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Techno-Managerial or Techno-Political Utopia?

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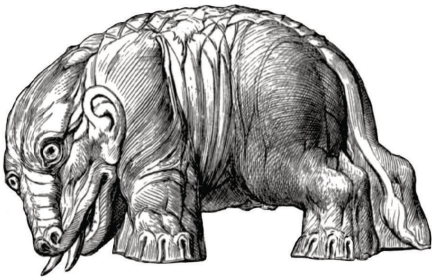
Abstract

This article examines the political function of state-sponsored proclamations of future technological developments with regard to the German example of 'Industrie 4.0'. Building on a comparison of two classical texts of the literary genre of utopianism, Bacon's *Nova Atlantis* and Morus' *Utopia*, the article argues that the future visions of 'Industrie 4.0' can be understood as a techno-political utopia. As such, it is a discursive strategy consisting of three elements: social mobilization for national competitiveness (nationalism) towards a profitable industry with "men at the center" (solutionism) and without industrial conflicts (corporatism). These elements limit an open political discussion on desirable digital futures. The article concludes by demonstrating how critical social sciences could contribute to open the discourse from a mere techno-managerial towards a techno-political utopia.

Keywords: Digitalization, Discourse, Industrie 4.0, State Politics, Futures, Utopia



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Introduction

"Industrial policy strategies are experiencing a renaissance in many parts of the world; there is hardly a successful country that relies exclusively on market forces to accomplish its tasks", writes the German Federal Ministry for Economic Affairs (2019, 8) in its *National Industrial Strategy 2030*. These industrial policy strategies often come in the form of state-sponsored proclamations of future technological developments. Following the world-wide economic crisis of 2008, such techno-managerial utopias**[1]** became an important discursive strategy**[2]** of statesmanship. In the US, the 'Advanced Manufacturing Partnership 2.0' initiative has been announced, China launched the 'Made in China 2025' program and Germany proclaimed an 'Industrie 4.0'. All these techno-managerial utopias are examples for a state politics in the mode of an announcement of technological visions. We will demonstrate this with regard to the example of 'Industrie 4.0'.

'Industrie 4.0' departs from prior techno-managerial utopias in so far as it moves away from the vision of full automation and even promises the 'reshoring' of industrial jobs from low-income countries and sugarcoats its innovation offensive with a rhetoric demand for human-centred design. Instead of more classical forms of automation, it emphasizes digital production control. In this, however, it depicts the factory as a unified cybernetic system without any internal frictions (Schaupp/Diab 2019). Because 'Industrie 4.0' is a unified system, there is no place for conflicts of interest and therefore for politics that would jeopardize the stability of the system. We will argue that therefore, this techno-managerial utopian dimension of the Industry 4.0 is not unpolitical. Rather, it is itself a policy: the politics of the end of the political.**[3]** In this sense, it is an anti-political utopia. Thus, the discursive enclosure of a wide scope of heterogeneous social actors seems to be at the centre of 'Industrie 4.0' both on the level of state politics and industrial relations.

In the first section of the article, we draw a distinction between technological and political utopias, based on two of the founding texts of utopia as a literary genre: Bacons' *Nova Atlantis* and Morus' *Utopia*. The second section concludes that 'Industrie 4.0' is a techno-managerial utopia insofar as it assumes political constancy while simultaneously proclaiming technological disruption. It is a discursive strategy of state-led corporatist mobilisation, which aims at veiling differences of interest in industrial relations, thereby creating a 'Harmony 4.0'. In the third section, in contrast, we emphasise the political character of industrial digitalisation. We argue for a techno-political instead of a techno-managerial utopia of digitalisation, which discloses the oftentimes implicit anticipatory assumptions and normative content of socio-technical futures and enables an open discussion on the means and ends of technological progress.

Political and technological utopia

Although every production model is necessarily forward-looking, there is little research on the utopian dimension of production models. It is repeatedly bemoaned though that management systems follow less and less linear developments or assumptions of rationality, but turn out to be fash-

[1] In the context of this article, we subscribe to a descriptive understanding of utopia as introduced below rather than a normative-empathic understanding of utopia (cf. Flechtheim 1972).

