessary to expand individuals' levels of autonomy and responsibility, paying attention to avoid falling into the stratagem of generalist flexibility, which will act only as a superficial substitution of conventional management technologies.

At first, critical management technologies are reified as knowledge bodies capable of generating transformations through the prescription of flexible and consensual interaction structures. Subsequently, for transformations to effectively occur, these structures must be integrated into the context of application, with the proper space for negotiations and adaptations. The possibility of reframing management technologies resides in the existence of these types of structure, since they make room for reification and integration to take place throughout interactions, balancing the relations between subject and object involved in the technical managerial action. Thus, through reification and integration, the use of critical management technologies aims at building an equitable, flexible, and linked to reality organization. A critical management must, then, constantly consider all impacts (human, social, and environmental) of their activities; it must operate as a producer of collective wellbeing in a systemic way, also paying attention to the individuals that do not belong to those contexts directly (Rohm & Lopes, 2015).

To exemplify, we mention as an alternative to conventional management the Dragon Dreaming management technology. Created by the Australian John Croft, DD is a set of values, concepts, models, and techniques to support collaborative management of collective projects, being currently applied to several groups and organizations throughout the globe. In Brazil, it has been disseminated since 2011 and the Brazilian community of DD facilitators, multipliers, and coaches is currently established as a self-managed organization known as Rede DD Brasil¹. DD has also been utilized as a theoretical and methodological resource in several academic productions in Brazil (e.g., Simas, 2013; Souza, 2016).

Based on concepts and values of deep ecology (Naess, 2005), systems theory (Bateson, 1972), pedagogy of the oppressed (Freire, 2005), and gift economy (Mauss, 2001), we understand that DD is guided by subversive rationalization, redesigning conventional techniques of project management, and introducing a few needs ignored by these. Broader perspectives are added to the ideals of efficiency and productivity: environmental, collective, and humanist. This is the reason why three conditions are necessary for DD to be applied in a project: service to the Earth, community building, and personal growth (Croft, 2009).

The DD model is based on four phases: dreaming, planning, doing, and celebrating. We observe an inspiration in conventional management models, which are also divided into four phases, the so-called PDCA: planning, doing, checking, and acting (Hosotani, 1992). Moreover, the dreaming and celebrating phases bring important contributions to conventional models, as they add moments of collective reflection, whether in relation to the future (dreaming) or in relation to the past (celebrating). In the dreaming phase, the individual leading the process allows his/her individual dream to turn into a collective dream by including the perspectives of all parties involved. In the celebrating phase, all parties must reflect upon the lived experience, knowledge acquired, and the results arising from the three aforementioned DD conditions. In addition, celebrating is also a phase dedicated to the care of the group's affective bonds.

The planning and doing phases also take place in a different way when compared to conventional models. Just as with dreaming and celebrating, these two intermediary phases advocate the equitable involvement of everybody. Furthermore, individuals are given autonomy to suggest actions to be accomplished, take responsibility for some of them, and carry them out as they wish. At the end of the planning phase, a flowchart of actions is created with ludic aesthetic and accessible for everyone to monitor the progress of actions. The monitoring of the accomplishment of actions can also be carried out through a self-assessment by peers, in a symmetric relationship.

For the four phases of the DD model, several techniques are proposed. For instance, in the dreaming phase, the "circle of dreams" is created, a type of brainstorm in which rounds are held between all individuals so that they add their dreams to the original dream. Unlike the conventional brainstorming, speeches are ordered and all individuals – preferably sitting around in a circle – are successively heard. The speeches are quick and specific; there is no need to justify nor explain the reported dreams. If an individual has nothing more to add, he/she gives floor to the next one until all contributions are made. This way, the equitable distribution of speeches is accomplished.

¹For more information on Rede DD Brasil, see www.dragondreamingbr.org.

Through this brief description of DD, we tried to highlight that it may be characterized as a critical management technology. Not only in terms of concepts, but also regarding the model and DD techniques, it is possible to observe the possibility of dialectics between **reifying and integrative moments of technological practice**, with significant space for the latter to occur in the application process. Next, we will demonstrate how the Feenbergian theoretical framework can serve as an analytical framework.

