



Socialism in the 21st Century (Soc21): Some Programmatic Remarks on Its Relation to Science and Technology

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SOCIALISM IN THE 21ST CENTURY (SOC21.nl) is a Dutch initiative to create a platform for researchers (especially in the Netherlands), who feel connected to or are directly involved in social movements. It is envisioned as a place where questions, results and conclusions can be shared, linked and tested against each other. It is based on the premise that thorough in-depth research and activism in social movements can go hand in hand. The aim of Soc21 is to contribute to knowledge development for and alongside social movements based on international solidarity, feminism and eco-socialism. It is to this end that SOC21 is also collaborating with *Marxism & Sciences*.

SOC21 was established by seasoned activists in the Dutch socialist movement. As stated on the website:

In order to develop an alternative for the current social order, it is necessary but not sufficient to build social movements. It is also necessary to develop a broad vision on social questions, link them together without imposing a hierarchy between more and less important positions, and to formulate solutions that can have practical significance while also contributing to an economic, social and ecological transition to a different society.

As one of those researcher-activists I will in the following draw on some questions and topics which I am working on in that context. Along the way I will make some programmatic remarks on the central questions of socialist development in theory and practice. As a trained physicist (and trained unionist) who worked as a science journals and books publisher for a long time, it may come as no surprise that I am particularly interested in the role of science, technology and science communication.

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In very general terms, the goal of replacing the capitalist mode of production with a socialist society is shared by all socialists. The more decisive discussion is about the best strategy to achieve this goal. As goal and methods are intertwined, the ever-changing direct social environment demands a system of more or less understandable slogans and concrete political proposals, in tune with the latest analyses of society. Standard notions such as the need for building collectives and “commons,” equal pay for equal work, recall of elected representatives by their constituents, stewardship of biological life on the planet, etc., have to be formulated or rather translated into programs that reflect the best knowledge we have. In that sense, after all historical forms of socialism collapsed (from social democracy to Stalinism, etc.), it is imperative to build a new socialist tradition, a tradition that stands on the shoulders of the best works of our socialist predecessors, provides a critical examination of those works, and integrates new knowledge and experiences accrued in the last decades.

A most important aspect is the turbulent role of science, technology, and medicine (STM) in today’s world. These three strands of human activity are fully integrated in the capitalist mode of production and as such are fully commodified. This means that we as socialist activists are confronted with two related issues: a) what is the role of STM in society as well as for us as individuals and citizens? What are the driving forces and what are the aims of its development (directions are taken on the basis of what?), b) what are the intrinsic notions and directions of the various STM theories and practices? and to what extent do they co-define our political consciousness. Given, that humans, in their struggle for survival and future, to a large extent, are engineering; exploiting given models and theories (see Marx’s distinction between the bee and the architect), in some parts of the world engineering, which is applied technology, is seen as an independent craft, it is fitting that the acronym includes engineering (so STEM). The point is that people are culturally used to the existing tools and try to extend and bend, or ‘engineer’, them for their own goals. So far so good, but many models, including linguistic expressions, are expressions of the driving forces of the capitalist mode of production. The efficiency of the Taylor system in the assembly line is not neutral, as it deskills workers and induces a dictatorial way of living, where the clock is ruling. Hence, there was a good reason in the early USSR for a heated debate on how to organize production (Bailes 1977). The driving force now is simple profit maximization and subsequently the private appropriation of the profit in a market economy. This induces working methods *and* a related language. Think about common expressions such as: “time is money,” “I don’t buy this argument,” “what is in it for me?” or “I buy you a coffee.” In this paper I touch on the issue to what extent efficient theories and methods can be transposed to

post-capitalist modes of production, lock, stock, and barrel. A famous Marxist economist once asked me the serious question if nuclear energy under workers control would be safer. The answer is not that simple, because we have to take an integral production chain as starting point and not only the present-day disastrous practice of mining and nuclear waste.