[2] We understand political discourse as closely intertwined with political institutions, primarily through its mobilizing function (Carstensen/Schmidt 2016).

[3] We understand 'the political' as the inherently conflictual (re-)negotiation of social order.

ion- and myth-driven so that the most diverse, partially contradictory control principles would be wildly combined (Brinkmann 2011). A systematic analysis of the utopian dimension of production models is largely lacking. An interesting exception is ten Bos (2000), who observes and laments the central role of utopian thinking in management fashions. From this observation, he develops a juxtaposition of the terms "fashion" and "utopia" and tries to promote the former against the latter concept so as to be "able to get rid of utopian tendencies." (ten Bos 2000, 14) Ten Bos describes the utopian moment of management pejoratively as "unworldliness" (ibid.). However, if we understand utopia as the concept for an ideal socio-technical order, a non-utopian model of production is an oxymoron. Any new production model is necessarily unworldly to the extent that it is innovative. However, 'unworldly' must not be confused with 'unrealistic'. The conception of each production model has to strike a balance between two poles: On the one hand, it must be unworldly insofar as it promises productivity leaps or other potential benefits, on the other hand, it must be concrete in so far as it cannot be effective without realistic implementation proposals. In the following, we will bring together these two aspects of unworldliness on the one hand and the efficacy on the other hand to sketch the concept of techno-managerial utopia. By drawing attention to the utopian dimension of the current discourse on the future of production, we strive to further illuminate the apparent disconnect between the oftentimes far-reaching proclamations revolving around the so-called 'Industrie 4.0' and the frequently quite modest job-floor realities. At the same time, we will argue that the characterization of the 'Industrie 4.0' as a techno-managerial utopia helps to better understand both its normative brunt and political one-sidedness. To gain a better understanding of the relevance of the term of 'utopia'**[4]**, let us first return to its beginnings: The publication of Thomas Morus' state novel *Utopia* (1516) represents the founding moment of the modern literary genre of utopia. In it, an island state is described, which in its technical development is about the same as the one the author knew from 16th-century England. Radically different, however, is the political and economic condition of the island. This is marked by communism in the economic sphere and a council democracy in politics: "Wherever there is private property, where everything is measured by the value of money, it will hardly ever be possible to pursue just or successful politics", one of the famous sentences of the novel reads (Morus 2017, 44). The political administration of Utopia is organized by a kind of citizens' councils composed of delegates from different neighbourhoods (53f.). Morus' design can thus be classified primarily as a *political utopia*: It is 'unworldly' regarding the social order, but 'realistic' with regard to technological development.

To understand the specific utopian dimension of 'Industrie 4.0', it is worth to briefly contrast Morus' utopia with that of Francis Bacon. In Bacon's *Nova Atlantis*, the framework is very similar to that of *Utopia*. Here, too, sailors land on an unknown island, which bears the name Bensalem. The achievements there, however, form the counterpart to those described by Morus. First, Bacon begins to praise Bensalem's orderliness. There is "barely a more chaste people under the sun like Bensalem's and no one so clean of filth and defilement" (Bacon 2017, 200). The main part of Bensalem's description, however, is Bacon's praise of the technology available to the is-

[4] We use this term here as a topical analytical concept. We cannot, however, go into the extensive cultural studies literature on the topic (for an overview, see Andersson 2018).

landers. He describes in detail the "various mechanical arts" (ibid., 209) by means of which nature is completely controlled on Bensalem. Not only mechanical "humans, quadrupeds, birds, fish and snakes" are constructed (ibid., 212), people, too, are subject to technical control, to a degree that the islanders "can fool the senses of men infinitely" (ibid., 213). Significantly, the publisher of the posthumously published script explains that Bensalem's technical order was more important to Bacon than the political one (Saage 1998, 63). We only learn implicitly that Bensalem must have been a classic monarchy, as Bacon knew it from England. The only difference is that the king is not advised by politicians, but by scientists, especially by engineers (Bacon 2017, 213ff.). Bensalem thus seems to be a technocratic monarchy. However, what we are explicitly told is that the political affairs on Bensalem are settled once and for all. Thus, the king is sure that public order "can be turned in a thousand ways for the worse, but hardly any for the better". So he decides "to set those institutions that were so well founded and secured in their time, for all times." (ibid., 192)

