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Automated Futures in Early English Science Fiction: Eliot and Butler

ABSTRACT: *Greatly debated but rarely analysed in science fiction, automation rose to prominence as a topic of discussion since the 1940s. However, the futures that it harbours, either utopian (leisureful society) or dystopian (machine takeover), loomed in XIX century literature already, at the same time as the Machinery Question was debated in England and contemporary of a seminal text in the study of capitalist appropriation of machinery like Marx's "Fragment on Machines". But a literary history of automation is yet to be entertained, although many writers can be seen as having spearheaded an effort to imagine the social outcomes of mechanization. Adopting a close and thematic reading of two of these authors – George Eliot and Samuel Butler – the article probes how early English science fiction confronted the rise of machinery; how it anticipated certain ideas regarding the progress of technology; and how it shaped the affective perception of automatic objects.*

KEYWORDS: *Automation; Future; Machines; Utopia; Science-Fiction.*

A literary history of automation. Introduction

“If managed well, the transition to a more automated British workplace should make businesses more productive, improve the supply of high-quality jobs, and support working people to have more leisure time”¹. This passage can be found in the concluding remarks of the House of Commons report on “Automation and the future of work”, whose aim was to assess the state of automation in the UK and its likely impact on the labour market. It shows the confidence that the authors reserve in an automated future as well as automation’s past: “Historically, large industrial transformations have seen changes to work but, rather than causing long-term job losses, they have resulted in more of the population in work than before and the quality of work improving”². The risks are mitigated, while the prospects welcomed as bringing more leisure than unemployment. Even if some

1 BEIS Committee 2019, 44.

2 BEIS Committee 2019, 43.

deleterious effects are envisaged – “a risk that the jobs left will be mainly in secure management roles, or low-quality and insecure administration and labouring”³ –, the authors insist with depicting automation as a constructive force: “automation can be an opportunity to incentivise businesses and employees towards more rewarding and less exploitative work”⁴.

Belief in an automated future can be seen, on some level, as the belief in a series of fictionalized scenarios divulged by the industrial sector, as well as in a cascade of works of fiction and speculation, trying to anticipate what our societies would look like if full-scale automation were to be embraced. The two sides have been seen as complementary, if not often overlapping⁵, in terms of the narrative tropes used by one side and the other, or considering the fascination that utopian or dystopian imagery exerts on them. On the one hand, the path leading to any kind of technology-related economic decision is driven by estimates and predictions that bear the marks of fiction; on the other, the fictions with a technological condition as an essential plot element often have more than one foot in the mutations of their time and react to them in the form of commentary, parody, satire, or otherwise.

Think of *Gulliver's travels*, especially when the journey to the island of Balnibarbi takes place in the second part of the book. After landing on the island, Gulliver is taken to the capital, Lagado, where a professor shows him the inventions in the local Academy, including a machine which, with the help of a few contrivances, can produce texts of any kind which are arranged by the professor, giving “the World a complete Body of all Arts and Sciences”⁶. This automatic encyclopedia displays a satirical purpose, evident in the overly detailed descriptions as well as in the overconfident and excited tone used by Jonathan Swift to mock his contemporaries, those whom he saw as blindly enamoured with the idea of reducing knowledge to combinatorial rules to be then applied mechanically. We can here observe the interaction between the scientific discourse and its literary counterpart, grasping one as the refraction of the other, with the ultimate aim of outlining a *literary history of automation*, which shall take the form not only of a thematical criticism of certain works of literature, where automation can be found as a dominant theme, but, most importantly, of a study seeing both discourses it addresses – the scientific and the literary – as embedded within a common context of emergence. A common context often calls for common themes, leading the analysis to discover if certain works of science and literature share a similar ideological outlook, or if they share an epistemic background.

