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The Non-Orientability of the Mechanical in  
Thomas Carlyle's Early Essays

by

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# The Non-Orientability of the Mechanical in Thomas Carlyle's Early Essays \*

Alessia Pannese \*\*

*Thomas Carlyle's early writings epitomise the critical stance towards the utilitarian culture of the age, which Carlyle condemns for glorifying the 'outward', i.e. the physical world of machinery, governed by automaticity and mechanical principles, at the expense of the 'inward', i.e. the spiritual realm of the human individual, whose hallmarks are instead free volition and agency, and to which automaticity and mechanical principles are foreign. By the 19<sup>th</sup> century, however, the distinction between human and machine was becoming increasingly problematic. Drawing from Thomas Carlyle's essays "Signs of the Times" (1829) and "Characteristics" (1831), and from earlier physiological texts with which they engage—chiefly David Hartley's Observations on Man (1749)—, I explore the tension between the understanding of the human in terms of free will and agency, and the physiological evidence that human thought and behaviour are partly automatic. I argue that the understanding of human nature as partly automatic destabilises Carlyle's categories of 'outward' and 'inward' by disrupting their underlying assumption of a clear boundary between man and machine based on their functioning (the latter) or not (the former) according to mechanical principles, entailing instead a fluid connotation whereby the 'mechanical' is defined as much by identification with the 'human' as in opposition to it. I conclude by offering a geometric illustration of the destabilised inward-outward boundary through the metaphor of non-orientable surfaces (e.g. Möbius strip and Klein bottle), in which it is impossible to distinguish an inside and an outside.*

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## 1. The equation

In 1829, British historian and cultural critic Thomas Carlyle wrote:

This condition of the two great departments of knowledge; the outward, cultivated exclusively on mechanical principles—the inward finally abandoned, because, cultivated on such principles, it is found to yield no results—sufficiently indicates the intellectual bias of our time, its all-pervading disposition towards that line of enquiry. In fact, an inward persuasion has long been diffusing itself, and now and then even comes to utterance, that except the external, there are no true sciences; that to the inward world (if there be any) our only conceivable road is through the outward; that, in short, what cannot be investigated and understood mechanically, cannot be investigated and understood at all.<sup>1</sup>

The last point is echoed two years later as: “what he can altogether know and comprehend, is essentially the mechanical”<sup>2</sup>.

Excerpted from Carlyle’s two early essays, respectively “Signs of the Times” (1829) and “Characteristics” (1831)—both originally published anonymously in the *Edinburgh Review*, and both purporting to be literary reviews themselves<sup>3</sup>—these passages parade Carlyle’s diffidence towards a perceived “intellectual bias” of an age which “practises the great art of adapting means to ends”<sup>4</sup>, and to which both essays at large move an excoriating critique. Anticipating later

<sup>1</sup> [Thomas Carlyle], “Signs of the Times”, *The Edinburgh Review* 49, no. 98 (June 1829), 439-59 (446-47).

<sup>2</sup> [Thomas Carlyle], “Characteristics”, *The Edinburgh Review* 54 (December 1831), 351-83 (353).

<sup>3</sup> The former of Rev. Edward Irving’s *Anticipation, The Rise, Progress, and Present State of Public Opinion in Great Britain*, and *The Last Days* (London, 1829); the latter of Thomas Hope’s *An Essay on the Origin and Prospects of Man* (London, 1831) and Friedrich von Schlegel’s *Philosophische Vorlesungen* (Dresden, 1828).

<sup>4</sup> [Carlyle], “Signs of the Times”, 441-42.

major critical voices against utilitarianism—e.g. Matthew Arnold’s attack on middle-class philistinism<sup>1</sup>, and John H. Newman’s denunciation of the university as an increasingly professionalising venue, as opposed to an institution promoting education for its own sake<sup>2</sup>,—Carlyle censures the utilitarian emphasis on technology and mechanisation, preconising instead a shift in focus towards the human individual and its intellectual and spiritual development. Carlyle’s condemnation of utilitarianism, however, is framed in a language that seems to reveal an understanding of reality not fundamentally dissimilar to the one underlying utilitarian positions: one in which the “mechanical” functions as the distinguishing feature between the “outward” and the “inward”, where the former is equated with the physical world of machinery, governed by automaticity and mechanical principles, and therefore suitable to be studied, known, and comprehended; the latter with the spiritual realm of the human individual, whose hallmarks are instead arbitrary processes of free volition and agency, and to which automaticity and mechanical principles are supposedly foreign, making it inaccessible to investigation and understanding.