Thus, Bacon's utopia is essentially a perfect techno-managerial order (with technology consciously coming first). This order is characterized by its complete functionality: It is constructed on the model of an all-encompassing clockwork, which works perfectly because each gear wheel is fixed in its place. Because it is a unified system, there are no conflicts of interest and therefore no politics that would jeopardize the stability of the system. The techno-managerial utopia is therefore not unpolitical. Rather, it is itself a policy: the politics of the end of the political. In this sense, it is an *anti*-political utopia. Its strenuous efforts to ban all conflicts and all politics, however, reveal what is at stake: Techno-managerial utopias are never without alternatives, but the result of negotiation processes between competing visions of the future. Luc Boltanski (2010) calls this the 'hermeneutic contradiction'. He thus points out that every regime of domination depends first and foremost on defining what is. For the knowledge of what is forms the basis of the knowledge of how we have to act. The central problem of all regimes, however, is that the official interpretation of reality remains potentially contestable at any time. In the case of 'Industrie 4.0', this contestability means that various institutional actors (state bodies, employers' associations, companies, science, trade unions) with diverging interests are involved in the negotiation of the techno-managerial utopia. Every regime therefore aims to hide this contestability. With regard to techno-managerial utopias, this applies not only to the question of what is, but also to the question of what will be. For, as Dierkes and others (1996) have shown, technical visions of the future essentially fulfil a guiding function in action.

In the digital age, techno-managerial utopias that work in a similar pattern to Bacon's *Nova Atlantis* play a central role. It seems to be exactly their anti-political character that makes the techno-managerial utopia attractive again in the digital age. Thus, the production model of 'Industrie 4.0' can be understood on the discursive level as a techno-managerial utopia. By that we do not mean a general idea of society like in the concept of socio-technical imaginaries (Jasanoff/Kim 2009; 2015). Instead, the concept of techno-managerial utopias deals with visions of the future which are limited spatially and socially to the same extent in which they are concrete. Like Bacon's description of Bensalem, they consist of a set of concrete ideas of future techno-

logies and organizational concepts closely linked to those technologies. Central to this is that technology and organization form a unified system. That is, the technical aspect of utopia is essentially organizational, and conversely, the organizational aspect is essentially technical. At Bensalem, technology organizes not only the natural environment, but also the islanders themselves, down to their biological existence. The administration, on the other hand, is a technical one: Politicians have been replaced by engineers who construct society like one of their machines. The aspect of 'unworldliness' inherent in every utopia does not extend to the political in the techno-managerial utopia. In Bacon, almost all social institutions of early modern England are copied to Bensalem: Religion, customs and state rule are idealizations of the English status quo rather than utopias. What is unworldly is instead imaginary technology, which becomes the central reference point of utopia. On the one hand, this fact pulls the critical sting that characterizes political utopias, as shown in Morus. On the other hand, this makes the techno-managerial utopia appear realistic, which in turn is conducive to its practical effectiveness. Of course, the two forms of techno-utopias reconstructed here are also partially overlapping. For our use of the terms as to-pical analytical concepts, however, an ideal-typical division between the two seems to be useful, as we will see in the following.