The goal of this article is to scan a period in which the traces of ‘automation’ were there, but the term itself had not been coined. And yet, in the XIX century the emergence of automation forced a social debate around it – under the banner

3 BEIS Committee 2019, 43.

4 BEIS Committee 2019, 44.

5 On the fictionality on which much economic planning is based, cf. Beckert 2013.

6 Swift 2005, 171.

of a Machinery Question⁷ – and also enticed as a potential literary theme. So, while first introducing the cybernetic problem of automation, framing it in terms more familiar to our present situation, we then illustrate the conditions that engendered it in the second industrial revolution, adopting Marx’s ‘Fragment on machines’ as the pivot around which to structure our analysis of how machines were discussed as more manageable substitutes for human labour. We later turn to the literary field to explore how automation – particularly the idea of automata replacing humans – affected it. A glimpse in the satire of Swift gave us one of the first examples of an interest within literature towards the use of machinery to automate physical and mental labour. Our article seeks to expand from that point and show what purposes (aesthetic, civic, etc.) and what fictions drove this interest forward. We selected two works to compare, both from the English Victorian age: George Eliot’s *Impressions of Theophrastus Such* (1879) and Samuel Butler’s *Erewhon* (1872), which represent two literary responses to the early stages of automation.

A close thematic reading of automation in those two works brings forth another issue: the birth of science fiction (SF) as a literary genre entertaining a special relation to the course of scientific and technological progress. Neither of said works is fully categorised as SF – the term, like automation, only surfaced in the XX century –, but they share a common approach towards the future, the temporal dimension canonically belonging to that literary genre. By looking at the interplay of the fictional and technical sides of automation, we assess how the former fed into the latter’s history, whether through an optimistic view or, rather, by echoing an apprehensive sentiment.

Automation 1950

Our attempt at a literary history of *automation* must begin with the main term, follow the points of origin that led to the development of a discourse about it from the 1940s onwards, and finally trace its conditions of possibility in the Machinery Question of the industrial era.

Frederick Pollock, a member of the Frankfurt School was among the first to witness and study in detail how transformations in production, transportation, and calculation had altered the industrial landscape of the United States, having escaped there during the war. Automation captured Pollock’s attention as a *technical phenomenon* imposing itself on the nation’s economy, through the intention of newer machineries, and a *discursive phenomenon* with deep ideological

7 The Machinery Question – “the public debate sparked in English society at this time upon the massive replacement of workers by new technologies” (Pasquinelli 2023, 78-79) – defines a period of, so to speak, ideological turmoil concerning the mass introduction of machinery in factories. It involved “popular literature and pamphlets, poems and satire, and also the industrialists’ celebration of a machine cult with dancing automata, ‘mechanical Turks’, and industrial engines set on display in public squares as tourist attractions” (Pasquinelli 2023, 81). Cf. also Berg 1980.

implications, whose spread owed as much to the growing debate and research on it – fuelled in large part by military investments and scientific reports commissioned by Congress – as to the journals (*Control Engineering, Automatic Control*) in which experts coming from engineering, mathematics, economy, and so on discussed the methods of automated production and the overall *meaning of automation*.

“There is no universally accepted definition of the term ‘automation’”⁸, Pollock noted, recognizing the frequent confusions that populated even its political or industrial uses, thus making it considerably more convenient to rely on a general and almost commonsensical definition:

By ‘automation’ we understand the use of certain methods of automatically producing and preparing goods; of producing information; and of making calculations (e.g. book-keeping) [...]. [Generally we mean] a technique of production the object of which is to replace men by machines in operating and directing machines as well as in controlling the output of the products that are being manufactured.⁹

Pollock also observed the overlap of personnel and equipment across the industrial sector and the country’s military complex, the case of General Groves, chief architect of the Manhattan Project and then head of the scientific department of a computer company (Sperry Rand), being one of the clearest examples of how national and private interests were entangled in this large-scale process. Moreover, automation encompassed another major set of transformations, related to the use of nuclear fission for the construction of military armaments, or as energy source, while electronic machinery gained a central role in the operating and managing of nuclear power plants. Almost inevitably, the problem of automation, covering such a wide spectrum of stakes, attracted discussions tackling it from a social and ethical angle.