Alongside the excerpt quoted above, several other instances in Carlyle’s two essays assume equivalence between the mechanical, and the outward, visible, material. The “skill in Mechanism” is defined as the skill of managing “external things”<sup>3</sup>, and men are said to have “lost their belief in the Invisible, and believe, and hope, and work only in the Visible”.<sup>4</sup> The link between the mechanical and the visible is mediated by the physical nature of the material world—“the science of the age (...) is physical (...), and, in all shapes, mechanical”<sup>5</sup>; “We are Giants in physical power”<sup>6</sup>; “This faith in Mechanism, in the all-importance of physical things”<sup>7</sup>—, to which Carlyle juxtaposes the (in his view regrettably increasingly neglected) metaphysical, spiritual realm: “From Locke’s time downwards, our

<sup>1</sup> See Matthew Arnold, *Essays in Criticism* (London and Cambridge: MacMillan and Co., 1865); and Matthew Arnold, *Culture and Anarchy* (originally published in *Cornhill Magazine*, 1867/1868) (London: Smith, Elder and Co., 1869).

<sup>2</sup> John H. Newman, *The Idea of a University: Defined and Illustrated in Nine Discourses Delivered to the Catholics of Dublin* (delivered 1852), fifth edn (London: Pickering and Co., 1881).

<sup>3</sup> [Carlyle], “Signs of the Times”, 452.

<sup>4</sup> *Ibid.*

<sup>5</sup> *Ibid.*, 445.

<sup>6</sup> *Ibid.*, 453.

<sup>7</sup> *Ibid.*, 457.

whole Metaphysics have been physical; not a spiritual Philosophy, but a material one”<sup>1</sup>; “It is no longer the moral, religious, spiritual condition of the people that is our concern, but their physical, practical, economical condition”<sup>2</sup>; and again: “the Metaphysical and Moral Sciences are falling into decay, while the Physical are engrossing, every day, more respect and attention”.<sup>3</sup> Carlyle’s denunciation that “only the material (...) is important to us”<sup>4</sup> extends to beauty and truth, which he views as having been displaced by “some brutal image of Strength (...) [whereby] We praise a work, not as ‘true’, but as ‘strong’; [as having] ‘affected’ us.”<sup>5</sup> Likewise, spiritual and moral pursuits have given way to physical pursuits, i.e. “tangible, material considerations [about] Profit [and] Power”.<sup>6</sup>

Beside their scathing overtones<sup>7</sup>, all these instances seem to indicate that whilst the outward, external, material world functions mechanically (i.e. according to mechanical principles, akin to machinery), the inward, spiritual world of the human individual does not. In other words, there seems to be an implicit assumption whereby Carlyle’s category of the mechanical does not apply to the sphere of the human. My argument here is that, if it is real, Carlyle’s assumption of equivalence between mechanical and outward, and, by implication, of non-applicability of mechanical principles to the human, is—and by Carlyle’s time had already become—problematic.

I will advance my argument by first presenting evidence that challenges the equation of the mechanical with the outer, physical world of machinery, in opposition to the inner, spiritual realm of the human, along various axes; then by offering a revised account of the “mechanical” that reflects said evidence.

<sup>1</sup> Ibid., 445.

<sup>2</sup> Ibid., 448.

<sup>3</sup> Ibid., 444.

<sup>4</sup> Ibid., 453.

<sup>5</sup> Ibid., 456.

<sup>6</sup> Ibid.

<sup>7</sup> Discussing Carlyle’s critique of utilitarianism is beyond the scope of this study.



## 2. The challenges

The crux of the matter is whether the mechanical can plausibly be taken as a hallmark of the physical automatic world of machinery, as opposed to the immaterial arbitrary world of human thought and behaviour; in other words, whether, as Carlyle seems to imply, the border between the mechanical and the non-mechanical aligns itself and is coextensive with the border between the machine and the human. I suggest it is not.

An intuitively safe distinguishing marker of the human from the machine is the ability to reflect upon one's self and exert volition through deliberate intention and action, as opposed to deterministic automatism. Although the notion of consciousness and volition as human indicators—as opposed to automaticity and determinism as defining machinery—is consistent with the Cartesian outlook, it is not necessarily universally applicable, and must therefore be historicised. By Carlyle's time, for example, drawing the distinction between human and machine along the axis of consciousness and volition was beginning to pose challenges.

