What is it to invent a machine? Technological invention has become such a common and familiar feature of modern culture and everyday life that one almost automatically responds as if this were a purely technical question relating to the physical construction of one or another ingenious mechanical device. But there is a more primary, philosophical dimension to that question which has informed modern discourse on technology from its very beginnings: a temporal dimension. If you revisit one of the founding texts of scientific and technological modernity – the Discourse on Method of René Descartes – you will find ‘the machine’ being figured as an originary principle, and vehicle, for a visionary program of scientific and technological innovation and change designed to reach potentially into every area of western culture [3: pp. 28-9]. When you look closely at the figuring of ‘the machine’ in that text, however – as I propose to do in this paper – questions begin to arise around the relation of technology and temporal discourse which have received surprisingly little academic attention, given the increasing prominence, and ubiquity, of references and allusions to machine technologies in the temporal discourses not only of the physical sciences, but the arts and humanities, and
popular culture as well.

In the accompanying Powerpoint presentation, I provide a historical overview of some such relationships.

Firstly, a word about the Discourse itself.

1. Philosophy or fable?

As its full title suggests – “Discourse on the method of properly conducting one’s reason and of seeking the truth in the sciences” – the Discourse on Method is a work of the highest philosophical ambition, and stands out as a text of special significance because it was conceived and written for a broad public of educated readers [3: p. 12]. Published in 1637, it outlined a radical proposal for the reinvention of western science and technology from first principles, and won immediate acclaim for the boldness of its ideas and the self-confidence of its rhetoric [10: p. 632]. It remains a philosophical work of enduring influence and appeal – and, consequently, a subject of continual reinterpretation and critique.

What, then, to make of the following passage, buried in its introduction, where the author quietly informs his readers that what they can expect to find therein is not a formal philosophical treatise, but a text of a rather different kind:

[P]utting forward this essay as nothing more than an historical account, or, if you prefer, a fable ... I hope it will be useful for some without being harmful to many, and that my frankness will be well received by all. [3: pp. 28-29]

Why a ‘fable’; indeed, ‘nothing more’ than a fable [ne proposant cet écrit que comme une histoire, ou, si vous l’ aimez mieux, que comme une fable]?

No justification or explanation is offered for this remark, so it would be easy to dismiss it as a light-hearted oratorical gesture of no significance. But in several preceding sentences the author makes it abundantly clear that his characterisation of The Discourse as a fable ought be taken at face value. “I consider myself very fortunate,” he writes, “to have found myself, from my early youth, on certain paths which led me to considerations and maxims out of which I have constructed” the Method named in the book’s title, and “I shall be very happy to reveal in this discourse the paths I have taken and to present my life as in a picture, so that each may judge it” on that basis alone [3: p. 28].

Rather than an abstract theoretical exposition of this ‘method’, what Descartes is offering his readers is a narrative informed by the old literary topos of ‘the search’, or ‘the quest’: an autobiographical account of a personal “search for truth” which led him to discover that method in the first place. This clearly is a deliberate strategy on Descartes’ part, and what it means, in effect, is that the entire philosophical discourse presented in his text is to be inscribed within this ‘fable’. In specifically characterising it as a ‘historical account’, Descartes draws attention to a significant feature of that text which is routinely overlooked in received accounts of ‘Cartesian philosophy’: its profoundly temporal
character. For what will emerge, as the Discourse takes shape, is a before-and-after story of search and discovery around two theoretical principles on which Descartes’ distinctly dualistic philosophical system would come to be founded: the cogito, or so-called ‘thinking thing’, which underwrites his metaphysics of human subjectivity; and ‘the machine’, his physics of the material world. As the narrative develops, its horizons will be expanded dramatically, as what begins as the story of a private and personal quest opens out into a much larger cultural, and indeed civilisational fable of scientific and technological change informed by those two principles.

