

UCLA

Paroles gelées

Title

Virtual Bodies: Anatomy, Technology, and the Inhuman in Descartes

Permalink

<https://escholarship.org/uc/item/5ww094n7>

Journal

Paroles gelées, 16(1)

ISSN

1094-7264

Author

Judovitz, Dalia

Publication Date

1998

DOI

10.5070/PG7161003078

Peer reviewed

Virtual Bodies: Anatomy, Technology, and the Inhuman in Descartes

Dalia Judovitz

René Descartes's *Discourse on the Method* (1637) marks a major turning point in the representation of the body in the Western tradition. Rather than valorizing the lived body and notions of experience, as his predecessor Michel de Montaigne had done in *The Essays* (1588), Descartes focuses on the body no longer as subject, but as object of knowledge, by redefining it anatomically, technologically, and philosophically.¹ He proceeds from the anatomical redefinition of the body in terms of the circulation of blood, to its technological resynthesis as a machine, only to ascertain its philosophical reduction to a material thing. Descartes's elaboration of the mind-body duality will reinforce the autonomy of the body as a material thing, whose purely objective and mechanical character will mark a fundamental departure from previous humanist traditions. Decontextualized from its wordly fabric, the Cartesian body will cease to function by reference to the human, since its lived, experiential reality will be supplanted through mechanical analogues.²

Descartes's anatomical interpretation of the body in terms of the circulation of blood breaks away from earlier humoral conceptions of the body predominant into the early part of the seventeenth century. Dating back to Galen (Claudius Galenus, 130–200? A.D.), the body's physiological complexion was understood to be governed by the interplay and balance of the four humors: blood, phlegm, choler (yellow bile) and melancholy (black bile). This humoral conception enabled an understanding of the body that was flexible and transitive, since the body's complexion changed depending on the specific combinations and particular mixture of these four fluids.³ The dominance of any particular humor created an imbalance that shifted the individual's complexion from health to disease. This humoral interpretation of

the body marked its embodied character and reflected its analogical relations to nature, as the juncture of the microcosm to the macrocosm. By privileging blood alone as the defining element of the body, one whose circulation and conservation will be based on mechanical principles, Descartes homogenizes the complexion of the human body, while disengaging it from the larger cosmic order.

Descartes's definition of the body is based on two newly emergent systems of reference, that of Harvey's anatomical discovery of the circulation of blood, as well as his own elaboration of mechanical analogies that rely on mathematical principles. As this study will show, Descartes's appropriation of Harvey's model for the circulation of blood will result in the disembodiment of the body as flesh and its reconstitution by analogy as a mechanical device. The mechanical organization of the organism will supplant its organicity, so that the logic of the automaton as a simulacrum will displace the priority of the lived, experiential body. Descartes's prioritization of rational consciousness based on epistemological principles, as elaborated in the *Discourse*, will lead to the disappearance of the lived body as a site for knowledge. His affirmation of the separation of the mind and the body will reflect not merely a metaphysical position, but a technological one, as well, since it will imply the objectification and instrumentalization of the body. This convergence of the anatomical, technological, and metaphysical models will generate a new understanding of the body as a virtual entity, whose mechanical legacy will continue to haunt the destiny of modernity.

From the Circulation of Blood to Bloodless Machines

The soul of all flesh is in the blood... Leviticus 17:14

Descartes's account of the circulation of blood in *The Discourse on Method* (Part 5) is significant because it purports to give a description of the body based on anatomical principles. The effort to valorize blood rather than other bodily humors involves a fundamental shift in the conception of the body. To privilege blood as the defining paradigm of the body is to redefine its symbolic centrality in a society founded on the link be-

tween sanguinity and nomination, such as we find in nobiliary kinship structures based on paternity. Descartes's anatomical account reflects the emergence of a new symbolic order that valorizes blood less as a figure of hereditary transmission, than as a system whose internal circulation and closure defines the self-enclosure of the body. Descartes's selective appropriation of Harvey's model for the circulation of blood will lead to the redefinition of the intelligible essence of the body in terms of its material and mechanical functions.⁴ Harvey's and Descartes's interventions reflect the emergence of a new concept of medicine, one that no longer relies on the "supposed isomorphism between the cosmic order and the equilibrium of the organism" reflected in nature's presumed powers to correct its own disorders.⁵