In view of this predicament an important project of SOC21 is called Marxism and Science & Technology (<https://soc21.nl/alle-activiteiten/marxism-and-science-technology/>). In part, it reads:

We live in a highly technology driven world. Since the industrial revolution the relationship between the urbanised working class and the soil has been lost. Entering a Dutch supermarket we know that the square object on a blue plastic dish is Fish, on a yellow one it is Chicken and on a Green one it is called biological meat. If the shapes are round, they are called Burgers, of which we now also have Vega types, which anyway are biological, contrary to experiments with synthetic meat. If we travel from place A to B we look at our GPS and 'know' how to drive and how long the journey will take. Every idea of distance, location, and environment is gone. Any sense of direction is lost. Map reading becomes an old fashioned craft. The abstraction from the real world on which we live, from a representation onto a physical map, to an abstract map based on Global Positioning Satellites circling the earth. We know where we are, provided we define this as a geometrical place.

And further:

In this project, we use the historical materialist outlook as a starting point, but want to dig deeper. Following critically Marx and Engels and their hope for a scientific socialism, we want to better understand the intricacies of models and theories and their applicability and capacity for forecasting. A central feature is a critical analysis of the highly abstract and mathematical theories of the natural sciences, their contingencies and successes. This analysis must become input for a critical evaluation of the often uncritical borrowing of the methods of the natural sciences in other contexts, such as sociology, the humanities, and economy. After all the sciences of non-living matter, even if their mathematical representations look prohibitively abstract, are in principle much easier than the complicated environment of living and thinking matter. For all practical purposes, the formal models of the natural sciences can be extremely useful in tackling social problems, and nothing should be worse than not appreciating that. The quest is: to what extent is this possible and to what extent are such applications safe, in terms of keeping the human social factor alive against technocratic implementations and forecasts. Even stronger, are we able to develop models and theories based on human culture and society that reciprocally might induce progress in the natural sciences? A prime, and unfortunately single, example is the development of elementary statistics that

proved its value in the cholera 1854 outbreak in London and became an essential research field in itself.¹

It is a well-known theme in socialist politics to address the submission of scientific investigations to the needs of hegemonic forces. A research project or the application of a theory, method, or technique is limited to formal measures of perceived usefulness within a limited timeframe. Long-term planning is not in the capitalist vocabulary. In itself, this might sound obvious. In a socialist society, the directions (and related financial and administrative support) of science would have different centres of gravity than in non-socialist societies. Are the choices based on short-term returns on investments or on long-term understanding of life on earth and its inhabitants? In order to expand this trivial opposition into a programmatic policy for socialists, there is a need for a clearer delineation of the various aspects of science in its broadest sense. A most important aspect is that even if the hegemonic culture fences off ideas and activities contrary to this hegemonic culture, humans can “jump out of their box” and invent novel theories, models and goals, in contrast to the poor bees and their single-minded labour. The emancipation of humanity, their labour, sexuality, and social structures transcend what is at some point in time accepted as “normal.” Then actual rules are not bended but broken.

In this respect, we have to think about categories as possible ingredients for an actual ST(E)M politics for and by the people at large. Unfortunately:

Since Marxism in the western world after the establishment of a dictatorial bureaucracy in the USSR, developed mainly as a discipline of historians, economists and sociologists, very little has been written on the role of science by (not about) people who are really involved in one of the natural sciences. It is typical that many authors dealing with science and materialism exhibit a total ignorance of the fundamental problems in modern physics or chemistry. (Kircz 1994)

Marxism & Sciences, in this special issue, focusses attention on social movements that try to do two things: A) address the exploitation of mental labour for the benefit of capital and the organization of workers in the ST(E)M industry (including research and educational institutions), B) address initiatives to redirect knowledge for the benefit of the populace. The second task includes the demystification of knowledge in order to advance self-organization of communities for purposes such as reducing pollution and the active usage in all knowledge actively in initiatives for other directions of research.

Before we start, we have to be clear what we mean by a science, next to a craft or common knowledge. A simple answer to the question ‘what is science’

1. See also the paper “Socialist strategies and the role science” which elaborate further in line with the above.
<https://soc21.nl/wp-content/uploads/2020/04/Intro1-v5a-What-is-this-work-about-kort.pdf>

is to stipulate that a science must be seen as the human process of systematically accruing knowledge (experiences, facts, regularities, etc.) which will be confronted with interpretations (theories), experiments, and subsequently will have the capacity to predict. Otherwise we establish only an understanding of why something happened without insight into how a process will continue, stutter, or even stop. In other words, is our interpretation of the world fit for change? As all sciences are human endeavours contingent to the socio-economic history of the present, they are human-made products.