It is worth recalling an essay written in 1955 by then-member of the Atomic Energy Commission, John von Neumann, entitled “Can we survive technology?”. He argued that a technological revolution was affecting the military and public sectors and evolving faster than the industrial upheavals of the XIX century, when earlier forms of automation could be recognized in Watt’s steam engine and its automatic valve control system. The shift from dependent machines to semi-automatic and finally to fully automatic machines consisted in numerous similar contrivances, re-structuring the division of labour¹⁰. But a “new footing”, as von Neumann called it, was attained by the next century: “This development began with the electromechanical (telephone) relay, continued and unfolded with the vacuum tube, and appears to accelerate with various solid-state devices (semi-

8 Pollock 1957, 5.

9 Pollock 1957, 5.

10 The study of automation as a series of technological transformations of the division of labour has been entertained by several Marxist thinkers and historians of technology: for a classic reading, cf. Friedmann 1955; for recent contributions to this line of inquiry, cf. Daston 2018 and Pasquinelli 2023.

conductor crystals, ferromagnetic cords, etc.)”¹¹. The concentration of different such devices in a single machine had then accelerated the future of automation: improvements in information-transmission technologies, with improvements in distribution and transportation chains and in the management of machines, left von Neumann thinking of a progress of unprecedented magnitude, whose far-reaching effects could only be resolved, or at least coped with, by reimagining the global political and economic scenarios made possible by automation.

We find echoes of this in what Norbert Wiener, one of the founders of cybernetics, wrote in 1960, warning against underestimating the dangerous drive to design autonomous machines. In fact, one of the most relevant issues for cybernetics was the idea that machines would have eventually *learned* from previously performed operations and improved their performance after each iteration, exhibiting original and unpredictable behaviors. The excitement at this prospect (and its scientific and economic benefits) could quickly turn into its opposite if these progress remained unquestioned. What makes Wiener’s remarks even more relevant to us are the examples and the tone he chose, making his own argument into somewhat of a moral and cautionary tale. He resorted to the master-slave dialectic to describe the relationship of humans and machines; if the latter normally occupy the servile role in that dialectic, Wiener noted how the situation could go awry for humans: “if the machines become more and more efficient and operate at a higher and higher psychological level, the catastrophe foreseen by Butler of the dominance of the machine comes nearer and nearer”¹². With this reference to Samuel Butler, Wiener placed his works among the fictional objects that have served to accompany and monitor, or sometimes predict, the ideological and material course of automation, and particularly its undesired social consequences¹³. The reference to Butler underlined Wiener’s view: a catastrophic future loomed on the horizon, if industrialized societies did not make considerable efforts to question the advance towards intelligent machines. He also turned to the sorcerer’s apprentice tale, another case of a master-slave dialectic with dire consequences for the master-figure, the titular apprentice losing control over the brooms that he had enchanted so that they would clean in his place; Wiener’s discourse turns cautionary, expressing such a complex phenomenon as automation with the help of fictional scenarios. Scientific discourse is no less immune to fiction than literature is permeated by it.

What we have seen until now through Pollock, von Neumann or Wiener is but a condensed portion of the *automation discourse* that has characterized decades of industrial growth and research, as well as policymaking or unionizing counteractions¹⁴. It is a long path from such a period in the history of automation

11 Von Neumann 1955.

12 Wiener 1960, 1357.

13 A similar reference to Butler’s fictions is found in the works of historian of technology Lewis Mumford, as an example of the English writer’s adoption in the discourse on automation around the same years as Wiener. Cf. Mumford 1964.

14 For a study exploring the recent constitution of an ‘automation discourse’, cf. Benanav 2020.

to the present, in which we may have become more accustomed to fictional worlds set in an automated world; however, the path is not shorter if we consider the other direction: the distance separating the discourse on the social effects of automation that we ran through from the “fictions of science” that had characterized the years between 1850 and 1900.

Automation 1850

What we call automation, Karl Marx had defined an ‘automatic system of machinery’ in the passage from his notebooks, the 1857-58 *Grundrisse*, known as the “Fragment on machines”. Its posthumous diffusion and fame notwithstanding, rediscovered by Italian *operaismo* in the 1960s and ’70s, Marx’s “Fragment” allows us to pierce the discourse on the automation of labour in the mid-XIX century and the future-centred scenarios that were accruing in this period already.