As opposed to earlier conceptions of blood which did not involve the notion of circulation, Harvey in *De motu cordis et sanguinis* (1628) describes the circulation of blood as a closed circle, where blood is recycled rather than consumed. The blood's enclosure within the pathways of the arterial-venal system establishes it as an autonomous system of exchange within the body. The continual, circular, and regenerative movement of blood insures both the preservation and regeneration of the body.⁶ Moreover, the circulation of blood as a microcosm reflects the movements of the macrocosm, that of the circular motion of celestial bodies. This analogy of circular motion inscribes the circulation of blood within the framework of Aristotelian cosmology and the Renaissance and Baroque world views that sought to establish analogical relations between the microcosm and the macrocosm.⁷ Although Harvey compares the heart, in passing, to various mechanical devices (a pump, fire engine, or hydraulic device) these mechanical analogies still reflect an Aristotelian vitalist view regarding the centrality of the heart, rather than a mechanical worldview. Nonetheless, despite his mechanist tendencies, Descartes does not appropriate Harvey's interpretation of the heart as a pump. He explains the blood's circulation and movement as a result of the generation of heat in the heart, a position which he believes to be different from Aristotle's prior formulation.⁸

What may have interested Descartes in Harvey's anatomical model of the circulation of blood is precisely its autonomous character, as a closed and self-regulating system of exchange, that redefines the physical closure of the body as material fact. The circulation of blood defines the body as a self-enclosed system whose network character provides the pathways for its mechanical functions. The circulation of blood provides a map for the body, it enables its schematic and figurative representation, as a virtual groundplan that autonomizes the logic of the body, dislocating and isolating it from the world as its framework of reference. The capacity of the body to analogically mirror and reflect the macrocosm is disrupted, since Descartes's objectification of the body reduces its capacity to sustain and generate meaning. The body is no longer a mirror of the larger cosmos, it is a mere object whose mechanical logic and material definition reflects his philosophical understanding of nature as inanimate, defined purely as matter, extension, and motion.

The autonomy, centrality, and circuitous nature of the arterial-venal system enables Descartes to provide a physical analogue to the philosophical reflections regarding the centrality and autonomy of the *cogito*. In Part 4 of the *Discourse*, Descartes describes the discovery of the *cogito* as a hypostatic moment based on a fiction of total negation: "And then, examining attentively that which I was, I saw that I could conceive that I had no body, and there was no world nor place where I might be; but yet I could not for all that conceive that I was not" (HR I, 101).⁹ The validity of the *cogito* is founded on the radical denial and elimination of all bodily and material qualities, so as to affirm the identity of thought with a hypothetical form of existence that is no longer grounded in the world. The artificial veracity of the *cogito* supplants in its definition of existence, the material reality of the body and its place in the world. By defining the *cogito* purely "as a substance the whole essence or nature of which is to think," which is independent of "any place" or "material thing," as well as, "entirely distinct from body" (HR I, 101), Descartes removes it from the realm of worldly existence.¹⁰ Thus when the body is brought back later in the *Discourse*, its physical and material reality no longer references the same order of existence as the *cogito*. For the anatomical body described in Part

5 returns not as a living entity but as a dissected corpse, whose mechanical logic is associated with artifice of automata (HR I, 116). The anatomical description of the body in terms of the circulation of blood thus provides a blueprint, a schematic map of the body as an apparatus, whose intelligibility will be governed by material and mechanical laws.

The Automaton as a Virtual Model

Every metaphysics of man as the protagonist in the natural theatre of creation is embodied in the automaton...

Jean Baudrillard

The analogy of the human body to mechanical devices is not new to the seventeenth century, but goes back to the late Middle Ages. In his treatise on surgery (1306-1320), Henri de Mondeville compares surgery to the mechanical arts, specifically to architecture.¹¹ More importantly, he goes on to define the body as the "instrument of the soul," and he proceeds to dismember this instrument into its constituent parts by analogy to various mechanical devices involved in artisanal production: the lungs are compared to the bellows of a blacksmith, the elbow to a pulley, etc.¹² This apparent instrumentalization of the body, however, preserves its organic character, to the extent that these artisanal analogies imply notions of social organization. Thus Mondeville's account of the anatomical body mirrors in its organization the hierarchical structures and bonds of obligation and debt that define the social body.¹³