- a) **Decontextualization and systematization:** at first, DD presents itself as a decontextualized management technology, originated in Australia. As abstract object, DD is applicable in several situations. However, by bringing the importance of the three criteria (namely, environmental, collective, and human development aspects) necessary to conduct a project right from the beginning, DD guarantees that its utilization is systematized to the application context.
- b) **Reductionism and mediation:** just like any other technology, DD can be reduced to a set of standardized elements that are characterized by the application. However, there are important openings for the accomplished projects to be adapted and enriched with aesthetic and ethical qualities to the moment of application. For example, it is advisable that the flowchart is constructed based on a ludic aesthetic according to the preferences of the group; in the circle of dreams, ethical values of individuals can be added to the dream. Thus, the mediation between technology and the context in which it is applied is guaranteed.
- c) **Autonomization and vocation:** even though not mandatory, DD technology is often applied through an external facilitator. This facilitator is autonomous in relation to the immediate consequences of the project, as this person is not a part of the team. By contrast, the Rede DD Brasil has developed several formative training processes for facilitators, since there is a need for vocational investment in these individuals. In other words, the facilitator becomes a member of a community, which is broadly linked to the effects of any DD applications.
- d) **Positioning and initiative:** like in DD, all individuals are involved in the four phases of the project – from dreaming to celebrating. Thus, the strategic positioning of a leader or group holding technical power is minimized. In addition, the freedom for tactical activities is wide as the individuals have autonomy to carry out actions for which they are responsible. In the case of facilitators, we could interpret that they somehow have an advantageous position in relation to the technical control of the process. However, it is important that the facilitator applies the technique with neutrality, respecting the three initial DD criteria and the need to adapt to the demands that may arise from the group.

Therefore, we understand that DD is an example of management technology whose proposal is the creation of organizational structures that establish objective limits to the involved subjectivities, but, at the same time, guarantee the equitable participation and autonomy of all parties. Thus, flexible and consensual management structures are constituted, which hold broader ethical and aesthetic values, preserving the needs for efficiency and for the achievement of collectively desired results.

According to Guerreiro Ramos (1989), the application of critical management technologies, such as the Dragon Dreaming, implies a new organization-subject model, which, when conceiving all individuals as thinking beings, may contribute to the construction of new organizational models and purposes, undermining the existing social hierarchy. However, considering Feenberg's (1999, 2002) ambivalence of technology, we also admit the possibility of technologies such as DD to be used only as mere instruments for the reproduction of unequal power relations. This will depend on the values and assumptions taken as basis at the moment of application.

FINAL CONSIDERATIONS

The aim of our article was the proposition of a theoretical framework to understand and reframe technological management knowledge through the critical theory of technology proposed by Feenberg (1999, 2002). We have accomplished our goal, as we carried out an analysis with the lines of thought from theorists in the field of administration, who criticized existing management practices, emphasizing the need for values and ideologies to be reconsidered in the organizational practice. Subsequently, we presented the concepts of the critical theory of technology developed by Andrew Feenberg and we show how such concepts could support a possible critical redesign of management as a technology that transforms human work. In addition, to provide more support to our argumentation, we ended the article by presenting an example of management technology that, according to our analysis and to the theoretical framework derived from Feenberg, could be considered critical, as it is constituted by the dialectic dynamic between reification and integration moments of technological practice, with clear emphasis on integrative moments.

The present article contributes to the theoretical-reflective field on management with a liberating technological practice, since studies that approach the critical theory of technology presented by Andrew Feenberg are still scarce in literature. There are also potential contributions to the practical application of technologies that seek to reframe conventional management formats, offering concepts and parameters for an analysis on ethical aesthetic delimitations of instrumental rationality. This way, we seek to contribute to the (re)construction of management technologies based on subversive rationalization, meeting the broader demands of society.

We highlight, however, that reframing management technologies through a critical bias would be only a part of a wider political-emancipatory project. Through the concept of concretization of technology that Feenberg (2010b) encountered on Gilbert Simondon's work, such project is the discovery of synergisms between technologies and their various environments. All technological functioning should be reconciled with broader contextual issues, making way for a new type of technological development – more complex and more abundant than the simple economic growth.

Civilizational transformation requires new technological systems based on new values. At the same time, we need technologies that can mediate individual and group aspirations through emancipation with practice. Therefore, it is important to combine the technologies in the field of management with other liberating technological systems, moving toward the concretization of technology defended by Feenberg (1999, 2002). The reframed management in democratic and liberating terms must be aligned with other technologies that promote autonomy in several spheres of life, such as housing, basic sanitation, food, health, etc. In this way, we make way for a context in which totally differentiated relationships can effectively take place between subjects, promoting human development, environmental regeneration, and stronger communities. Considering our utopia, we do not advocate the end of contradictions, but rather their overcoming at every moment in the light of scientific, technical, and critical analysis.