Critical insight into Descartes’ strategy here can be drawn from what might seem an unlikely source: rhetoric. In an Aristotelian tradition of philosophical rhetoric, revived recently by Ernesto Grassi and others, rhetoric is defined as the theory of argumentation, and in particular, the theory of inventive argumentation [9: p. 17]. In this tradition, rhetoric is understood to be the ‘counterpart’ of philosophy, not its ‘enemy’ [1: 1356a], and provides a theoretical understanding of the argumentatively ‘inventive’ function of so-called ‘literary’ figures and forms in discourse on the ‘first principles’ of philosophical or scientific inquiry. A ‘principle’, rhetorically understood, is a premiss or ‘starting point’ for an argument – that which is posited ‘first’ as a ‘ground’ or ‘foundation’ for subsequent discourse – which necessarily means, as Grassi argues, that since it cannot itself be logically derived from any more prior principle, it must be invented through aesthetic modes of argumentation – via metaphors, images, or narratives which reveal or disclose it directly to the senses [6: pp. 27-8]. It’s in this sense that Aristotle describes rhetorical invention as “the path to the principles of all inquiries” [2: 101b4]. The word ‘theory’, notably, itself derives etymologically from the Greek theorein, meaning ‘to see’ [7: p. 20].

The Discourse on Method is clearly open to such rhetorical interpretation in three critical respects: its primary subject is the ‘first principles’ of philosophical and scientific inquiry; it offers an ‘argument’ involving reasoning ‘to’ first principles, not ‘from’ them; and it utilises an ‘extra-rational’ mode of discourse, a ‘fable’, as the medium through which those principles are to be ‘revealed’ in the text. In a further echo of Aristotelian rhetoric, the

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1 Grassi specifically examines the inventive function of ‘the fable’ in philosophical discourse in two of his texts [cf. 6: pp. 27-8; 5: p. 23ff.]
same French verb – *inventer* – is used throughout the *Discourse*, for ‘to discover’ as well as ‘to invent’ [8].

2. The *Discourse* as a ‘temporal’ discourse

Of critical interest for this paper is the temporal aspect of Descartes’ fable; and in particular, the figuring of ‘the machine’ within it. For clearly what is presented through this fable is an *argument* which is figured, framed, articulated, and ordered in explicitly temporal terms, via a narrative of search-and-discovery.

The object of that search, as explicitly stated in the text, are “the principles or first causes of everything which is, or which may be, in the world” [3: p.80]. In figuring these principles as timeless universals, subsisting beyond the sensible element of human existence and experience, Descartes follows Western philosophical tradition, characterising them metaphorically as ‘firm and solid’, like ‘rock or clay’ rather than ‘shifting ground and sand’, or the ‘foundations’ of a building [3: pp. 31, 50, 38].

More problematically however, he also figures those principles in explicitly *temporal* terms: as ‘first’ principles which he, Descartes, is seeking actively to originate; that is, to invent for a ‘first’ time, within the temporal element of human existence, as principles which would enable him, as the progenitor of a radically new scientific and technological order, “to begin afresh from the foundations”, and “build on a foundation which is wholly my own” [3: pp. 95, 38].

This profoundly temporal understanding of invention as *origination* is dramatised, and indeed mythologised in his fable as a search for principles which would make possible a sharp transition from the ‘uncertainty’, ‘inconstancy’ and ‘chaos’ of received tradition, to the ‘certainty’, ‘stability’ and ‘order’ of a totally new world [3: pp. 33-34, 32]. In setting out on his path of philosophical discovery, Descartes writes, he

… resolved to leave all these people to their disputes, and to speak only of what would happen in a new world, if God were now to create, somewhat in imaginary space … a chaos as disordered as the poets could ever imagine, and afterwards did no more than to lend his usual preserving action to nature, and let her act according to his established laws [3: p. 62].

In this remarkable passage the invention of theoretical principles is likened to the ‘creation’ of an entirely ‘new world’, out of pure ‘chaos’, in an ‘imaginary space’ [*les espaces imaginaires*] situated seemingly beyond historical time, and indeed time itself. *The Time Machine* of H.G.Wells, it would seem, was already on its way.