One reason why the distinction between human and machine must be historicised is that it would be problematic to assume that machinery was necessarily understood as lacking freedom and agency, as machines have not always been associated with automaticity and involuntariness. In the early 19<sup>th</sup> century, for example, the rise of industrialisation had brought about speculations about the possibility that machines might develop consciousness and agency. Industrial machines were in fact often described as possessing life-like qualities and exerting agency through controlling, dominating, and alienating the factory worker.<sup>1</sup> A few years after Carlyle's early essays were published, novelist and critic Samuel Butler observed that “[d]ay by day, (...) the machines

<sup>1</sup> See, for example, the representation of monstrous machinery in the factory chapters of Marx's *Kapital*.

are gaining ground upon us; (...) we are becoming more subservient to them; (...) bound down as slaves to tend them”<sup>1</sup>, and imagined that machines might eventually develop consciousness by Darwinian selection, and be able to reproduce and evolve as a species, and impose themselves as the superior race—“[i]n the course of ages we shall find ourselves the inferior race”<sup>2</sup>—leading to the dystopian prediction that “the time will come when the machines will hold the real supremacy over the world and its inhabitants”.<sup>3</sup>

A second reason why the distinction between man and machine based on volition ought to be historicised and problematised is that eighteenth- and 19<sup>th</sup>-century progress in physiology had made it increasingly clear that the functioning of the human body and mind includes partly automatic mechanisms. At about the time Carlyle published his second early essay, Scottish neurologist Charles Bell, who first articulated the difference between sensory and motor nerves<sup>4</sup>, characterised breathing (in animals with a spinal cord) in terms of “animal machine with alternate dilatation and contraction”.<sup>5</sup> Three years later, English physiologist Marshall Hall advanced his theory of reflex, where action is shown under conditions of no sensation and no volition.<sup>6</sup> The idea that human action may be triggered independently of sensory perception or voluntary motion<sup>7</sup>—hence unconsciously, automatically—presages Darwin’s seemingly oxymoronic notion of “machinery of life”.<sup>8</sup>

<sup>1</sup> [Samuel Butler] (under pseudonym Cellarius), “Darwin Among the Machines”, *The Press*, Christchurch, New Zealand, 13 June 1863, 184.

<sup>2</sup> *Ibid.*, 182.

<sup>3</sup> *Ibid.*, 185.

<sup>4</sup> “Each lateral portion of the spinal marrow contains three tracts or columns: one for voluntary motion, one for sensation, and one for the act of respiration”. Charles Bell, *The Nervous System of the Human Body* (London: Longman, Rees, Orme, Brown, and Green, 1830), 23.

<sup>5</sup> *Ibid.*, 25.

<sup>6</sup> “[W]hen the head is removed from the body, sensation and volition cease, whilst the reflex function (...) alone continue[s]”. Marshall Hall, “On the Reflex Function of the Medulla Oblongata and Medulla Spinalis”, *Philosophical Transactions of the Royal Society of London* 123 (June 1833), 635-65 (663).

<sup>7</sup> “It is distinctly proved, by this series of observations, that the reflex function exists in the medulla independently of the brain; in the medulla oblongata independently of the medulla spinalis; and in the spinal marrow of the anterior extremities, of the posterior extremities, and of the tail, independently of that of each other of these parts, respectively”. *Ibid.*, 650.

<sup>8</sup> Charles Darwin, *On the Origin of Species* (London: John Murray, 1859), 83.

Consciousness and the will were subjects of much consideration within the 19<sup>th</sup>-century discourse, during a period that was engaged in scientific investigation and reassessment of these concepts at large.<sup>1</sup> Carlyle himself explicitly refers to the “deep questions” that the “curious relations of the Voluntary and Conscious to the Involuntary and Unconscious” raised within psychology and physiology.<sup>2</sup> And yet, the relation to consciousness and the will proves to be an especially moot point in Carlyle’s essays, where the mechanical is first (in 1829) taken to be inanimate<sup>3</sup>, then (in 1831) pronounced vital<sup>4</sup> and conscious<sup>5</sup>, but also implicitly held as non-vital.<sup>6</sup> This apparent inconsistency between and within the two essays is crucial for my argument because it suggests that the mechanical is and was (in Carlyle’s time) not a reliable criterion for establishing the boundary between man and machine.



By the second half of the 19<sup>th</sup> century American philosopher and psychologist William James had made it clear that:

Ninety-nine hundredths or, possibly, nine hundred and ninety-nine thousandths of our activity is purely automatic and habitual, (...) so fixed by repetition as almost to be classed as reflex actions. To each sort of impression we have an automatic, ready-made response.<sup>7</sup>

<sup>1</sup> See works by George Eliot and George Henry Lewes.

<sup>2</sup> [Carlyle], “Characteristics”, 358.

<sup>3</sup> “the living artisan is driven from his workshop, to make room for a speedier, inanimate one”. [Carlyle], “Signs of the Times”, 442.

<sup>4</sup> “in all vital things, men distinguish an Artificial and a Natural (...): the Artificial is the (...) mechanical”. [Carlyle], “Characteristics”, 361.

<sup>5</sup> “the man of logic (...) his whole force is mechanical, conscious”. Ibid., 355.

<sup>6</sup> “what is mechanical lies open us; not what is dynamical and has vitality”. Ibid., 354.