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REFERENCES

- Bateson, G. (1972). *Steps to an ecology of mind*. New York, NY: Ballantine Books.
- Bueno, N. L. (2013). *Tecnologia educacional e reificação: uma abordagem crítica a partir de Marx e Lukács* (Doctoral Dissertation). Universidade Federal do Paraná, Curitiba, PR.
- Certeau, M. (1994). *A invenção do cotidiano: artes de fazer*. Petrópolis, RJ: Vozes.
- Croft, J. (2009, February 19). *Introdução: tornando os sonhos realidade*. Retrieved from <http://www.dragondreamingbr.org/portal/index.php/2012-10-25-17-02-40/fichas-tecnicas.html>
- Feenberg, A. (1999). *Questioning technology*. New York, NY: Routledge.
- Feenberg, A. (2002). *Transforming technology: a critical theory revisited*. Nova York, NY: Oxford University Press.
- Feenberg, A. (2010a). Racionalização subversiva: tecnologia, poder e democracia. In R. T. Neder (Org.), *Andrew Feenberg: racionalização democrática, poder e tecnologia* (pp. 67-96). Brasília, DF: Observatório do Movimento pela Tecnologia Social na América Latina/CDS/UnB/Capes. Retrieved from <https://www.sfu.ca/~andrewf/coletanea.pdf>
- Feenberg, A. (2010b). Do essencialismo ao construtivismo – a filosofia da tecnologia em uma encruzilhada. In R. T. Neder (Org.), *Andrew Feenberg: racionalização democrática, poder e tecnologia* (pp. 203-252). Brasília, DF: Observatório do Movimento pela Tecnologia Social na América Latina/CDS/UnB/Capes. Retrieved from <https://www.sfu.ca/~andrewf/coletanea.pdf>
- Freire, P. (2005). *Pedagogia do Oprimido* (43a ed.). Rio de Janeiro, RJ: Paz e Terra.
- Habermas, J. (1982). *Conhecimento e interesse: com um novo posfácio* (1968). Rio de Janeiro, RJ: Zahar Editores.
- Hosotani, K. (1992). *The QC problem solving approach: solving workspace problems the japanese way*. Tokio, Japan: 3A Corporation.
- Mauss, M. (2001). *Ensaio sobre a dádiva*. Lisboa, Portugal: Edições 70.
- Misoczky, M. C., Flores, R. K., & Goulart, S. (2015). An anti-management statement in dialogue with critical Brazilian authors. *Revista de Administração de Empresas*, 55(2), 130-138.
- Naess, A. (2005). Ecosophy, population, and sustainable development. *The Trumpeter*, 21(1), 72-89.
- Netto, A. F. N., Ferreira, V. C. P., Novaes, J. L. C., & Neiva, D. S. (2016). A Teoria Crítica no estudo da Administração. *Revista de Carreira e Pessoas*, 5(3), 282-302.
- Paes de Paula, A. P. (2008). Maurício Tragtenberg: contribuições de um marxista anarquizante para os estudos organizacionais críticos. *Revista de Administração Pública*, 42(5), 949-968.
- Paes de Paula, A. P., Maranhão, C. M. S. A., & Barros, A. N. (2009). Pluralismo, pós-estruturalismo e “gerencialismo engajado”: os limites do movimento *critical management studies*. *Cadernos EBAPE.BR*, 7(3), 393-404.
- Pinto, A. V. (2005). *O Conceito da Tecnologia*. Rio de Janeiro, RJ: Contraponto.
- Ramos, A. G. (1989). *A Nova Ciência das Organizações: uma reconstrução da riqueza das nações*. Rio de Janeiro, RJ: Editora da FGV.
- Rohm, R. H. D., & Lopes, N. F. (2015). O novo sentido do trabalho para o sujeito pós-moderno: uma abordagem crítica. *Cadernos EBAPE.BR*, 13(2), 332-345.
- Simas, A. C. B. F. (2013). *Comunicação e diferença: estudos em comunicação colaborativa para a sustentabilidade comunitária* (Doctoral Dissertation). Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ.
- Souza, M. M. P. (2016). *Reciclando a crítica nos estudos organizacionais: as tecnologias de gestão colaborativa no contexto da Associação Astriflores* (Doctoral Dissertation). Universidade Federal de Minas Gerais, Belo Horizonte, MG.
- Spicer, A., Alvesson, M., & Karreman, D. (2009). Critical performativity: the unfinished business of critical management studies. *Human Relations*, 62(4), 537-560.
- Spicer, A., Alvesson, M., & Karreman, D. (2016). Extending critical performativity. *Human Relations*, 69(2), 225-249.
- Tenório, F. G. (1998). Gestão Social: uma perspectiva conceitual. *Revista de Administração Pública*, 32(5), 7-23.
- Tragtenberg, M. (1971). A teoria geral da Administração é uma ideologia? *Revista de Administração de Empresas*, 11(4), 7-21.

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