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# Radical Science Movements: Past, Present and Future

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> Therefore, only if we acknowledge the crisis which calls into question the meaning, goals and value of science can we overcome the impasse between the antiscientific pessimism of irrationalism and the scientistic optimism of an abstract rationalism. (Ciccotti et al. 1976).

THE AWARENESS OF THE PROBLEMATIC relationship between politics and science in general, as well as the discussions about social orientation and public participation, truth and trust in the sciences in face of continued capitalist extraction and commodification recently led to increasing interest in the history of what came to be known as *Radical Science Movements*.

This term designates retrospectively an actually many-faceted and locally different phenomenon, the history of which to some extent still has to be written. Nevertheless, there are important common features which not only refer to the importance of science for the 'big acceleration' in the 20th century—the development of technology and its social, environmental and planetary impact, but also with the global influence of Marxism in the 1960s and 1970s. In this situation when science began to be seen as a decisive productive force and the system of education, research and development significantly grew, students, scholars and scientists engaged to fight for political reforms in general, for solidarity with emancipation movements in the 'global South' and the realization of a 'common modernity.' Today we would identify the latter issue with the 'Anthropocene' and the problem of modes of production which rather destroy than facilitate the living conditions of humanity. In the late 1960s, particularly in the wake of the '68 social movements, Marxist and New Left activism inspired

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students, scholars and scientists especially to reflect their own position as 'intellectual workers' as well as the general function of science in society. Their idea was to reform science and education according to an ideal of science for the common good. In this way they posed a question, which seems to be of utmost importance still today. *Marxism & Sciences* has thus decided to devote a special issue to the past, present and future of the idea of science activism.

The history, actuality and potentiality of the *Radical Science Movements* can help to understand the polarizing debates of the present conjuncture and, above all, to imagine future scenarios in which political participation and social responsibility take a central role in the scientific enterprise and in the construction of a process of social emancipation.

As mentioned, *Radical Science Movements* often formed in the wake of the international political turmoil generated by the protests of '68. In many different countries a large number of social movements sought to address the problem of science in society and politics in science, thereby contributing to establish a new awareness and a critique of the social function of science not only in 'advanced' capitalist societies. Although the question of scientists' social responsibility had already been addressed before (notably by John Bernal)[1] and movements promoting social responsibility among scientists had already emerged after Hiroshima and Nagasaki (see Moore 2008), they gained impetus as part of larger radical-democratic and socialist struggles in the 1970s. As such, they became part of class and labor struggles, which went far beyond mere appeals to moral values and also began to address ecological issues.

Among the new groups, the *British Society for Social Responsibility in Science* (BSSRS) was founded in 1969. This was an association with a distinctly Marxist character and a structure, which aimed to mobilize those scientists who were concerned about the social effects of their research and work. Shortly afterwards, again in Britain, a community of researchers and scholars began publishing the *Radical Science Journal*. This can be seen as the source of the retrospective name for the more general phenomenon, we have in view.

The BSSRS, included many sub- and working groups, such as: Agricapital, Hazards, Women in Science, Politics of Health, Politics and Energy, and Radical Statistics (Bharucha 2018).

1. Bernal 1946, on this point see also Ienna 2022; Cozzoli 2023.

In 1970, the organization *Scientists and Engineers for Social and Political Action* (SESPA) was created in the United States and soon started the publication of *Science for the People* (the name by which this movement would later be known) (see Schmalzer et al. 2018). In the same period, similar movements in France disseminated their "critique des sciences" through a wide range of journals, magazines, and bulletins such as *Suivre et vivre* (beginning in 1970), *Labo-Contestation* (1970), *Le Cri des Labo* (1969–1972), and *Impascience* (1975) (see, Quet 2013; Debailly 2015).

The Italian context witnessed similar tendencies, following the social unrest of 1968 and of the "*Autunno Caldo*" (Hot Autumn) of 1969.[2] Radical approaches to science in Italy were disseminated through a large number of journals with titles such as *Sapere* (especially during the period 1974–1982), *Medicina Demoratica* (1977 and still active today), *Testi e Contesti* (1979-1982), *SE Scienza Esperienza* (1983–1987), *Rosso Vivo* (1973–1974), *CRS Capitalismo Natura Socialismo* (1991–1997) and through book series such as *Scienza e Politica* (edited by Marcello Cini e Giulio A. Maccacaro) and *Medicina e potere* (edited by Maccacaro) (see Laser 1999; Guerraggio 2010; Baracca et al. 2017; Ienna 2020; Ienna 2023).