It has been debated by Marxists and non-Marxists alike whether the “Fragment” must be taken as a proper scientific analysis of its contemporary economic transformations. But, more than falling in or out of science in absolute terms, the text can be *read* either as a scientific text – and evaluated as such – or as a piece of fiction, shifting the focus from its empirical validity to its pragmatic effects and “its potential function as science fiction”¹⁵. Marx, at the same time as he criticizes the effects of automatic machinery in their present time, also projects them as a future event, trying to predict their consequences in a way that, if on the one hand it seems to us coherent with the aims of an economic inquiry on extended timescales, on the other, is reminiscent of a *utopian impulse*¹⁶.

To what degree was this impulse present in the discourse on automatic machines in the industrial age? In a way, it was conveyed through a growing confidence toward technological progress, but also compensated by reflections on the economic risks and dire, dystopian implications that started being associated with machines. For instance, the opposition of labour and leisure time represented already a significant subject of debate, as well as doubt. The Machinery Question had prompted more utopian thinkers, social reformers, economists, politicians, to turn their heads to what mass industrialization and the machine-driven division of labour might have had in store in the long run, often with a cautious stance or an outright pessimistic eye. As Friedmann noted, “it is not surprising that industrial mechanization has

15 Trott 2018, 1118.

16 The term is borrowed from Fredric Jameson’s study of utopianism in science fiction, where he, in turn influenced by Ernst Bloch, broadly defines a ‘utopian impulse’ as a force “governing everything future-oriented in life and culture; and encompassing everything from games to patent medicines, from myths to mass entertainment, from iconography to technology, from architecture to eros, from tourism to jokes and the unconscious” (Jameson 2005, 2). The conceptual brush is broad indeed, but nevertheless valuable in how, in the rest of his essay, the author situates this impulse alongside the modern idea of ‘progress’ and, afterwards, within science fiction itself, as one of its more pronounced qualities.

aroused gloomy thoughts among some of its observers”¹⁷; thoughts that, on most occasions, were triggered by considerations focused specifically on the workers’ fate:

Can the worker who, in the course of technological evolution, becomes a sacrifice to subdivided tasks bereft of intrinsic interest, hope again to find in the factory a joy in work and an expansion of his own personality? Must he not give up this utopia and try to find compensations outside the factory, in the form of culture and leisure-time activities in which personal tastes may be discovered and expressed?¹⁸

Marx himself sought to display the detrimental effects of machinery: to further divide the structure of labour by mechanizing its elements – thus substituting hand tools by a system of machinery – is to deprive the workers of their living labour and grant capital the control over those machines. Like Fourier or Proudhon before him, Marx meant to show the contradictions at the heart of the Machine Question, the likelihood that it hid more downsides than were foreseen: “Hence the workers’ struggle against machinery. What was the living worker’s activity becomes the activity of the machine”¹⁹. The latter’s description also conveys a much-circulated equivalence in the automation discourse of Marx’s time: the one of machines and organisms²⁰, a trope which goes back to mechanist philosophy and to Descartes’ thought, returns in the *homme-machine* contrived by La Mettrie in the XVIII century, and finally enters the debates in physiology and biology on whether organisms can be viewed as natural automata—with the idea of “natural machines” attested, in its modern use, as far as in Leibniz.

In Marx, the division of labour, once a system of machinery is introduced, becomes akin to an organism, reinforcing the impression that machines may replace not only the workers manufacturing goods, but all human activity insofar as it is governed by the same principles: “Labour appears [...] subsumed under the total process of the machinery itself, as itself only a link of the system, whose unity exists not in the living workers, but rather in the living (active) machinery, which confronts his individual, insignificant doings as a mighty organism”²¹. And this transferral of properties, conveyed through labour from the workers to the machines, and enabled by a functional homology and by “the analysis and application of mechanical and chemical laws”²², leads to another central equivalence for the automation discourse; rather simplistic, but nevertheless yielding the ideology of automation²³.

17 Friedmann 1955, 391.

18 Friedmann 1955, 391.

19 Marx 1973, 704. For the comments on machinery by Fourier and Proudhon, as well as Adam Smith’s, cf. Friedmann 1955, 129-132.