<sup>7</sup> William James, *Talks to Teachers on Psychology: And to Students on Some of Life’s Ideals* (New York, NY: Henry Holt, 1899), 65-66.

Challenging the conventional causal understanding of thought as producing action, James also theorised that thought may result from action, as opposed to causing it. According to the James-Lange theory, emotional thoughts, for example, are caused by physiological autonomic (i.e. automatic) bodily responses—and not the other way around, as expressed in the seemingly counterintuitive claim that “we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble, because we are sorry, angry, or fearful”.<sup>1</sup>

Political commentators incorporated the physiological notions of reverse causality between thought and action in their criticism. Walter Bagehot, for example, observed that “no man can *argue* on his knees [as] The same superstitious feeling which keeps him in that physical attitude will keep him in a corresponding mental attitude”.<sup>2</sup> Likewise, political and cultural critics embraced the physiological notion of habit: “It is the dull traditional habit of mankind that guides most men’s actions”—notes Bagehot—as men are moved “as much by what they are used to as by what they choose”.<sup>3</sup> Carlyle appears to have been aware of the power of habit and automaticity on action and thought over fifty years before James put his name on it<sup>4</sup>, when he observed that “Men are grown mechanical in head and in heart, as well as in hand”.<sup>5</sup> Likewise, Carlyle’s stance in both early essays was heavily influenced by eighteenth-century science.



Indeed, the 19<sup>th</sup>-century advances in the understanding of human physiology owed their momentum to 18<sup>th</sup>-century insights on the nature of the hu-

<sup>1</sup> William James, “What is an Emotion?”, *Mind* 34 (1884), 188-205 (190).

<sup>2</sup> Walter Bagehot, *The English Constitution* (reprinted from the *Fortnightly Review*) (London: Chapman and Hall, 1867), 108.

<sup>3</sup> *Ibid.*, 10.

<sup>4</sup> “the same habit regulates, not our modes of action alone, but our modes of thought and feeling”. [Carlyle], “Signs of the Times”, 444. See also “Opinion is at all times doubly related to Action, first as cause, then as effect” (446).

<sup>5</sup> *Ibid.*, 444.

man body and behaviour. About a century before Carlyle's proclamation of the need to rescue the human from the machine, English philosopher David Hartley had published his *Observations on Man* (1749)<sup>1</sup>, where he had applied Newtonian science to human morality. Likening the human person to a "mechanism" amenable to scientific study, Hartley had sought to develop a "science of man" based on the assumption that the body's "component Particles" are "subjected to the same subtle Laws" (i.e. the Newtonian laws) as are all other material entities.<sup>2</sup> Through his "Doctrines of *Vibrations* and *Association*"<sup>3</sup>—the former inspired by Newton, the latter by Locke<sup>4</sup>—, Hartley had examined morality and religion in terms of their consequences and physical causes.<sup>5</sup> Remarkably, Hartley ushered in the prospect that the will itself may be mechanical<sup>6</sup>, as, like every other human action, "results from the previous Circumstances of Body and Mind (...) as other Effects do from their Mechanical Causes".<sup>7</sup> Importantly, the will, in Hartley's view, is mechanical but not automatic.<sup>8</sup>

Hartley distinguishes between mechanical and automatic, positing that something mechanical may be either automatic (depending upon sensation) or voluntary (depending upon ideas).<sup>9</sup> Accordingly, human action, which is mechanical, may be automatic or voluntary.<sup>10</sup> The distinction is notable because, con-

<sup>1</sup> David Hartley, *Observations on Man, his Frame, his Duty, and his Expectations* (London: Printed by S. Richardson for James Leake and Wm. Frederick, 1749)—an integrated account the human being in terms of neurology (i.e. man's "frame"), moral psychology (i.e. man's "duty"), and spirituality (i.e. man's "expectations").

<sup>2</sup> Hartley, *Observations on Man*, 62.

<sup>3</sup> *Ibid.*, 5.

<sup>4</sup> *Ibid.*

<sup>5</sup> *Ibid.*, v and 81.

<sup>6</sup> "all human Actions proceed from Vibrations in the Nerves of the Muscles, and these from others, which are (...) of a mechanical Nature. (...) Since (...) all Desire and Aversion, are (...) generated by Association; i.e. mechanically; it follows that the Will is mechanical also". *Ibid.*, 503.

<sup>7</sup> *Ibid.*, 500.

<sup>8</sup> "The Will appears to be nothing but a Desire or Aversion sufficiently strong to produce an Action that is not automatic". *Ibid.*, 371.

<sup>9</sup> "Of the two Sorts of Motion, viz. automatic and voluntary, the first depends upon Sensation, the last upon Ideas". *Ibid.*, 85.