So how might ‘the machine’ figure in this scenario?

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2 For example, the same verb is used when Descartes describes ‘Sparta’s laws’ being ‘devised’ [*inventées*] (bk 2 para 1), machines being ‘invented’ [*inventées* again] (bk 5 para 9), a geometer who would ‘discover’ [*inventât*] a new demonstration (bk 4 para 8), and a learner who ‘discovers’ [*l’invente*] something (bk 6 para 6). Citations drawn from a bilingual edition of the *Discourse on the Method* by George Heffernan [8]
3. ‘The machine’ as epistemological principle

When the figure of ‘the machine’ is introduced into Descartes’ fable, in the following passage from Book 5, it is invested with the status of a fundamental theoretical principle within a single sentence, and by means of a single rhetorical device – a metaphor: ‘the body as a machine’. Descartes simply posits as a self-evident truth that human bodies “can move without the will conducting them,” and proclaims that

This will not appear in any way strange to those who, knowing how many different automata or moving machines the industry of man can devise, using only a very few pieces ... will consider this body as a machine, which, having been made by the hands of God, is incomparably better ordered, and has in it more admirable movements than any of those which can be invented by men [3: p. 73].

He then moves on immediately, without explanation or justification, to expound a radical vision for the future reconstruction of all the physical sciences upon this epistemological foundation which has been conjured seemingly out of thin air.

A striking feature of Descartes’ rhetorical strategy here is its radical ‘atemporality’. In sharp contrast with the means employed earlier in the Discourse for the invention of ‘the cogito’ as founding principle for his metaphysics – a painstaking exercise in self-critical reasoning, governed by a methodological principle of radical doubt, consuming several whole chapters – ‘the machine’ is installed as principle via the most abbreviated form of argumentation possible, a direct appeal to self-evidence: a blunt statement that the body-as-machine proposition “will not appear in any way strange” to those equipped with a working knowledge of automata. Introduced into the text ex nihilo, that statement is immediately absolved of any obligation to submit to the conventional rigors of philosophical discussion, debate, reflection, criticism or critique – as if there could not possibly be anything dubious or even problematic about it.

But Descartes’ argument is not as unproblematically self-evident as it might seem, however. For inscribed implicit within this curiously double-negative figure ‘not in any way strange’ is the contrary assertion that for those not equipped with the requisite technological know-how, the body-as-machine claim will indeed appear strange – that is, ‘not in any way’ self-evident. Indeed, Descartes seems to be arguing that it is precisely because of its estrangement from common understanding that the promotion of ‘the machine’ to the status of a timeless universal principle is justified. Yet that estrangement, surely, is itself a product of its very invention as a technological artefact in the first place – as an ‘automaton’ containing an in-
built motive principle as an element of its material construction. To understand the extraordinary physical capabilities of some animals, Descartes writes, is “to discover that although they might do many things as well as, or perhaps better than, any of us,” they “did not act through knowledge, but through the disposition of their organs: for, whereas reason is a universal instrument which can serve on any kind of occasion, these organs need a particular disposition for each particular action” [3: pp. 74-75].

If you look inside Descartes’ metaphor a little more closely however, a temporal element emerges which clearly plays an originary role in the invention of ‘the machine’ as epistemological principle. For ‘the machine’ is figured in the first instance as an artefact whose very condition of existence is temporal: a ‘device’ which cannot exist in the first place unless it has been ‘made’, through an act of technological fabrication. But no critical consideration is given to the temporal element of technological activity in Descartes’ fable of epistemological invention.

4. ‘The machine’ as technological principle

Issues of a similar kind, but more practical import, arise a few pages further on in The Discourse, where ‘the machine’ is promoted no less rapidly to the status of founding principle for a technological revolution in industry and culture. Envisioning the future development of a “practical philosophy” which would make possible “the invention of an infinity of devices by which we might enjoy, without any effort, the fruits of the earth and all its commodities”, Descartes declares that by such means we will assuredly “make ourselves, as it were, masters and possessors of nature” [3: p. 78].