Other possible sources for Descartes's analogy of the organism and the machine date back to St. Thomas Aquinas's passing metaphorical comparison of animals and clocks, as well as to Gomez Pereira's claim that animals are machines, lacking any sensitive soul.¹⁴ Descartes's analogy of the human organism to a machine departs from these earlier formulations, in that the Cartesian machine acquires a new network of meanings. It designates an instrument for the transformation of natural forces or an ordered arrangement of parts that can function autonomously. It can also signify a combination of machines of varying degrees of complexity. In Descartes's time the word machine also has an

additional meaning, that of a ploy, ruse or a machination. This latter meaning is implicit in Descartes's use of the machine as a heuristic device, insofar as it functions as the insignia of human ingenuity in its capacity to manipulate nature and deploy artifice.¹⁵ For the machine in Descartes's works is not merely a technical and mechanical analogue of nature, rather, its marvelous, quasi-artistic character attests to the erosion of the distinctions between nature and art. It represents an usurpation of the Aristotelian interpretation of the *organon* that designates a functional part of the animal, since this notion of functionality is expanded by erasing distinctions between organization and fabrication.¹⁶ The Cartesian machine results from the dismemberment of the natural body and its re-synthesis, manipulation, and control according to the dictates of a rational model.

In his *Treatise on Man* (written during 1629–33, alongside the *Discourse* and the *World* and published posthumously in 1662), Descartes does not speak directly of man. Rather, when speaking of men he refers to "fictional men," hypothetical analogues intended to cast light on "real men" in the same way that the axiomatic "new world" in the *World* is invoked to illuminate the nature of the "real world."¹⁷ This ghosting and doubling of the human, by positing the priority of a fictional hypothesis in order to elucidate the real, emerges as a strategy of virtualization that enables Descartes to speak of the body not as a lived entity, but as a disembodied technical and mechanical thing. For what is presented initially as a mere tool for conceptualization, the "fictional men" of the *Treatise* or the "new world" of the *World*, becomes the theoretical prototype which will dictate what can be known about "real men" or the "real world." Commenting on the *Treatise*, Canguilhem underlines the deception that Descartes's theory effectuates, since the analogy of the organism to the machine ignores the concrete existence of the lived body in order to substitute for it a rational reconstruction:

The theory of the animal-machine, would therefore have the same relation to life that a set of axioms has to geometry, that is, nothing more than a rational reconstruction. Thus the theory operates by deception: it pretends to ignore the concrete existence of what it must represent, and it denies that what it actu-

ally produces comes only after it has been rationally legitimized.¹⁸

But this rational reconstruction of the organism as a machine is itself a construction based on mathematical geometrical principles. Its legitimacy is derived not from the body that it putatively represents, but from the general mathematization of nature. Its priority relies on the preeminence of epistemology, which as a theory of knowledge must precede all other understanding of the world.¹⁹ Having inaugurated his *Treatise* with the claim that these [fictional] men possess a soul and a body, Descartes in effect separates the two by considering the body alone. Although he briefly mentions the union of the body and the soul, this topic will be left largely untreated. For the *Treatise* will focus on the workings of the body alone, considered not as a real entity, but as a hypothetical, virtual construct:

I suppose the body to be nothing but a statue or machine made of earth, which God forms with the explicit intention of making it as much as possible like us. Thus God not only gives it externally the colours and shapes of all the parts of our bodies, but also places inside it all the parts required to make it walk, eat, breathe, and indeed imitate all those of our functions which can be imagined to proceed from matter and to depend solely on the disposition of our organs.

We see clocks, artificial fountains, mills and such other machines which, although man-made, have the power to move of their own accord in many different ways. But I am supposing this machine to be made by the hand of God, and so I think you may think it capable of a greater variety of movements than I could possibly imagine in it, and of exhibiting more artistry than I could possibly ascribe to it. (PWD I, 99)

Briefly alluding to the Biblical creation of the body as a statue made of earth (*Genesis 2:7*), Descartes rewrites this mythic origin. His description of the human body as a statue and then as a machine undermines its Biblical status as a vessel which is animated by the breath of God. Endowed with the external semblance of the human body, this artificial replica mechanically imitates human functions, such as walking, eating, and breathing. The fact that Descartes includes breathing among these me-

chanical functions alerts us to the secularization of the body insofar as it is removed from the sacred purview of the *pneuma* (breath, or soul).²⁰ This secularization of the body is accompanied by its dehumanization. By describing human functions in purely mechanical terms, as proceeding from matter and depending solely on the disposition of the organs, Descartes dehumanizes them insofar as they cease to refer to the organic reality of the lived body. These mechanical analogues simulate elements involved in the organization of the lived body only to sublimate them technologically. This conflation of the material and mechanical aspects of the organization of the body with its overall definition as an organism reflect Descartes's reassignment of the human to the mind, instead of the body.