Other *Radical Science Movements* developed in the 1970s and published journals e.g. in Denmark (*Naturkampen*), Sweden (*Natur och Samhälle*), the Netherlands (*Revolution and Wetenschap en Samenleving*), F.R. Germany (*Wechselwirkung*), and India (*Science for the Villages* and *Kerala Shasthra Sahithya Parishad Bulletin*) (Jaffry 1983; Kannan 1990; Vitale 2013). They addressed socio-political as well as ecological issues.

Science and Technology Studies (STS) often shared common social and intellectual origins with the *Radical Science Movements*; however they had a different trajectory. After completing the process of theoretical consolidation during the 1970s and 1980s, STS became academically institutionalized. This process has generated a strange de-politicising of the analysis of the relationship between science, technology and society. When the geopolitical and ideological situation changed especially after 1989, the idea of 'Radical Science' almost vanished completely and thus an important juncture between public and scientific discourse was lost.

Today, after a global pandemic made the lack of an informed exchange obvious, the contradictions between ideals, institutions and functions of

2. This expression refers to a season of labor and worker struggles (partly inspired by the student protests of 1968) marked by a conspicuous number of strikes and factory occupations. The central theme of these claims was the demand for higher wages and greater labor protections. As a result of these events, the so-called "Statuto dei lavoratori" [Workers' Statute] was signed on May 20, 1970.

science are focussed again. The increasing political and economic pressure on the scientists and scholars in all fields resulted in the idea to *revive scientific activism,* as can be seen in the declaration of the "World Science Day for Peace and Development," "March for Science," "Science day," and, to some extent, even in eco-activist groups like "Fridays for Future" or "The Last Generation."[3]

If we compare 'old' and 'new' science activism, the continuity of the general issues are as obvious as the changed contexts and the attitudes in the public sphere. Whereas the main concern of the *Radical Science Movements* in the 1970s and 1980s was to denounce the non-neutrality of scientific knowledge and its ideological uses, today's movements want to defend science and refer to the objectivity of scientific facts in an attempt to curb forms of denialism by both political and economic actors. However, this kind of approach often runs the risk of falling into naive forms of scientism, expertism or technocracy as a reaction to the rampant distrust towards science. The reasons for such distrust are manifold and should not be treated as one and the same thing. Their analysis forms one of the major issues of political epistemology today. Of course, it is a crucial difference if critique is meant to improve conditions or just simulated for the manipulation of sentiments. In this respect official political discourse often rather obfuscates than makes transparent, e.g., how much of scientific work is dependend on commercial interests.

In terms of the engagement from within science and education there seems to be a lack of analysis to situate intellectual labor within the structures of domination and thus objectify one's position at the same time. In contrast, the *Radical Science Movements*, thanks to their Marxist theoretical basis, often had a much clearer understanding of the underlying historical and structural issues and were able to elaborate a critical view of science capable of eschewing both scientism and relativism. This kind of approach therefore deserves to be reframed in light of the contemporary scientific-political situation.

3. The interaction of science and society, the role of resource managment and of knwoledge in general is now much more acknowledged by governments, thus (unknowingly) following up on ideas of science activism and on an issue which in the Eastern Bloc states was widely discussed under the heading of "Scientific-Technological Revolution" already in the 1960s. In this respect the status of science and knowledge production in modern societies was often more adequately reflected in socialist science studies, as e.g. in the trail-blazing Richta-Report (Richta 1968). The tension between 'technical intellegenzija' and science activism in that context, e.g. in terms of involvement in the ecological information groups, still remains outside of the focus of recent studies and forms a comparative *desideratum*.

*Radical Science Movements* for all their differences represent not only a historical phase of disciplinary or institutional formation, but point to an important task of our times, which we try to understand, investigate and unfold further.

In this respect, we have collected contributions aimed at analyzing the ideas and issues of science activism and thereby observed the re-emergence of the need to use Marxist categories to analyze the major issues that afflict contemporary science.

Our issue has been divided into five sections: Articles, Essays, Communications, Interview and Cultural Work.

The first section ("Articles") contains contributions that aim to critically read the current conjuncture. This section opens with Kulyash Zhumadilova's contribution titled *The Dialectics of Engagement: Some critical remarks on contemporary participatory research program*. In this text Zhumadilova analyzes some limitations of a research trend in STS known as the "Engaged Program" proposes direct engagement with extra-academic factors. Some of them involve activism and devlopment of alternative interactions, others require reflexivity or ethical deliberations. The variety of approaches that have emerged in this context, however, do not seem to be effective in that they do not radically challenge the issues they want to overcome, not to speak of "the fragmented structure of contemporary academia" based on neoliberal principles. Thus the author points out the limits of approaches which are well-meant but lack systemic analysis, hinting instead at the ideas of Levins and Lewontin about a "dialectics of engagement."