This means an understanding of how to change the directions of science away from the goal (*telos*) of final profit and certainty for the benefit of the owners (and their managers) of the means of production—and/or their implicit military goals—into the general well-being of humanity as part of nature. In other words: the well-being of the totality of nature and humanity as the measure of success of a theory or method.

Obviously, this is not a simple call for nationalization of research-intensive companies (such as the pharma industry), but rather digs deeper in the choices made in research. A standard example is the case of malaria research, which is not a priority for big pharma but is for humankind. A related discussion on which I will not expand in this contribution is the criminal, ever-increasing labyrinth of patent laws, the ultimate commodification and private appropriation of the social results of mental labour. This means that the so-called scientific method is framed in pragmatic terms of modern capitalism.

Ever since the Ancient Greeks, and in particular the Aristotelian tradition, there is a strong tendency to reduce complicated issues to palatable chunks fitted for formal logical handling. In the modern era, analysis and reduction became the primary method of the sciences in all fields. This is seen in the successful and versatile mathematical methods that serve us in our society. Indeed, breaking down complicated objects into simple parts enables us often to rebuild the complicated object, using a reductionist causal chain. However, the road back from gen to butterfly, or quark to telephone, is still in *terra incognita*. Simple sciences like physics allow mathematical models based on formal logic. As soon as more complicated issues arise such as the dialectics of the place of humans in nature, or the very function of the human body as a whole, we have to depart from reductionist reasoning. Hence, in powerful statistical methods based on computations using the largest possible number of past performances or characteristics, the staple of data grinding and so-called artificial intelligence, we only emphasize and enhance existing knowledge and its social consequences, instead of advancing knowledge.

It is also a social problem that due to lack of long-term planning of novel research we are confronted with capitalist solutions to capitalist problems. Think about the massive investment in concrete and steel (and their nitrogen

oxides footprint) in offshore windmills. However, the most serious challenge is that researchers of complicated social issues try to mimic the simple, straightforward methods of the natural sciences. Because these methods work with great success in the simple world of applied mathematics, such as engineering as we know it, there is no reason to try and mould vast interacting and interpenetrating systems like society, the human body, or ecology into elementary “particles.” It may help in well-defined contingent situations, but it remains a poor man’s solution nibbling on the enormous unknown we are confronted with. For a novel approach, not only do we have to rethink the modern fashion of casting everything in formal systems, but we also have to try and develop novel methods on other levels so as to transcend the mechanical methods of the day (Kircz 2015).

To understand this issue, it is crucial to re-direct science into a more pluralistic fashion, based on the activity of humans in various social contexts. Obviously, this can be achieved by knowing and using lessons learned so far. Claims made in the so-called science-wars in the 1990s—despite often providing correct critique of today’s scientific practice—never materialized as a successful counterculture.² This discussion poses the question again: do we merely deal with a re-direction and re-organisation of state of the art models, or do we strive for a more democratic society based on a multitude of human activities that will give birth to novel theories, methods, and practices. For an anti-reductionist approach in Marxian sense, further discussions are needed in a better understanding of the dialectics of quantity-quality transitions (Kircz and van der Linden 2021).

Everything mentioned above is of course in need of worked-out programs tailor made for particular situations. Here we face the problem of ‘specialization’ and ‘application’. The contradiction involved is an aspect crucial in mobilizing citizens in taking control of their local environment: neighbourhood and workplace. On this level, ‘citizen’s science’ is a democratic weapon for making people aware of their capabilities to learn and use all kinds of measuring techniques to monitor safety and pollution. Buying useful apps on your phone is merely the first step. Knowing what a reading means—other than something shown in green, yellow, or red—is crucial. It is again the commodification of simplified knowledge that suppresses people’s understanding of

2. Already in 1983, long before the post-modern fashion, the British socialist scientist Brian Easlea (Easlea 1983) analyzed the remarkable relation between masculinity and analytical procedures of smashing object into pieces in order to find ever more “elementary” units from which more complicated structures can emerge. In line with this anti-reductionism the systems-biologist Dennis Noble (Nobel 2006) makes the case that both causal ways, from down to top down versus bottom-up, must be taken as equal valid approaches, in his attack on reductionist genetics.

what it is all about in order to go beyond complaining about data readings and move toward self-organisation to address its causes.