Descartes's subsequent mention of man-made machines, such as clocks, artificial fountains and mills that have the power to move of their own accord, serves to underline human technical ingenuity. This allusion to the power of machines as artisanal products is a testament to God's superior productive capacity to fabricate the human body as an infinitely complex mechanical device. According to Descartes's account, God the creator becomes God the fabricator, the consummate artisan, who disposes of infinite resources and artistry. The gesture of divine creation which constitutes the realm of the natural world is now redefined as a form of fabrication that indelibly conflates technique and art. The natural world is thus sublated by the artificial logic of the artifact, just as the body is replaced by its mechanical specter — the automaton. As Canguilhem points out: "The intention behind the construction of an automaton was to copy nature, but in the Cartesian theory of life the automaton serves as an intelligible equivalent of nature. There is no room in Cartesian physics for an ontological difference between nature and art."²¹ The Cartesian automaton does not copy nature, but seeks to gain ascendancy over it by becoming its intelligible equivalent. In so doing, it conflates organization with fabrication, and erases the distinctions between nature and art.²²

But Descartes is not content merely to secularize divine creation by equating it with human technical and artistic ingenuity. Nor is he satisfied with eroding the distinctions between nature and art. He goes a step further by suggesting that nature itself, in

making animals, has created automatons superior to artificial ones: "Since art copies nature, and people can make various automatons which move without thought, it seems reasonable that nature should even produce its own automatons, which are much more splendid than the artificial ones—namely, the animals" (Letter to More, 5 February 1649; PWD III, 366). While Descartes appears to recognize the superior powers of nature, insofar as it produces animals, he considers them to be nothing more than automatons that are more accomplished than man-made artificial ones. In the process, nature as source of animate life is replaced with nature as consummate artisan of mechanical, but hauntingly life-like automatons. Since nature produces animal-machines, its perceived technological and artistic interventions overlap with human artisanal activities. From this perspective, when art copies nature it only reproduces the very processes of production attributed to nature itself. This instrumentalization of nature, as a supposed creator of automatons, removes certain aspects of its animate character, divesting it of life and vital action.²³

When Descartes mentions machines to explain the inner-workings of the organism, he relies on the technical devices of his time: clocks, artificial fountains, and water mills. But in the *Treatise*, Descartes frames his mechanical analogies for the human organism by presenting them in an elaborate garden setting. Here, grottoes and fountains, constitutive elements of landscape architecture, function as marvelous embodiments of the human body represented as a mechanical system:

Similarly you may have observed in the grottoes and fountains of the royal gardens that the mere force with which the water is driven as it emerges from its source is sufficient to move various machines, and even to make them play various instruments or utter certain words depending on the various arrangements of the pipes through which the water is conducted.

Indeed, one may compare the nerves of the machine I am describing with the pipes in the works of these fountains, its muscles and tendons with the various devices and springs which serve to set them into motion, its animal spirits with the

water that drives them, the heart with the source of water, and the cavities of the brain with the storage tanks. Moreover, breathing and other such activities which are normal and natural to this machine, and which depend on the flow of the spirits, are like the movements of a clock or mill, which the normal flow of water can render continuous. (PWD I, 100–101)

If God created man in the garden of Eden, Descartes takes the marvelous artifice of the gardens of his time as a paradigm for the human body.²⁴ Instead of simply describing the body in mechanical terms as he has done earlier, he now stages its appearance as the unfolding scenography of a garden landscape. The mechanical complexity that underlines Descartes's description of the human body is represented as a veritable feat of landscape architecture and engineering, a complex system that weaves into its conceptual fabric various kinds of machines, whose structural and hydraulic principles ensure continuous motion. The human body is represented as a composite of various technical devices, parts of it operating like springs and others operating like channels and storage tanks, that is, conduits for the flow, pressure and circulation of blood and the animal spirits.

What is notable in Descartes's discussion is the fact that the system for the circulation of blood also doubles as the carrier of animal spirits. The animal spirits represent the most rarefied and subtle parts of the blood that are separated through a process of mechanical filtration (based on the smallness of pores) into the pineal gland situated in the brain cavity (PWD I, 100).²⁵ These minute corpuscles "cease to have the form of blood," since they attain a virtual almost immaterial status. Their subtlety or fineness is such that they take on the character of a "very fine wind" or rather a "very lively and pure flame" (PWD, I, 100). Descartes also makes an analogy between the nerves and the system of pipes underlying a garden. He models the nervous system on the arterial-venal model suggesting that neural circulation follows a hydraulic model involving tiny doors or valves placed in nerves (PWD I, 107). The nerves are animated by the passage of animal spirits who have the power to change the shape of muscles (PWD I, 100). Descartes thus mechanizes the nervous system by automating its functions, in order to explain its physiological processes in terms of the activity of the animal spirits. The inge-

nity of the Cartesian model for the human body lies in its conception of hydraulic circuitry that simultaneously accounts both for the circulatory and the nervous system.