The second article by Nafis Hasan entitled *Science, Politics, Activism in the U.S.: A Three-Body Problem* offers an interesting reconstruction of the oppositional polarities between positivist naiveté and anti-science skepticism in contemporary U.S. society. The author's goal is to show how U.S. scientists find themselves squeezed within these polarities and how they are unable to find forms of political participation that can critically analyze science as an essential part of the capitalist system of production and enable further organization.

The article interestingly deconstructs the implicit political assumptions of movements largely based on a blind faith in science. In this regard, the author points out the dead ends into which such movements fall if they are not based on a serious materialistic conception of the power of scientists, "which can then be exploited to organize and achieve real victories." A further deconstruction concerns the assumption that scientists moving into politics (which as Nafis shows has been the case especially since the

Trump election) usually stand for a social orientation. Here the task emerges to actually define what is meant by 'defending science.'

The second part of the article addresses the question of unionization of scientists and scholars. The author describes the need to form collective organizations that not only fight for the improvement of individual working conditions but, more importantly, may lead to the construction of scientific practices emancipated from the interests of the capitalist system of production.

The contribution by Dhruv Raina and OmPrasad entitled *Reflections on Social Movements of Science in Contemporary India*, presents the main stages of development of science movements in India and analyzes the effects of the crisis of scientific legitimacy in society in the last decade and its connections with the emergence of right-wing politics. The article especially addresses some of the political issues that the social movements of science face in populist and authoritarian regimes. In India the concerns are varied but reflect the main themes of debate that are discussed in the rest of the world: the emergence of a data society, the management of pandemics, the dramatic results of anthropogenic impact on the environment etc. The authors point out, however, that in the Indian context one finds some differences: neither have social movements of science been reactivated as was the case in the past with the protests against the Kaiga nuclear plant or broader social movements such as the movement against large dams, nor have mass social movements centered on climate change as is the case in the Western world. The authors also highlight some shifts in the interest of social movements as a result of the reception of international demands in local contexts, such as the rise of identity politics. The article concludes by calling for greater engagement with inequality, poverty and understanding their connections with dimensions of nature in the Anthropocene.

The first part of the article *From the Inheritance of Radical Science Movements to a Political Ecology of Knowledges* by Antoine Lalande and Jeanne Le Marec is devoted to reconstructing the main stages that marked the evolution of radical science movements in France in the 1970s. In this section, the authors also describe the variety of the "critique des sciences" in France and the interconnections between these movements and the process of emergence and institutionalization of French STS (e.g., the *Pandore* bulletin created by Latour and Callon).

The second part is devoted to discussing the legacy of this tradition within contemporary debates by reflecting its possible re-actualizations. First, the authors highlight how in recent years various scholars have

recovered the traction of the French *Radical Science Movements* by demonstrating how this tradition represents the political root of French STS largely ignored in standard narratives of this field of research. As an exemplary initiative to that end the authors refer to the online platform https://science-societe.fr/.

The authors describe the main motivations, political themes and groups that have formed in recent decades and in the conclusion envision an "ecology of knowledge," which takes up the crucial concerns and lessons of the older movements.

The next sections of the special issue collect essays, documents and statements by people who are revitalizing some principles of the *Radical Science Movements* nowadays. In those papers, it is therefore possible to see the open laboratory of contemporary radical science in which toolboxes and ambitions are exposed.

The first of these is a retrospective essay by Sigrid Schmalzer, historian of science and one of the leading proponents of the renaissance of the *Science for the People* movement in the U.S.A.[4] In her contribution the author reflexively reconstructs her scientific, pedagogical and political trajectory by showing how these aspects of intellectual life are closely entangled with each other. Beginning with her academic interest in the history of science in the era of Maoist China she shows how the principles of science from below lead her to appreciate the idea of *Science for the People*, how she became a passionate scholar of this movement and, subsequently, how she took part in the process of revitalizing the project.

Calvin Wu and Edward Millar, the authors of the next essay, are also contributing to that project. Wu is currently the publisher of the new edition of the *Science for the People* journal and Millar is one of the members of the publishing collective.[5] Their essay entitled *The Revitalization of Science for the People* traces the process of the formation of the movement's new season by a new generation of science workers but in a in a very different sociopolitical and institutional context. The essay provides valuable reflection highlighting historical continuities and points of rupture between two different generations of science activists. The text shows how the legacy of the activists of the 1970s can be taken as a lesson for the current movement and what scenarios are open within which to recompose a new awareness of the social function of science.

4. https://scienceforthepeople.org/
5. https://magazine.scienceforthepeople.org/

In his remarks on the question of socialism and science, Joost Kircz, a comreditor of this journal and member of the Dutch Soc21 collective (www.soc21.nl), emphasizes the fundamental task of coming to grips with science and technology in extractivist production in order to develop socialist alternatives. Kircz points out that this also amounts to a Marxist and socialist self-criticism in view of those models which were one-sidedly based on industrial development and therefore helped to create the impasse of historical socialist states to expect social progress from an increase of production. Kircz points to this complex issue, to suggest a deeper understanding of science and technology in an eco-socialist perspective. Soc21 is organizing working groups and collaborates with other projects (like this journal) to that end.