<sup>10</sup> "The *Motions* of the Body are of two kinds, *automatic* and *voluntary*". *Ibid.*, iii. "The *automatic* Motions are those which arise from the Mechanism of the Body (...) They are called *automatic*, for their Resemblance to the Motions of *Automata*, or Machines, whose Principle of Motion is within themselves". *Ibid.*, iii.

trary to the Cartesian account of “mechanism” as the distinguishing attribute of (non-human) animals, it acknowledges the presence of a non-voluntary aspect within the human person as well. More importantly, Hartley recognises that automaticity applies not only to bodily movements which are automatic in nature (e.g. “the Motions of the Heart, and the peristaltic Motion of the Bowels”<sup>1</sup>—movements which cannot be performed at will), but also to actions which are voluntary in nature (e.g. “Walking, Handling, Speaking”—all potentially controllable by the will), when they are not “attended to, and performed with an express Design”.<sup>2</sup> Crucially, in order to perform a voluntary action without attending to it, one has to have gained full command over it.<sup>3</sup> This makes automaticity an achievement—not a given. Habits imply the will, as they arise as a result of repetition of willed actions.

This notion of habit as acquired through the will paves the way for the possibility of a direct connection between morality and physiology, as (moral) actions leave a physiological footprint which may be scientifically studied. French physiologist and philosopher Pierre Jean Georges Cabanis proposed this theory in his influential treatise *Rapports du physique et du moral de l’homme* (1802), where he sought to establish a unified “science of man”<sup>4</sup>, based on the argument that the study of man’s physical nature produces insight into man’s moral character as well<sup>5</sup>, as moral considerations may “borrow the lights from the study of physical phenomena”.<sup>6</sup> Cabanis supports his stance by pointing out that historically the wisest men cultivated the study of health and disease<sup>7</sup>, and the most successful philosophers tended to be well versed in physiology<sup>8</sup>: Pythago-

<sup>1</sup> Ibid., iv.

<sup>2</sup> Ibid.

<sup>3</sup> Hartley illustrates this point through the example of a child gradually learning to exert control over her actions, until she eventually can perform them without conscious volition.

<sup>4</sup> “la physiologie, l’analyse des idées et la morale, ne sont que les trois branches d’une seule et même science, qui peut s’appeler (...) *la science de l’homme*”. P[ierre] J[ean] G[eorges] Cabanis, *Rapports du physique et du moral de l’homme*, in 2 vols (Paris: Crapart, Caille, and Ravier, 1802; 2<sup>nd</sup> ed. 1805), 7.

<sup>5</sup> “L’étude de l’homme physique est également intéressante pour le médecin et pour le moraliste”. Ibid., vii.

<sup>6</sup> “S’il est ici question de considérations *morales*, c’est par rapport aux lumières qu’elles peuvent emprunter de l’étude des phénomènes *physiques*”. Ibid., xxxviii.

<sup>7</sup> “les hommes qui cultivoient la sagesse (...) étudioient l’homme sain et malade”. Ibid., 11.

<sup>8</sup> “la philosophie rationnelle (...) les hommes qui l’ont cultivée avec le plus de succès, étoient

ras<sup>1</sup>, Democritus<sup>2</sup>, Hippocrates<sup>3</sup>, Aristotle<sup>4</sup>, and, more recently, Descartes<sup>5</sup>, and Locke<sup>6</sup>, have all, each in their own way, understood the tight relation between man's physical and moral qualities, as well as the fruitfulness of studying them holistically.

The idea that there be a direct connection between morality and physiology was to find resonance in 19<sup>th</sup>-century political theory: "it is the action of the will that causes the unconscious habit; it is the continual effort of the beginning that creates the hoarded energy of the end; (...) Here physical causes do not create the moral, but moral create the physical".<sup>7</sup> Bagehot's observations exalt the will by celebrating its absence (the will achieves its goal precisely when it is no longer needed, and habits can take over), and, in the parallel between the "action of the will" and the "silent toil" transmitted across generations, will and habit become the bridge between physiology and politics. The reason why "an old constitution like that of England" works well, and "yesterday's institutions are by far the best for to-day (...) the most ready, the most influential, the most easy to get obeyed"<sup>8</sup>, can therefore be traced back to physiological mechanisms: man's natural inclination towards "sleepy" and "dull" habits.<sup>9</sup>

Carlyle refers to Hartley's and Cabanis's work with disparaging mockery:

nobody now cares about (...) Hartley's, Darwin's, or Priestley's contemporaneous doings in England. Hartley's vibrations and vibratiuncles one would think were material and mechanical enough; but our continental neighbours have gone still farther. One of

presque tous versés dans la physiologie". Ibid., 10.