Descartes pursues his analogy of the human body with the gardens of his time, comparing external objects and their capacity to stimulate sense organs with garden visitors who unwittingly trigger mechanisms that set an elaborate spectacle into motion:

External objects, which by their mere presence stimulate its sense organs and thereby cause them to move in many different ways depending on how the parts of its brain are disposed, are like visitors who enter the grottoes of these fountains and unwittingly cause the movements which take place before their eyes. For they cannot enter without stepping on certain tiles which are so arranged that if, for example they approach a Diana who is bathing they will cause her to hide in the reeds, and if they move forward to pursue her they will cause a Neptune to advance and threaten them with his trident; or if they go in another direction they will cause a sea-monster to emerge and spew water onto their faces; or other such things according to the engineers who made the fountains. (PWD I, 101)

Instead of presenting sense perception in technical terms, Descartes re-stages it as an elaborate spectacle whose theatrical character is intended to illustrate its mechanical underpinnings. The artifice of the hydraulic machine functions here as an analogue for the human, displacing its priority through the display of an illusionism that mimics it. The choreographed movements of these devices triggered by the movements of the spectators suggest not only their autonomous existence, but also the illusion of personality and even psychology, inasmuch as these figures appear to respond and interact. The seemingly autonomous movements of these machines create the illusion of agency, as they mechanically ghost the human.

Descartes's representation of the workings of the human body by means of this scenographic garden display recalls the presentation of the anatomical body made available through the spectacle of display afforded through dissection. In both cases, the human body is rendered invisible insofar as it makes itself available as a display of complex mechanisms composed of spe-

cific mechanical parts and devices.²⁶ For Jean-Claude Beaune, the Cartesian automaton is a theoretical instrument, a virtual model that elides its own intervention as a heuristic device: "Most of all, the automaton is a spectral model, a sort of *theoretical microscope* enabling a 'sighting of depth': the anatomy and the internal movements are *seen* across the corporeal envelope, supposedly negligible, as one would see the wheels of a machine."²⁷ The opacity of the body as a corporeal entity is rendered transparent by the automaton, its spectral and mechanical analogue. Considered from this perspective, the body is no longer the means for the world's disclosure, for its autonomization as a machine supplants its corporeal character by substituting for it an organizational, mechanized logic.

The Specter of the Inhuman

*For I am one of those who deny that man
understands by means of the body...
Descartes*

In the conclusion to his *Treatise on Man*, Descartes returns to his earlier elaboration regarding the relation of bodily parts to their requisite functions by reiterating his materialist and mechanist position: "these functions follow from the mere arrangement of the machine's organs every bit as naturally as the movements of a clock or other automaton follow from the arrangements of its counter-weights and wheels" (PWD I, 108).²⁸ These functions proceed solely from matter and the disposition of the organs understood as the wheels and cogs of a machine. The capacity for movement, that generates the illusion of agency, is based solely on the internal arrangement and disposition of bodily parts and does not require an external principle of animation. As Descartes explains, these organic functions do not necessitate that the machine be conceived by supposing a "vegetative or sensitive soul or other principle of movement and life, apart from its blood and animal spirits" (PWD I, 108).²⁹ Descartes here rejects the medieval conceptions of the soul as vegetative and sensitive entities that animate the body, in order to emphasize the purely material and mechanical nature of the body. According to Stephen Gauk-

roger, Descartes's aim was to show that certain psycho-physiological functions that had already been recognized as corporeal could be accounted for in a manner that did not render matter sentient.³⁰