20 Cf. Canguilhem 2008, 75-97.

21 Marx 1973, 693.

22 Marx 1973, 704.

23 The idea that automation represents a case of ‘scientific ideology’ we derive from Mumford (1964, 263); instead, for a broader definition of what a scientific ideology is, cf. Canguilhem

When stating that machines “are products of human industry; [...] *organs of the human brain, created by the human hand*; the power of knowledge, objectified”²⁴, Marx points us in the direction of the equivalence of power and knowledge, which, however facile, occupied a key role in defining the narrative around why mechanization had to be regarded and welcomed as a positive force: it was an essential component in the deep confidence in *progress* that in many industrialized countries was being propelled also thanks to machines. More precisely, via Marx we are pointed towards Charles Babbage, towards Andrew Ure, towards the discourse on the automated factory, as well as towards the discourse on automata that had been developing in English physiology and psychiatry around the same years, and ultimately towards the many mathematicians and engineers devising the machines²⁵. We read, for instance, Babbage stating that “[c]ette progression continuelle de savoir et d’expérience est notre grande force”²⁶, and then Marx replying that “[t]his progression, this social progress belongs [to] and is exploited by capital”²⁷. In these two statements we discover two utopian impulses, opposed in tension but oriented towards the same future: a future where the progress of machines has never been interrupted and has evolved further, in one view carrying mostly positive consequences for the humans ready to reap the fruits of that technological progress (“notre grande force”), whereas, in the other, declining towards exploitation or subservience to capital, and hence, to machines.

If we turn to Babbage alone – together with Ada Lovelace, the pioneers of mechanical computation – and his treaty on machines and manufactures, we are transported to the core of the utopian ideology that prompted decades of experiments and speculation, culminating a century later in the cybernetic project of the intelligent machine. The sake of automation lies in the anticipation (or, the anticipative construction) of the future; it all depends on the means as well as the methods chosen to peer at this temporal horizon. It is, in fact, time that matters to Babbage, in the sense that he expressed the view that the progress of humans, as conveyed by the advancements of science, was inevitable and at least in part foreseeable: “When time shall have revealed the future progress of our race, those laws which are now obscurely indicated, will then become distinctly apparent”²⁸.

But Babbage was aware that the scientists had in this regard quite the competitors: poets, satirists, writers who, in parallel and sometimes in advance to science, had built a future in the form of fiction. But time had come for science to maintain a stronger grip on its future ways: “the unreal creations of fancy or of fraud, called,

1994, 35-40.

24 Marx 1973, 706.

25 In connection to automation as a form of ideology, others have sketched a wider frame for this ideological position, rooted in the notion of ‘machine’ and its existence in the factory system: cf. Zimmerman 1997.

26 Babbage 1833, 485. For further context on the power-knowledge equivalence as an ideological motor of sorts during the Machinery Question, cf. Knight 1856, an essay published by Babbage’s and Ure’s editor.

27 Marx 1973, 589.

28 Babbage 1832, 389-90.

at the command of science, from their shadowy existence, obey a holier spell: and the unruly masters of the poet and the seer become the obedient slaves of civilized man”²⁹. Babbage even joked at the satirists who had mocked scientific progress: “Nor have the wild imaginings of the satirist been quite unrivalled by the realities of after years: as if in mockery of the College of Laputa, light almost solar has been extracted from the refuse of fish [...]; and machinery has been taught arithmetic instead of poetry”³⁰. The mocked satirist is evidently none other than Swift, Babbage wishing to point out that, though fiction might have endowed the future with its visions, “science has called into real existence the visions of the poet”³¹.