Techno-managerial utopia

This specific relationship between seemingly visionary techno-managerial imagination and anti-politics is constitutive for the 'Industrie 4.0' discourse. To be sure, when analysing the genesis of 'Industrie 4.0', there is no lack of political involvement: Tracing back the label to talks involving members of German ministries and meetings at the World Economic Forum, Pfeiffer characterizes the pervasive presence of talk about "Industrie 4.0" as "first and foremost the result of professionally managed agenda setting" (2017, 112). And although Hirsch-Kreinsen frames "Industrie 4.0" as a promising technology and suggests that the practical impact of the "Industrie 4.0" should be understood as an emergent result of heterogeneous actors linking their strategic interests to the propagation of "Industrie 4.0" rather than "the result of a master-plan of a controlling agency" (2016, 11), he too highlights the importance of political actors in its development and dissemination. Accordingly, by anti-politics we do not mean simply the lack of involvement of political actors. In case of 'Industrie 4.0', the involvement of political actors even extends beyond the spectrum of immediate state politics and includes engagement with trade unions. Instead of propagating fully automated factories – as has been the case in the previous utopia of computer integrated manufacturing (CIM) – the mantra of human-centred innovation and production is ubiquitous (Pfeiffer 2017). What, then, constitutes the anti-political dimension of 'Industrie 4.0'? Although political actors of various kinds have been central for the development of the techno-managerial 'Industrie 4.0' utopia, there has been remarkably little discussion on the question what ends are being advanced by it. To some degree, this is understandable, as one could argue that the 'Industrie 4.0' has been conceptualized as an answer to a shared challenge: finding a way to frame a renegotiation of economic prio-

rities to manage the national economy in the wake of the global financial crisis (ebd.). Accordingly, 'Industrie 4.0' features a clear nation-state, not to say nationalist, frame of reference. At the centre is always the comparative national advantage of Germany with its high-tech industry. This is also expressed orthographically: the German ending -ie was defended by the patriotic inventors of the label internationally against the English 'industry'. Thus, 'Industrie 4.0' helps stabilize an economic primacy, an unquestioned dedication to improve competitiveness on a global level. All other needs and interests have to adapt to this central demand. A central tool for this homogenisation are state-led mediations such as the "Dialogue Process Work 4.0", in which the positions of employers and trade unions were consolidated into a *White Paper "Work 4.0"*, which has been accepted by most social actors (Kalff 2020). It would thus seem appropriate to speak of a "Harmony 4.0" that is being formed around "Industrie 4.0" (cf. Arlt et al. 2017, 83ff.).

In this way, this vision contributes to a constellation in which concerns regarding technological and societal developments or the expression of desires that are incompatible with the competitiveness-orientation of 'Industrie 4.0' tend to be quickly pushed aside by a built-up of normative pressure. Accordingly, the vision helps to stabilize and perpetuate existing social relations, rendering it structurally conservative at its core: Rather than enabling an open democratic societal debate on political, social and economic possibilities, it limits societal discussion on socio-technical innovation to an extremely restricted question (how to best increase national competitiveness in global competition) whose pursuit can then be openly discussed, or rather: managed. In this respect, the relationship to the future in the 'Industrie 4.0' discourse bears strong resemblance to that of neo-conservative futurology criticised by Flechtheim (1972) in which references to "the future" distract from necessary discussions of social and political change. Instead of discussing possible social and political innovations that could address contemporary challenges, this kind of futurology, according to Flechtheim, tends to relegate the solution of societal problems to the future. Today, this kind of logic seems to experience a resurgence in the form of so-called *solutionism* which has been identified as a key feature of digital capitalism and relegates the solution of societal problems to technological development (Nachtwey/Seidl 2017). This way of thinking bears striking similarities to the mix of social conservatism and technological utopianism characteristic for Francis Bacon's *Nova Atlantis*.

The limiting effect and dominance of this core-orientation is illustrated by the fact that attempts to redirect the discussion around 'Industrie 4.0' stay within the confines of the larger goals defined by this vision – for instance, the German unions have resorted to arguing for a 'worker participation 4.0' by stating that worker participation is an advantage for the German economic location.**[5]** This argumentative position might lend itself well to a co-managerial understanding of unionism, but it quickly becomes precarious once considerable conflicts of interest arise and the interests of workers are labelled as obstacles to national economic success.