Ferdinand Alqu   observes that Descartes's rejection of these medieval conceptions of the soul prepares the mechanized body for the reception of the soul, as a unique entity whose sole function will be rational and intellectual.³¹ Descartes's identification of the soul with reason alone goes against the Renaissance vitalistic or animistic interpretation of nature, wherein the soul permeates the universe and is identified with life.³² Earlier in the *Treatise* Descartes notes that "when a *rational soul* is present in this machine it will have as its principal seat the brain, and reside there like the fountain-keeper" (PWD I, 101). The rational soul resides in the mechanized body as the ghost in the machine, the centralized fountain-keeper, sole agent and administrator of the mechanized functions of the body. The immaterial presence of the rational soul that haunts the automated body controls its bodily and material manifestations. As Descartes later explains to Regius (Letter of May 1641): "There is only one *soul* in human beings, the *rational soul*; for no actions can be reckoned human unless they depend on reason" (PWD, III, 182). The rational soul becomes the sole point of reference for the human, for all forms of agency achieve their humanity through their dependence on reason alone. Thus the locus of the human becomes the mind alone defined as consciousness, intellection and volition. The removal of agency from all aspects of the body and its equation with machines will redefine the purview of animality as one which references a nature reduced to artifice and mechanics. For Descartes considers animals to be like clocks, that is, machines governed by the disposition of their organs and not by reason (HR I, 117).³³ Thus the reification of the human soul to a purely rational entity accompanied by the total mechanization of the corporeal body runs the risk of a materialist reduction, of the evacuation of all spiritual elements, since they may be perceived purely as effects engendered through material causes. Although Descartes defends himself against the accusation that his rejection of the sensitive and vegetative soul will open the way for atheists to deny the presence of a rational soul in the human

body, the rise of materialism in the eighteenth century, as attested by the writings of Julien Offray de La Mettrie and Baron d'Holbach, will prove him otherwise.³⁴

In Part 5 of the *Discourse on the Method*, Descartes recapitulates the mechanical analogies elaborated in his *Treatise on Man* by reaffirming the equation of the body to automata and mobile machines. The perfectability of the human body as a machine brings Descartes back to the question of how to distinguish the human from its mechanical analogues. For if there were such machines that both bore a resemblance to our body and could simulate its actions, then fundamental questions arise regarding the distinction of the human from its inhuman, mechanical body doubles:

On the other hand, if there were machines which bore a resemblance to our body and imitated our actions as far as it was morally possible to do so, we should always have two very certain tests by which to recognize that, for all that, they were not real men. The first is, that they could never use speech or other signs as we do when placing our thoughts on record for the benefit of others....And the second difference is, that although machines can perform certain things as well or perhaps better than any of us can do, they infallibly fall short in others, by the which means we may discover that they did not act from knowledge, but only from the disposition of their organs. (HR I, 116)

In this passage, the machine analogy for the body reveals its troubling implications, insofar as the possibility of the mechanical simulation of the human body raises the specter of an inhuman double that could come to haunt it. Hence, Descartes's need to posit two specific tests designed to reaffirm the difference between the human and the machine by reinforcing the mind-body duality.

His first test, involving the appeal to speech or signs as the distinguishing mark of the human, relies on his valorization of reason. However, the notion of reason evoked in this context is no longer the disembodied thought of the solipsistic *cogito*, defined by its self-identity and transparency. Rather, this notion of reason emerges out of intersubjective and communicative exchanges, and it references the capacity of individual subjects to

represent or embody thought. As Jean-Pierre Sérís points out: "The *loquela*, the speech, performance and usage proper to human language is the unique and certain indicator of the presence of a soul that thinks in the bodies of others."³⁵ Sérís's emphasis on language as the defining characteristic of the human neglects the fact that Descartes's appeal to speech and signs suggests a more general understanding of the subject's capacity for representation as attested by the capacity for manipulating and recording of signs, be they verbal or non-verbal. For as Descartes observes in the *Discourse*, even the deaf and dumb are able to use signs to make themselves understood (HR I, 117). Descartes's statement regarding man's use of speech and other signs identifies the humanity of the subject with the capacity for representation. However, representation, whether linguistic or non-verbal, involves modes of embodiment through material signs. Thus Descartes's affirmation of the subject's humanity through representation contradicts his concurrent claims regarding the immaterial nature of reason.

Descartes's second test for distinguishing the human and the machine relies on his critique of the machine whose scope of action is limited because of its purely instrumental character. However, when Descartes criticizes the instrumental limits of the machine, he is also necessarily alluding to his earlier equation of the body to the machine. While reason is a universal instrument that can serve all contingencies, bodily organs need special disposition or adaptations for each particular action leading Descartes to conclude that it is impossible that there would be sufficient diversity in any machine to act in all events of life (HR I, 116). Thus while machines may be able to perform certain functions better than humans, in the end they are limited by the fact that they do not act out of knowledge but simply out of the disposition of their organs. Descartes's critique of the material limits of the machine, which is also an analogue of the human body, posits disembodied reason as the unique referent of the human.