However, more than proceeding on two separate lines, sometimes traversing the same points but seldom with similar purpose, science and fiction have ended up crossing, their relation resembling more of a circle than Babbage would have admitted. If, on one hand, Wiener’s use in his discourse of Butler’s works has showed an advanced stage, during which the future-bearing wonders of SF were already given some credit, or at least were granted a presence in the imaginary of cybernetics; on the other, Babbage seemed less disposed to lend an ear to the writings, say, of Swift, discrediting them in the face of science’s power to make up its own image of the future. And yet, we can argue that the creative circle between science and fiction, already since Babbage and Marx’s days, had set in motion the production of a number of narrative works that it is critical custom to consider as the prodromes of the SF genre. Alongside Swift we find Voltaire, accompanying him in the satirical tradition, or Louis-Sébastien Mercier, until the XIX century’s flurry of works to which have been, retroactively, often attributed the traits of SF, like those of Jules Verne and Edward Bellamy, or, more importantly, Mary Shelley’s *Frankenstein*.

Now, the field which we are about to scan represents a way smaller corpus than even a fraction of the works of fiction that dealt, in some form or another, with the Machinery Question when it was occurring. The group of fictions that will be compared in the next section have been chosen bearing in mind that, Babbage’s mistrusted eye to fiction notwithstanding, literature proved a great deal more effective than most of the scientific discourse in expressing not the validity of the future’s image but its *affection* on the present. This we remark in line again with what Jameson argued was the essential force of SF: not to ‘represent’ the future for the sake of it but, on the contrary, “to defamiliarize and restructure our experience of our own *present*”³². And the fact that it will be, first of all, *those* works’ present to come to the surface through our reading should not undermine the possibility that we peer, alongside their dreams of an automated future, at the present that we struggle ourselves with, one in which not many of Wiener or Babbage wildest imaginings might have resisted the impact of time.

29 Babbage 1832, 390.

30 Babbage 1832, 390.

31 Babbage 1832, 390.

32 Jameson 2005, 303.

Automated futures

As we anticipated, the selected works are read with the aim of evidencing, not just the bounds amongst each other, but most importantly how they elicit the defamiliarizing effects that embody the pragmatic power of SF. We are comparing two responses to the automation discourse in the XIX century; and, particularly, two responses to the impression that technical objects might in the future become more autonomous than automatic, and supersede humans as the dominant species. This kind of terminology was not uncommon in England, as the evolutionary theories discussed in those decades and the debate on automata and automation had crossed on many occasions. Some writers even chose to appropriate the former in order to satirize the latter's exaggerations. We encounter an example of such a tendency in both the works of Samuel Butler and those of George Eliot.

Butler is the best known among the two authors in this regard, his interest for the idea that machines are akin to living organisms having been examined already for almost over a century³³, remarking the evident satirical notes that he intended to strike by writing his accounts of machinic life, of machines evolving and eventually replacing humans as the rulers of the planet³⁴. Before *Erewhon*, he penned (and signed under the pseudonym Cellarius) a short text in 1863, titled "Darwin among the machines". The text has accumulated quite the notoriety as one of the first known instances of proto-SF tackling the existential risks that machines specifically pose to humans³⁵: by pushing to its extremes a Luddist sentiment that the beginning of his century had seen expressed against the introduction of the Jacquard loom, Butler argues in favour of the destruction of all machines, thus proposing to wage a war against the most dangerous contenders of human beings to the role of dominant species; hence the reference to Darwin and to machines as "evolving" creatures.

These arguments returned in Butler's most accomplished work on the topic, 1872's *Erewhon*, in which the protagonist travels to the foreign country of Erewhon (like in Swift, the utopian-fantastic trope of the voyage) where a civil unrest and panic led to the annihilation of all forms of machinery. This occurred hundreds years prior the narrated events and mainly because of a book, whose author, "the most learned professors of hypothetics"³⁶, had foreseen that the future relations of humans and machines would have turned perilous for the former, in danger of enslavement (the reversal of a dialectic already proven worrying long before cybernetics): "the machines were ultimately destined to supplant the race of man,

33 Cf. MacDonald 1926 and Gillott 2015.

34 Cf. Burrells 2010.

35 Cf. Butler 1863. For a brief history of the concept of 'existential risk', cf. Moynihan 2020. One may also note that the discourse on automation and the discourse on evolution had possibly attracted Butler in equal measures insofar as he saw what the former entailed for the latter's definition of 'extinction' as necessary and intrinsic to evolutionary processes, and especially in Darwin's theory, who had dedicated an entire section of his *Origin of Species* to extinction.