In the "Communications" section Jerome Lamy and Arnaud Saint-Martin report about their French journal project. The authors are the creators of the blog https://zilsel.hypotheses.org/ which gradually transformed into the journal *Zilsel. Science, technique, société* https://www.cairn.info/revue-zilsel.htm/. In contrast to the STS field on the transnational academic level, the journal has the ambition to revitalize and question the theoretical canon of this field by comnfronting it with relevant non-canonized intellectual resources. It is for this reason, the authors explain, that the journal has been named after Edgar Zilsel (1891-1944), the famous sociologist and historian of science andMarxist member of the 'Vienna Cirlce.' His contribution in describing the social division of scientific labor as well as the role of technology in modern societies is used as a point of reference for experimenting with new forms of critical science study. The paper thus addresses the legacy of the Marxist interpretation of scientific knowledge proposed by Zilsel.

The last contribution in this section presents the manifesto of the *Politically Mathematics Collective* from India. This collective of scholars and educators formed in 2016 to investigate the political function and significance of mathematics in the broadest sense. Senthil Babu inform in the short commentary about the context and further aims of the group. During the Covid-19 pandemic they engaged in particular in analyzing the models used to communicate with the public and legitimate political measures. The manifesto is an example how a group of different scholars can organize themselves around the common inquiry into politico-epistemic questions, usually left out or only at the margins of public discussion. In this way, we hope to suggest similar formations and further organization in other fields

as well. The interconnection and mutual support of such groups could lead to other forms of transnational collaboration even in the academic field.

The fourth section of the issue contains an interview by Gerardo Ienna with Gary Werskey, who was involved in the older British Radical Science Movements taking part in the *Radical Science* journal as well. The interview presents reflections devoted to the development of the Radical Science Movements in the UK and how it formed a communicative pivot between the old scientific left, the new left of the *Radical Science Movements* and the STS field. Werskey also reports about his contributions to reconstruct the debates on science and Marxism that developed between the 1930s and 1950s and how he, as a member of the Edinburgh Science Studies, gradually distanced himself from the so-called "strong program" in the sociology of science.

In the final section we present a special and in our view exemplary case of politico-epistemic intervention: the "Atlas Project" of the artists Alice Creischer and Andreas Siekmann. Based on investigations to track the commodified and proprietised situation of knowledge in global capitalism, the flows of money and the exploitation of resources for private interests, they use the means of statistical visualization as it was first developed by Gerd Arntz (1900–1988) and Otto Neurath (1882–1945). Neurath and Arnzt collaborated in the 1920s and '30s for the publications of the *Museum für Wirtschaft und Gesellschaft*[6], which influenced the dissemination and visualization of knowledge not only in central Europe and the Soviet Union but throughout the world. The motivation was highly political while the focus was on communicating knowledge about the relations of economy and society. As the artists explain they seek to continue the emancipative and political spirit of the "Vienna Method of Pictorial Statistics" (later renamed *Isotype*), which was revolutionary in its time not only in terms of design, in sharing and spreading knowledge, but in realizing this task as a fundamentally political one. In our view, this still forms one of the important tasks of today, when complex situations on local as well as global levels need to be understood by many people in order to even be able to discuss about possible action. Educating and informing people not only about scientific facts or results, but about actual possibilities and unsecurities in science, about limits of methods and procedures, and about the basic material conditions and infrastructures of knowledge production

6. The Museum for Economy and Society in Vienna was led by Neurath, who, like Edgar Zilsel, was another scholar with ties to Marxism and the philosophical 'Vienna Cirlce' alike.

today, amounts to a neuralgic point in emancipative political action as well as in "rethinking science for the Anthropocene" (Renn 2020). Many debates involving epistemic issues today could be enhanced by new ways of mediating complex epistemic issues as we can see in the work of Creischer and Siekmann. The online version of the printed collection of panels titled "Nature meets itself in the stomach of the predators" is available as an appendix to their text and provides valuable means for politico-epistemic education integrating pictograms, statistics and further explanations of facts.

As seen from the quick recapitulation in the preceding pages, this special issue has the task of bringing together different perspectives connected by a Marxist interpretation of knowledge production and the scientific enterprise and support the idea of epistemic activism in science and society today. This special issue can only be a small contribution, reflecting the current situation, but we hope it will inspire others to take up the thread, which also pertains to the perennial discussion of this journal in terms of the relation of Marxism and (all) the sciences.

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