Struggling against the ascendancy of the automaton, Descartes locates the human in a knowledge that derives not from the logic of the organism, but rather supersedes the organic by governing its mechanisms. In so doing, he underlines the superiority and autonomy of reason as a faculty which is independent of

the material and mechanical organization of the body, since the rational soul "could not be in any way derived from the power of matter" (HR I, 118). While Descartes recognizes that it is insufficient to conceive of the rational soul as "lodged in the human body like a pilot in his ship" and that it is "necessary that it should also be joined and united more closely to the body" (HR I, 118), the *Discourse* does not provide an understanding of their conjoined nature. Descartes's final conclusion that "our soul is in nature entirely independent of the body" (HR I, 118), will make it all the more difficult to envisage and mediate their relation. The rational soul's ultimate autonomy from material and bodily reality implies that it functions in a virtual, rather than worldly realm of existence. Having radically severed the relation of the mind to the body, Descartes's subsequent efforts to suture their division will continue to pose problems throughout his later works.³⁶

Descartes's comments regarding the distinctions between the human and the machine bring out the fundamental paradoxes that underlie his conception of the body. His first test for identifying the human with the capacity for representation, understood not merely as speech but as the ability to communicate and embody ideas through signs, enters into conflict with his second test, which involves the limited instrumentality of the body as machine and material artifact.³⁷ If representation signifies the capacity for embodiment, for attaining material manifestation, then the limited or specialized performance of the body as material artifact could no longer be viewed in opposition to the mind, but would be construed as evidence of its embodied character. For the capacity of the mind to engage in representation is not a virtual event, but becomes perceptible and communicable precisely through its engagement with the body and material signs.

Descartes's efforts to distinguish between the human and the machine thus function as an implicit test of the mind-body dualism. The problem that will continue to haunt the Cartesian system is the inability to think embodiment, finding mediation between a disembodied reason and the mechanized body. Descartes's anatomical schematization of the body through the circulation of blood, and his subsequent resynthesis of the natural

body as a machine dismembered from the mind, emerge as instances of a process of virtualization that documents the ascendancy of the automaton over the experiential body.³⁸ Haunted by an errant, disembodied mind, the triumph of these virtual bodies over the lived body will raise the specter of the inhuman as one of Descartes's most significant legacies to the modern age. This legacy can only be overcome once reason is reembodyed by bringing its capacity for representation within the purview of the body and the materiality of the world.

Dalia Judovitz is Professor and Chair of the Department of French and Italian at Emory University.

Notes

¹ My analysis is based on Michel Foucault's notion of epistemic rupture, that is of a historical and epistemological discontinuity between the late Renaissance and the Baroque and the Cartesian world-views. See his discussion in *Les Mots et les choses* (Paris: Gallimard, 1966), pp. 13-15; 32-91.

² Descartes' position represents a rejection both of the French humanist tradition and of the Italian Neoplatonist tradition, as well, since his elaboration of subjectivity as a disembodied entity breaks up the continuity of the chain of being that enables the reflection of the microcosm in the order of the macrocosm.

³ For a general analysis of Galen's humoral theories, see Rudolph E. Siegel, *Galen's System of Physiology and Medicine* (Basel: S. Karger, 1968), pp. 205-224.

⁴ For a general account of Descartes' debt and reaction to Harvey, see Etienne Gilson, *Etudes sur le rôle de la pensée médiévale dans la formation du système cartésien*, 5th ed. (Paris: 1984), pp. 51-101. Also see Marjorie Grene, "The Heart and Blood: Descartes, Plemp, and Harvey," in *Essays in the Philosophy of Science of René Descartes*, ed. Stephen Voss (New York: Oxford University Press, 1993), 324-335.

⁵ See Georges Canguilhem's comment in *A Vital Rationalist: Selected Writings from Georges Canguilhem*, ed. François Delaporte; trans. Arthur Goldhammer (New York, Zone Books, 1994), pp. 130-31.

⁶ For a detailed analysis of Harvey's work, see Walter Pagel, *William Harvey's Biological Ideas: Selected Aspects and Historical Background* (New York: Hafner, 1967), pp. 51-59.

⁷ These analogies are visible in Harvey's dedication to Charles I, where he equates the sun, the king and the heart, see Owsei Temkin, "Metaphors of Human Biology," in *The Double Face of Janus: And Other Essays in the History of Medicine* (Baltimore: The Johns Hopkins Press, 1977), pp. 281-82.

⁸ See Descartes' letter to Plempius, 15 February 1638 (PWD, III, 79-80) and his comments in *Description of the Human Body* (1664; PWD I, 318-19). Also see, Anne Bitbol-Hespériès' discussion in *Le Principe de la Vie chez Descartes* (Paris: 1990), pp. 55-102. Descartes' preference for a model based on heat might be explained by his efforts to account both for the motion of blood and its distillation into the minute corpuscles of the animal spirits.