<sup>1</sup> "[Pythagore] voulut soumettre les phénomènes de la vie à des formules mécaniques". Ibid., 16.

<sup>2</sup> "Démocrite paroît avoir senti mieux encore les étroites connexions de l'état physique et de l'état moral". Ibid., 22.

<sup>3</sup> "[L]a médecine et la philosophie, fondues ensemble dans ses écrits, y sont absolument inséparables". Ibid.

<sup>4</sup> "[C]'est dans l'étude des faits physiques, qu'Aristote avoit (...) puisé (...) sa métaphysique et sa morale". Ibid., 32.

<sup>5</sup> "[Descartes] passa une partie de sa vie à disséquer. Il croyoit que le secret de la pensée étoit caché dans l'organisation des nerfs et du cerveau". Ibid., 36.

<sup>6</sup> "Locke étoit médecin; et c'est par l'étude de l'homme physique, qu'il avoit préludé à ses découvertes dans la métaphysique, la morale et l'art social". Ibid., 38.

<sup>7</sup> Walter Bagehot, *Physics and politics* (New York, NY: D. Appleton, 1873), p. 11.

<sup>8</sup> Bagehot, *The English constitution*, 10.

<sup>9</sup> Ibid.

their philosophers has lately discovered, that “as the liver secretes bile, so does the brain secrete thought”; which astonishing discovery Dr Cahanis [*sic*], more lately still, in his *Rapports du Physique et du Morale de l’Homme*, has pushed into minutest developments [*sic*].<sup>1</sup> The metaphysical philosophy of this last enquirer is certainly no shadowy or unsubstantial one. He fairly lays open our moral structure with his dissecting knives and real metal probes; and exhibits it to the inspection of mankind (...). We have the greatest admiration for this learned doctor: with what scientific stoicism he walks through the land of wonders, unwondering (...).<sup>2</sup>

Much of the work that Carlyle so ridicules, however, left its mark on him. Echoes of Hartley’s argument that the mechanical nature of the human body and mind renders them suitable for scientific investigation<sup>3</sup> appear in Carlyle’s critique of the “intellectual bias of our time”, according to which only what can be studied and understood mechanically can be studied and understood at all.<sup>4</sup> Similarly, Hartley’s theory of the body as mechanical system endowed with an inherent natural tendency to heal itself<sup>5</sup> resonates in Carlyle’s view of health as an inherently automatic and unconscious state<sup>6</sup>: “the sign of health is Unconsciousness”<sup>7</sup>; “The healthy know not their health, but only the sick”.<sup>8</sup> And

<sup>1</sup> Cf. “la pensée, qui se produit dans le cerveau, ne sauroit exister quand cet organe manque”, and: “Pour se faire une idée juste des opérations dont résulte la pensée, il faut considérer le cerveau comme un organe particulier, destiné spécialement à la produire; de même que l’estomac et les intestins à opérer la digestion, le foie à filtrer la bile”; as well as: “Nous concluons (...) que le cerveau digère en quelque sorte les impressions; qu’il fait organiquement la sécrétion de la pensée”. Cabanis, *Rapports du physique et du moral de l’homme*, 152, 152-53, and 154, respectively.

<sup>2</sup> [Carlyle], “Signs of the Times”, 446.

<sup>3</sup> “And all the Evidences for the mechanical Nature of the Body or Mind are so many Encouragements to study them faithfully and diligently, since what is mechanical *may* both be understood and remedied”. Hartley, *Observations on Man, his Frame, his Duty, and his Expectations*, 267.

<sup>4</sup> [Carlyle], “Signs of the Times”, 446-47.

<sup>5</sup> “[A]ll the natural Functions tend to the Welfare of the Body, so there is a remarkable Tendency in all Disorders of the Body to rectify themselves”. Hartley, *Observations on Man, his Frame, his Duty, and his Expectations*, 266. These tendencies are subject to the “Laws of Mechanism”, as they show the “Traces of Mechanism” (267).

<sup>6</sup> “In the Body (...) the first condition complete health is, that each organ perform its function unconsciously”. [Carlyle], “Characteristics”, 352.

<sup>7</sup> *Ibid.*, 354.