From this perspective, the anti-political dimension resurfaces: Everyone is welcome to talk about disruption and radical innovation – as long as everything stays the same. It is a peculiarity of the 'Industrie 4.0' discourse that a feature of the capitalist mode of production – to innovate in order to

[5] A textbook example of „a pattern of *one-dimensional thought and behavior* in which ideas, aspirations, and objectives that, by their content, transcend the established universe of discourse and action are either repelled or reduced to terms of this universe" (Marcuse 2007, 14).

stay ahead of the competition (or at least keep up with it) – that has been well-known for more than 150 years is being advertised as something radically new.

The pervasive effect of the 'Industrie 4.0' discourse was not just defining for much of the public debate on technological innovation in the past years – it also dominated most of scientific research on technological innovation in Germany in the past years. Although there have been some critical interventions (see above), most of the research has been focused on helping to develop the notion of 'Industrie 4.0' and work towards its implementation. This holds particularly true for research in the applied technical sciences, but also for most of the social sciences. Countless studies were published that for instance focused on the impacts of 'Industrie 4.0' on economic growth and/or on aggregate labour demand. In a telling example of how societal demand and scientific research converge, social scientists strived to provide orientation in the ongoing innovation process. With the orientation towards the 'Industrie 4.0' vision, however, research runs at risk to be 'contaminated' by the normativity transported by the 'Industrie 4.0'. To give just one example: In a study on "Economy 4.0 and its labour market and economic impacts", Wolter et al. conclude:

> There ultimately is no other way – if Germany's [sic] unable to implement Economy 4.0, other countries will still do so. And the assumptions which have a positive effect on Germany in the above scenario (pioneer, additional demand abroad, competitive edge) will then count against Germany as a business location. Decreases in production and further unemployment will result (2016, 61).

Studies like these are then in return quoted by state actors to alleviate fears of technological unemployment, a powerful dystopian motive impeding technology acceptance by the general public. The discussion of automation anxiety in the aforementioned Federal Ministry of Labour and Social Affairs' *White Paper"Work 4.0"* is a case in point: Invoking the debate on technological unemployment, these concerns are largely discarded by referencing a number of long-term forecasts that broadcast little to no losses due to technological development. Despite acknowledging their uncertainty and epistemic limitations (BMAS 2017, 47ff.), they nonetheless seem to be accepted as the scientific foundation of the BMAS' assessment that radical changes to the social security system need not be discussed (ibid., 180).

While honesty regarding one's normative orientation should be welcomed in research, one should reflect whether the normative commitment displayed in studies that firmly reaffirm the basic assumptions of the 'Industrie 4.0' might be misguided. On a more fundamental level, however, the social conservatism that is part of the 'Industrie 4.0' vision is matched by a conservative moment of scientific prognostic itself: Since a prognosis of future states of affair has to build on retrospective knowledge and data, it is necessarily designed to prolong past and present social conditions into the future.

As Tetens (2013) argues in his introduction to the philosophy of science, scientific prognosis is limited to talk about the future based on knowledge regarding existing structures and the laws governing them and their dyna-

mics. Projecting them into the future might seem unproblematic in many cases – for instance concerning the assumption that gravity will persist in the future. Yet, delivering a prognosis of future development not only requires us to make assumptions regarding the behaviour of these structures. To make a prognosis of the future development of a societal system furthermore requires us to make a plethora of assumptions regarding the status of various variables affecting this system – that by themselves are again error-prone. Even more nuanced scenario approaches then are necessarily informed by precarious knowledge and heavily laden with (tacit) anticipatory assumptions. In a setting that requires social scientists to appear 'realistic', this quickly introduces a conservative bias that leads to the selection of assumptions that deliver more or less status quo scenarios that are normatively informed by a broadly shared, seemingly apolitical 'common sense'. In such a setting, even the most aggressive partisanship for a quite disputable program such as the 'Industrie 4.0' initiative appears self-explanatory and techno-managerial utopianism is matched and reproduced by studies that largely amount to little more than pleasant background music. This is not to say that these studies are poorly conducted by scientific standards or would yield no interesting insights. Their epistemic limitations need to be reflected more widely however.