36 Butler 1872, 79.

and to become instinct with a vitality as different from and superior to that of animals, as animal to vegetable life”³⁷.

Chapters XXI, XXII and XXIII are dedicated to the reading and commenting of the book that had caused such a stir and led the entire nation to destroy its machines. The satirical overtones with regard to the Machinery Question – Butler’s present that he wished to defamiliarize – are here slightly more evident, albeit one might also interpret it as a serious and gloomy commentary about what machines might one day come to be if scientific progress is left unbounded; hence, SF as an image of the future, stemming from such hypotheses as machine consciousness and the self-replication of which artificial beings might be endowed in the future. Certain passages, however, convey an attempt at keeping the two tendencies – the satirical and, we might say, the dystopian – together, therefore eliciting worried and pessimistic sentiments both towards the present and the future, evoking the impression that we are reading as much a satirical commentary as a hypothetical speculation. We refer, for instance, to passages such as the following, in which the Erewhonian author of that book of machines reveals the modern condition of most people as already machine-bound and only destined to worsen:

How many men at this hour are living in a state of bondage to the machines? How many spend their whole lives, from the cradle to the grave, in tending them by night and day? Is it not plain that the machines are gaining ground upon us, when we reflect on the increasing number of those who are bound down to them as slaves, and of those who devote their whole souls to the advancement of the mechanical kingdom?³⁸

It is doubtful that Butler ever intended for similar passages to be interpreted as appeals to struggle against the fact that technological progress was being appropriated by capital, in the vein of Marx. And yet, the defamiliarization may not have worked in favour of class struggle, nor in favour of fomenting a real Luddite reaction, but at least it managed to create the dissonant idea of a “mechanical kingdom”, which may have contributed in challenging and undermining, with the mediation of a fictional object, the zeal with which machines were discussed by technicians, scientists and liberal economists, either in the name of an abstract entity (progress), or a more efficient manufacturing or calculating process.

Not too dissimilarly from Butler, George Eliot committed a chapter of her *Theophrastus Such* to exploring a rather similar question: should people (civilians, intellectuals, politicians, etc.) be content, excited or worried about this much power being given to machines in industrial and ordinary life? The chapter’s title – “Shadows of the Coming Race” – echoes the tendency encountered in Butler’s works to develop such fictional accounts of machines around the terms of evolutionary theory and, broadly, of the natural sciences, as if machines were in fact a brooding living realm, originating from inorganic matter.

37 Butler 1872, 79.

38 Butler 1872, 202.

Eliot's work takes the form of a series of allegorical dialogues that the protagonist, Theophrastus, entertains with a number of characters, and this chapter is no different. This actually simplifies things, as the satirical message of the discussion between Theophrastus and his friend Trost hinges on the very stark and dualistic opposition that emerges from their exchanges. For instance, whereas Trost makes no shame of his (Leibnizian, as we shall notice) confidence in the future of machines and their foreseeable benefits for humanity, especially for those who won't be forced anymore to undertake humiliating, fatiguing, and servile tasks once a machine will be able of doing them in their place:

My friend Trost [...] is confident that at some future period within the duration of the solar system, ours will be the best of all possible worlds [...] my friend Trost always tries to keep up my spirits under the sight of the extremely unpleasant and disfiguring work by which many of our fellow-creatures have to get their bread with the assurance that 'all this will soon be done by machinery'.³⁹

Theophrastus, instead, seems more worried, and senses the dangers that "the Coming Race" might bring: "will the creatures who are to transcend and finally supersede us be steely organisms, giving out the effluvia of the laboratory, and performing with infallible exactness more than everything that we have performed with a slovenly approximateness and self-defeating inaccuracy"⁴⁰. According to this view, humans are bound to lose, if their opponent consists of creatures that, though repetitive in their behavior, operate with such a precision that no error, no pain, might ever obstruct their activity. There are no doubts nor dangers, however, according to Trost, in whose portions of dialogue, always filtered by Theophrastus' sarcastic point of view, are expressed those sensible and measured opinions that we might call, if not techno-optimist or capitalist, at least bourgeois and paternalizing: "'But,' says Trost, treating me with cautious mildness on hearing me vent this raving notion, 'you forget that these wonder-workers are the slaves of our race'"⁴¹. The two characters must be seen as social types serving an allegorical purpose; and though the chapter remains, in the end, too succinct to detail the automation discourse, which had been developing for almost three quarters of a century by then, it nevertheless serves as a reinforcement of the idea that machines and organisms are finally put against one another, to the unavoidable detriment of the latter, echoing the pessimism that had characterized the general response towards machinery, with the exception of the enthusiastic perspective of many industrialists and technicians.