<sup>8</sup> *Ibid.*, 351.

although Cabanis's claim that the moral is "nothing else than the physical"<sup>1</sup> is something which Carlyle may have found hard to swallow, Cabanis's view of man as a "living machine"<sup>2</sup> seems to live on in Carlyle's account of the "vital action" as unconscious mechanism.<sup>3</sup> Hence, like Hartley and Cabanis before him, and James after him, Carlyle thinks highly of the unconscious—be it in performance<sup>4</sup>, in judgement<sup>5</sup>, in private conduct<sup>6</sup>, in politics<sup>7</sup>, or in morality.<sup>8</sup>

From a biological perspective, this extension of the notion of unconscious automaticity to include a large range of human behaviour is radical in that it narrows the gap between human and (non-human) animal as well as between (human and non-human) animal and machinery. From a philosophical perspective, it is even more radical, because it dignifies automaticity by raising it above voluntariness. Hence not only is man partly automatic, but the automatic side may be superior (in the sense of more advanced) to the voluntary one, an idea that seems to foreshadow Darwin's notion of "unconscious selection".<sup>9</sup> Taken farther, this line of argument led to James's quasi-rejection of the non-automatic: "a man's conscious wit and will (...) are aiming at something

<sup>1</sup> "[L]e moral n'est que le physique". Cabanis, *Rapports du physique et du moral de l'homme*, 39-40.

<sup>2</sup> A "machine vivante". Ibid., 141.

<sup>3</sup> "[S]uch is still the wish Nature on our behalf; in all vital action, her manifest purpose and effort is, that we should be unconscious of it, (...) For indeed vital action (...) is (...) a means, not an end; [it is] on the result, that Nature (...) is wont to intrust us with insight and volition. Boundless as is the domain of man, it is but a small fractional proportion of it that he rules with Consciousness and by Forethought". [Carlyle], "Characteristics", 353.

<sup>4</sup> "[A]lways the characteristic of a right performance is a certain spontaneity, an unconsciousness". Ibid., 356.

<sup>5</sup> "Of the Wrong we are always conscious, of the Right never". Ibid.

<sup>6</sup> "The good man is he (...) to whom well-doing is as his natural existence, awakening no astonishment, (...) like a thing of course (...). Self-contemplation, on the other hand, is infallibly the symptom of disease". Ibid.

<sup>7</sup> "[I]n the Body Politic, as in the animal body, the sign of right performance is Unconsciousness". Ibid., 361.

<sup>8</sup> "If in any sphere of Man's Life, then in the moral sphere, as the inmost and most vital of all, it is good that there be wholeness; that there be unconsciousness, which is the evidence of this". Ibid., 357. See also "Thus is true Moral genius (...) ever a secret to itself" (358).

<sup>9</sup> Discussing "unconscious selection", Darwin notes that whereas "[m]an can act only on external and visible characters: nature cares nothing for appearances, except in so far as they may be useful to any being". Darwin, *On the Origin of Species*, 34-37, and 83, respectively. Cf. Carlyle's notion of outward, external, visible world as the only domain suited for investigation and comprehension.

only dimly and inaccurately imagined. Yet [...] his conscious strainings are letting loose subconscious allies”, and it is they, which, in James’s view, are better suited to reach the aimed ideal.<sup>1</sup> Thus the will is necessary and valuable, but it is unable to reach beyond what Arnold would call the “ordinary self”. Only the unconscious (i.e. the automatic, the mechanical) may access the “best self”. In James’s physiological terms this translates as “[l]et one do all in one’s power, and one’s nervous system will do the rest”.<sup>2</sup>

Taken together, these considerations suggest that it would be problematic to assume a simple direct correspondence between the mechanical and the material world of machinery, and between the human and consciousness, agency, and the will. The various lines of evidence of unconscious automaticity in human behaviour point to a misalignment between the axes mechanical-non-mechanical and machine-human, because they indicate that the mechanical cannot be assumed to only apply to or be indicative of machinery.



### 3. The equation, redux

Earlier in the 1829 essay, Carlyle muses:

Were we required to characterise this age of ours by any single epithet, we should be tempted to call it (...) the Mechanical Age. It is the Age of Machinery. (...) There is no end to machinery.<sup>3</sup>

My aim here has been to zoom in on the concepts of mechanical and machinery as presented in Carlyle’s early essays, and examine ways in which they

<sup>1</sup> William James, *Varieties of Religious Experience* (New York, NY: Longmans, 1902), lecture IX.

<sup>2</sup> Ibid.

<sup>3</sup> [Carlyle], “Signs of the Times”, 441-42.

intersected with new perspectives on mechanisation in a newly industrialised culture, as well as with the physiological understanding of human thought and actions as partly automatic. In his analysis of “the two great departments of knowledge”, Carlyle seems to view the mechanical as the distinguishing feature between the machine and the human, as suggested by the equation opposing the “outward”, conceived of as operating according to mechanical principles, and the “inward”, conceived of as operating according to non-mechanical processes. Here I have suggested that this equation of outer with mechanical, and inner with non-mechanical is trans-historically and trans-disciplinarily unstable. Similar to the connotation of the mechanical in Carlyle’s essays, which morphs from actual to metaphorical machine(ry)<sup>1</sup>, gradually moving beyond the outward to increasingly invest the inward<sup>2</sup>, the 19<sup>th</sup>-century understanding of the relation between human and machine changed with the rise of industrialisation and ensuing new perspectives on mechanisation and machine agency, as well as with advances in physiology and resulting discovery of automatic mechanisms governing the human body and behaviour. Whilst 19<sup>th</sup>-century British culture championed the value of individual freedom, 19<sup>th</sup>-century physiology increasingly coalesced around the idea that man is not free, but rather operates according to automatic mechanisms. As automaticity gained admittance into the understanding of human action and thought, a conceptual reconfiguration of the relation between man and machine ensued: the upshot being that man too, after all, is a machine.