Techno-political utopia

For scientists who want to provide a critical corrective to such a narrowing of public and scientific discourse, the question arises on how to respond to the demand for scientific prognosis particularly and what to contribute to the debate more generally. Reflecting upon the character of scientific prognosis, Adorno (1972) diagnosed that simply prolonging existing social conditions into the future would contribute to reaffirming and perpetuating them. Instead, he highlighted the importance of transcending existing social relations in investigating the objective material, technological basis for reasonable societal conditions and human emancipation (Bloch/Adorno 1978).

In this spirit, transcending the limitation imposed upon public debate and imagination by standardizing visions such as 'Industrie 4.0' would, in a first step, demand of researchers dedicated to social progress to provide robust knowledge regarding the likely technological possibilities afforded by the ongoing technological development. More importantly, their public engagement would need to follow an anti-technocratic impetus: disclosing and deconstructing the oftentimes implicit anticipatory assumptions and normative content of socio-technical futures and enabling open discussion of the ends of technological progress (Urry 2016).

In the context of 'Industrie 4.0', this would require critical scientists to show that the apparent apolitical character of this techno-managerial utopia thinly veils very real economic and political interests and threatens to immobilize societal progress through an anti-political mobilization. This would not, however, imply to shy away from the discussion of technological development altogether and emphasize solely political issues. Instead, it would require scientists to explore ways to commission technology in the interest of societal progress – while at the same time emphasizing that societal progress

will not result from technological development by itself, but rather might the product of people striving to realize political utopias and the technologies suitable to them (Frey/Schneider 2019; Srnicek/Williams 2015). Rather than fetishizing either the political or the technological dimension of utopia, progressive techno-political projects would strive to reconcile the two in a push for truly radical socio-technical change.

Conclusion

Starting out with a comparison of two defining early utopias – Francis Bacon's *Nova Atlantis* and Thomas Morus' *Utopia* – we gained an understanding of two types of utopian thinking: political utopias with strongly critical features that focus on transcending the existing social order with relatively little regard for technological innovation. And techno-managerial utopias, characterized by conservatism in regard to social institutions and visionary technological thinking. We then characterized the 'Industrie 4.0' vision as a modern techno-managerial utopia in the context of worldwide economic crisis. It consists of three strategic elements: social mobilization for national competitiveness (*nationalism*) towards a profitable industry with 'men at the center' (*solutionism*) and without industrial conflicts (*corporatism*). Furthermore, we discussed the constraining effect on the public debate on poli-tical, social and economic possibilities afforded by technological development that is exercised by 'Industrie 4.0'. It is important to underscore, however, that the discourse on 'Industrie 4.0' is by no means frictionless. What we reconstructed here is a state-sponsored discursive strategy, which can and is being contested by other actors, researchers possibly being one of them. Thus, we introduced some fundamental features of a science dedicated to enriching the public debate on socio-technical possibilities and to reconciling the political and technological dimensions of modern utopian thinking in the form of techno-political utopias.

In the recent past, first bold proposals have been put forward in this spirit: Whether they focus on appropriating the productive potentials of late-capitalist society to build a society that offers freedom, plenty of leisure time and an end of scarcity for all (Srnicek/Williams 2015) or whether they focus on technological possibilities for alternative ways to coordinate economic activities that transcend the anarchy of the market and capitalist competition (Phillips/Rozworksi 2019), they share the common feature that they leave the framework of capitalist competition to discuss the promises of technologies against a wider normative background and that they distance themselves from naive optimism by emphasizing the importance of political action to realize these promising potentials. By presenting alternative socio-technical visions, they move beyond the mere perpetuation of existing social conditions into the future. Only by doing so can we hope to transcend our historical situation characterized by escalating economic conflicts, increasing social polarisation and deepening ecological crises. Developing and discussing alternative techno-political utopias and ways to realize them might, in this sense, be a key task facing scholars of technology today.

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