The sarcastic and volatile tone that initially characterized Theophrastus and Trost's dialogue, once we move towards the conclusion, acquires rather the traits of a lyrical evocation of what would happen if only the machines will eventually be left to roam the planet – and the global afflatus brings us back to what we

39 Eliot 1879, 247.

40 Eliot 1879, 249.

41 Eliot 1879, 249.

encounter, decades later, with von Neumann's appeal to a global perspective sorely needed in order to steer automation. Ultimately, the satirical purpose remains, but now almost secluded in the background, pushed back by a conclusive array of evocative images, maintaining a more cryptic and implicit critical reference to (social) evolutionism, which reaches the moral as well as figurative peak of Eliot's text:

[W]ho shall say that those fittest existences will not be found along the track of what we call inorganic combinations, which will carry on the most elaborate processes as mutely and painlessly as we are now told that the minerals are metamorphosing themselves continually in the dark laboratory of the earth's crust? Thus this planet may be filled with beings who will be blind and deaf as the inmost rock, yet will execute changes as delicate and complicated as those of human language and all the intricate web of what we call its effects, without sensitive impression, without sensitive impulse: there may be, let us say, mute orations, mute rhapsodies, mute discussions, and no consciousness there even to enjoy the silence.⁴²

The future dominated by machines is senseless, inert, inorganic, devoid of all meaning, since no existing being can grasp it anymore. Somewhat gloomier than the desertic landscape of a world where humans have gone extinct, such as the extreme but now topical image of 'the last man on Earth' of which Mary Shelley had proposed a glimpse in 1826, Eliot's image of a world populated by machines, with no trace of humans, is one where only blind repetitions and "mute orations" survive, undergoing processes which bear no resemblance with the lively impulses that characterized the organic realm. There might be life, somewhere, but rather closer to how a crystal grows; life in the form of unaware and automatic action, repetition – and one might be here stimulated to interpret a figurative and moral content such as this by weighing it against the expressive means adopted by Eliot, who, coherently with the machines whose silent and yet vocal world she sketched, consigns the ending of this chapter, the very last 'impression' of this Earth, to a double and then triple repetition: "without...without", "mute...mute...mute".

Conclusion

We have explored the connection between automation and the literary field, limiting ourselves to the XIX century and to only two fictional texts, aware of their limited general validity as examples of a larger situation in English literature, even considering the narrower field of SF, seen here at its very beginnings.

Nevertheless, the works of Samuel Butler and George Eliot exhibit the conjecture between the scientific discourse on automation and the way in which this specific theme had been appropriated and developed in narrative form. The fictional accounts of machines are in turn re-appropriated at a different stage along

42 Eliot 1879, 254-255.

the evolution of said discourse: if Babbage staunchly required of the sciences to oppose, or at least to spare with the visions of poets and the mockeries of satirists, Wiener, a century later, ended up acquiring those very same fictional scenarios as necessary elements in the narration that science needs to make of itself. This may become true of scientific discourse especially when it stops evaluating its problems only according to the categories of precision, efficiency and reason, but embracing the moral or social consequences of the problems it occupies itself with, like automation.

After all, a future-oriented impulse – a ‘utopian’ impulse – was already present in the XIX century discourse that traversed the works of Babbage, as well as Marx. If we build utopia, or generally if we anticipate the future, we do so fictionally, whether through economic speculation or through literary representation, whether by devising calculating and even intelligent machines or by imagining what such machines may turn out to be in the unforeseeable, almost present, future.

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