Hence, in contrast to Carlyle’s (and contemporaries’) early idea of the mechanical as the distinguishing feature between the “outward”—i.e. the physical world of machinery, governed by automaticity and mechanical principles—, and the “inward”—i.e. the spiritual domain of the human individual, governed by vo-

<sup>1</sup> See, for example, “we have machines for Education (...). Then, we have Religious machines (...) the Bible Society, professing a far higher and heavenly structure, is found, on enquiry, to be altogether an earthly contrivance (...) a very excellent machine for converting the heathen. (...) No individual now hopes to accomplish the poorest enterprise single-handed, and without mechanical aids; (...) In these days (...) ‘to live, signifies to unite with a party, or to make one’. Philosophy, Science, Art, Literature, all depend on machinery”. [Carlyle], “Signs of the Times”, 443. See also “Machine of Society” (447).

<sup>2</sup> See “let us observe how the mechanical genius of our time has diffused itself into quite other provinces. Not the external and physical alone is now managed by machinery, but the internal and spiritual also”. [Carlyle], “Signs of the Times”, 442.

lition and agency, the message emerging from 19<sup>th</sup>-century advances in mechanisation and physiology is that the mechanical is not necessarily automatic, and the human is not necessarily volitional. Rather, the mechanical inhabits a hybrid space vacillating between the external and the internal, the material and the spiritual, the volitional and the automatic, and, ultimately, the human and machinery.

#### 4. Geometric coda

Therefore, unlike what the opening equation seems to imply, the border between the mechanical and the non-mechanical is neither aligned nor coextensive with the borders between the outside and the inside, the automatic and the volitional, and, ultimately, the machine and the human. Instead, by articulating the tension between the understanding of the human as partly free volitional agent, partly deterministic automatic machinery, the discourse emerging from Carlyle's two early essays and the physiological texts with which they engage results in an ambivalent notion whereby the mechanical hovers above both the inward and the outward, unable to serve as the criterion to discriminate between the two.

In differential geometry, a non-orientable surface is one in which it is impossible to define or distinguish an inside and an outside.<sup>1</sup> The Möbius strip<sup>2</sup> and the Klein bottle<sup>3</sup>,—both devised in the latter half of the 19<sup>th</sup> century, hence coeval with the discourse of the mechanical—are exemplars of non-orientable surfaces with no identifiable inner and outer sides.<sup>4</sup> Transposing the concept of non-orientability from geometry to the mechanical discourse as articulated in

<sup>1</sup> Thomas Banchoff, Stephen Lovett, *Differential Geometry of Curves and Surfaces* (Natick, MA: A. K. Peters, 2010), p. 138.

<sup>2</sup> August Ferdinand Möbius, *Gesammelte Werke*, vol. 2, ed. by F. Klein (Leipzig: Hirzel, 1886). The strip is discussed on p. 19-20. Möbius however did not publish his discovery during his lifetime. The strip was also discovered independently by Johann Benedict Listing in the same year (1858).

<sup>3</sup> Felix Klein, "Bemerkungen über den Zusammenhang der Flächen", *Mathematische Annalen* 7 (1874), 549-57.

<sup>4</sup> Alfred Gray, Elsa Abbena, Simon Salamon, "Nonorientable Surfaces", in *Modern Differential Geometry of Curves and Surfaces with Mathematica*, 3<sup>rd</sup> ed. (Boca Raton, FL: Chapman and Hall / CRC, 2006), 331-51.

the examined texts by Carlyle and interlocutors, it is possible to visualise the fluid connotation of the notion of mechanical: like the geometric structure of a non-orientable surface, which makes it impossible to discriminate the inside from the outside, the understanding of human nature as partly deterministic and automatic destabilises Carlyle's categories of 'inward' and 'outward' as defined by their (purportedly) functioning (the latter) or not (the former) according to mechanical principles; like a non-orientable surface, the mechanical partakes of the inward as much as of the outward. The non-orientability of the mechanical, therefore, ultimately disrupts the conceptual boundary between man and machine, as it yields a notion of machine which is defined as much by identification with the human, as in opposition to it.

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