A radical ‘atemporality’ is once again the defining feature of Descartes’ rhetoric; ‘the machine’ is promoted instantly to the status of a universal principle, and absolved at once from questioning or critique. At the same time, however, it is also figured as a fundamentally temporal entity in three senses:

1. a technological ‘invention’, an artefact manufactured by human beings within the temporal element of their existence and experience;
2. an automated mechanical ‘device’ equipped with a temporally productive capability of its own – an inbuilt ‘principle of movement’; and
3. an invention invested with a constitutive role in human subjectivity itself, for ‘the machine’ is presented not simply as an instrument for human mastery of nature, but as the very means through which humans would become masters in the first place – ‘make ourselves’ masters, as the text explicitly states.

Yet no account is offered of the temporality of technological invention in Descartes’ fable: ‘the machine’ is presented as a strangely detemporalised entity, paradoxically isolated from the lived experience of its human inventors and operators, as from nature itself.

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3 This highlights a critical aspect of Descartes’ mechanistic epistemology which is often misunderstood: it applies not to ‘the universe’ as a whole, but strictly to particular ‘bodies’, construed theoretically as technological ‘inventions’. This point is stressed by one perceptive commentator, Otto Mayr, who notes that analogies to clockwork and automata, while rigorously and consistently applied to the bodies of animals and humans throughout Descartes’ writings, are “conspicuously absent” from his astronomy, despite the great popularity of the ‘world-machine’ metaphor at his time. [c.f., 11: pp. 63-4]
And no consideration is given to the potential consequences of a plan to flood both natural and cultural environments with a veritable ‘infinity’ of devices, each designed to function in isolation from the others.

This profoundly ambivalent figuring of ‘the machine’ as at once a temporal and atemporal entity raises in a particularly acute and critical way that question around which Descartes’ fable of epistemological and technological invention turns: What is it to invent a machine in the first place? Despite its fundamental importance to Descartes’ philosophical enterprise, that question is nowhere posed in the Discourse. He simply proceeds as if the answer may be presumed somehow already to be known – indubitably and absolutely. As I’ve attempted to demonstrate however, there is presupposed in Descartes’ rhetoric a broader temporal discourse of innovation, origination, production, reproduction, alteration and change in which the figure of ‘the machine’ is invested with an inventive, but deeply problematic role which has been absolved from critical consideration in the philosophical ‘discourse’ founded upon it.

Hence there is opened up in the Discourse on Method a problematics around technology and temporality whose reverberations can subsequently be felt in many writings around technological change in modern literature, philosophy, and popular culture – from the writings of Jean-Jacques Rousseau in the eighteenth century to present-day public debates on climate change – but which has received little sustained attention academically until relatively recently, with the work of Bernard Stiegler and others [13]. What I’ve attempted to do in this paper is offer a critical insight into that problematics from what might seem an unlikely source – rhetoric. Despite its ancient vintage, and its relative marginalisation in the modern academy, rhetoric offers a theory of invention which is at once the oldest and the most modern: it was in Aristotle’s text On Rhetoric that the word ‘technology’ [technologos] made its first recorded entry into western culture [12: pp. 128-132]. To invent a machine, in a rhetorical understanding, is perhaps first and foremost to invent an argument – an argument of a fundamentally temporal order in that it entails the invention of a productive principle from which may be derived not just particular end-products, but various after-effects and consequences within pre-existing natural, cultural, and technological environments. In the Discourse on Method of René Descartes, as I’ve tried to show, that argument assumes a characteristically modern form which is as problematic as it is inspirational, and surely warrants further critical examination.

References

4. Stiegler writes: “at its very origin and up until now, philosophy has repressed technics as an object of thought. Technics is the unthought … The critical question of the relationship between technics and time is assuming its place on the public stage.” [14: p. ix; p.14]