Another important aspect is that every technology generates its pollution, and every scientific discovery can be used for human destruction. So, on the mundane level of applications of methods and technologies, we have to widen the perspective from 'useful now' to long-term 'possible consequences'; the talk about 'efficiency' and 'sustainability'. Hyper modern 'milk factories' in The Netherlands with hundreds of cows are very efficient in waste management, outflanking small farms with a few cows. In the present-day ecology discussion, the phenomena of efficiency on the macro side and (e.g.) animal rights on the other side are important aspects to review in relationship to the early socialist politics of collective farms. In the fight against big money, it is important to address the need of a fully-global understanding in discussions of (e.g.) degrowth.

The marvels of technology, from the use of fire for cooking food to the present-day permanent social control between lovers, parents and children, taxpayers and bureaucrats, etc., is an enormous source for literature, films, and social programming of all stripes. Here we enter the issue of communication, education, and the driving role of media as McLuhan already emphasized sixty years ago (McLuhan 2003 [1944]). And there is, contrary to what is often suggested in terms of 'popularisation' a growing interest in knowledge.

A clear example is the fascination with 'the stars' and how that fascination is used. Indeed, many a human is fascinated by looking up to the night sky and wonder the stars. This wondering before the stars is universally used in religions as the region of where every deity is seated, and consequently as a source of commodification and oppression. It is crystal clear that artificial satellites are mainly used for military aggression (sorry, defense against aggression), and it is well known that scientific satellites are often only part of the 'payload' of rockets that bring various commercial and military satellites in outer space. But 'selling' this to the populace is completely morphed into the 'ever human desire' to understand the heavens. Even if this is the case, the massive costs incurred (mostly hidden in 'defense' budgets) must be compared to the little money spent in research and technology to attack climate change or respond to common diseases such as malaria, schistosomiasis, and others. It is important to note here that technological utopianism was also a feature of self-declared "socialist states." This was not just part of a scientific or progressivist ideology but has to be understood in its particular historical context (see Fig.1), from which it nevertheless did or could not emancipate, initiating a path-dependency leading to ideological petrification.³

3. For the massive propagandistic use of aviation and the cosmos in the USSR, see Palmer, 2000, 2006. For a review of technological utopianism in the USSR see Josephson, 2010.



Figure 1. Peasants disembark an Agitprop airplane after they have taken above clouds to show that there is no God. (Russian State Film and Photo Archive, Krsnogorsk/russiainphoto.ru)⁴

The discussions about war and peace, armament and disarmament, medicine and eugenics, hunger and bio-industry, welfare and urbanisation, potable water and soil pollution, etc. all have, in addition to the inter-human relationship, a common basic kernel: the relation between humanity and its biological substrate as part of its natural environment. The relationship between people and nature is the basis of all discussions regarding the blessings and dangers of science and technology and therewith the whole issue of ecology (Kircz 1994). The more we learn, the greater is the amount of the yet unknown (Kircz 2023; Firestein 2012; deGrasse Tyson 2005). This means that we cannot anymore maintain a belief in stopgaps; as socialists, we need a clear understanding toward the goal of a conscious world-wide planned economy in one way or the other.

Conclusion

Our lives are now fully immersed in scientific theories, methods, and practice. Children use now-ubiquitous computers in their cradles in the same way that our great grandparents might have used a walking stick. We can use such devices for various applications (such as typing this essay on a PC), but the eman-

4. <https://www.rbth.com/history/332301-how-aviation-became-effective-propaganda>

cupatory value of STEM is not only in applications but in a deeper understanding of the dynamics of methods and the dangerous consequences of the myth that this is the only way to achieve progress. Conscious socialist politics starts with the fight for a broad education against the present trend to reduce curricula to hands-on tricks and teaching to the test. Science of and for the people means guaranteeing that the people understand the background of theories, methods, and applications in order to understand the intertwining of goal and method on all levels of social activity. Such an aspiration is a key factor in building SOC21 and *Marxism & Sciences*.

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