⁹ All quotations from Descartes' writings come from *The Philosophical Writings of Descartes*, trans. E.S. Haldane and G.R.T. Ross (Cambridge: Cambridge University Press, 1969), henceforth abbreviated as HR, volume and page number, and from *The Philosophical Writings of Descartes*, trans. J. Cottingham, R. Stoothoff, D. Murdoch (Cambridge: Cambridge University Press, 1984), henceforth abbreviated as PWD, volume and page number.

¹⁰ Georges Canguilhem also notes the dependence of Descartes' theory of the animal machine on the *cogito*, see his *Vital Rationalist*, p. 227.

¹¹ See Marie-Christine Pouchelle, *Corps et Chirurgie à l'Apogée du Moyen Age* (Paris: Flammarion, 1983), pp. 170-73. Mondeville privileges the architect who is defined by the capacity to design a plan of action. This privilege, accorded to architects as a guiding paradigm for surgeons, also occurs in Descartes' analogies in the *Discourse* (Part 2), when he compares the philosopher with the architect who operates according to an overall blueprint.

¹² For these analogies, see M-C. Pouchelle, *Corps et Chirurgie*, pp. 176-183. Aristotle also makes an analogy between animal movements and automatic mechanical movements, like those found in war machines, such as the catapult. See Alfred Espinas, "L'Organisation ou la machine vivante en Grèce au IV^e siècle avant J.-C.," *Revue de métaphysique et de morale* (1903), pp. 702-17.

¹³ Pouchelle elaborates this cohesion between anatomical and social categories in Mondeville, see her *Corps et Chirurgie*, pp. 189-92.

¹⁴ See Aquinas's *Summa Theologiae* (I, II, 13, 2) and Gomez-Pereira, *Antoniana-Margarita, opus nempe physicis medicis ac theologicis non minus utile quam necessarium* (Medina del Campo, 1555-58). In his letter to Mersenne, June 23, 1641, Descartes denies knowledge of Gomez's work and dismisses it off-hand, but the similarity of their positions is striking; see G.A. Lindebom's discussion in *Descartes and Medicine* (Amsterdam: Rodopi, 1979), pp. 61-62.

¹⁵ For an analysis of the meaning of this term as presented in late seventeenth-century dictionaries, see Claude Reichler, "Machine et Machinations: La Ruse des Signes," *Revue des Sciences Humaines*, Vol. LVIII, Nos. 186-187 (April-October, 1982), pp. 33-39 and Gérard Simon, "Les Machines au XVIIe siècle: usage, typologie, résonances symboliques," in the same issue, pp. 10-13.

¹⁶ See Georges Canguilhem's comments in *Vital Rationalist*, pp. 206-207; see also his general discussion of the relation of the Cartesian machine to the notion of the organism, in "Machine and Organism," *Incorporations*, eds. Jonathan Crary and Sanford Kwinter, special issue of *Zone 6* (1992), pp. 45-69.

¹⁷ John Cottingham notes that Descartes is referring here to "fictional men," introduced in an earlier and (lost) part of the *Treatise on Man*, analogously to his use of the "new world" in the *World*, see *The Philosophical Writings of Descartes*, p. 99. For a detailed analysis of the role of the fictional and the axiomatic in the *World*, see my *Subjectivity and Representation in Descartes: The Origins of Modernity* (Cambridge: Cambridge University Press, 1988), pp. 87-97.

¹⁸ Georges Canguilhem, "Machine and Organism," pp. 53-54.

¹⁹ For an analysis of the mathematical and epistemological underpinnings of Descartes' philosophy, see my *Subjectivity and Representation in Descartes*, pp. 39-85.

²⁰ In his letter to Reneri for Pollot, Descartes argues that the statement "I am breathing, therefore I exist," is insufficient as an argument for existence, since the thought of breathing implies existence in the mode of "I am thinking, therefore I exist" (April or May 1638; PWD III, 98).

²¹ Canguilhem, *Vital Rationalist*, p. 207.

²² This can be seen in Descartes' later claim in *Principles of Philosophy* that, "it is not less natural for a clock, made of the requisite

number of wheels, to indicate the hours, than for a tree which has sprung from this or that seed, to produce a particular fruit" (HR I, 300).

²³ Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution* (San Francisco: Harper & Row, 1980), pp. 194-205.

²⁴ Descartes' description of gardens echoes Montaigne's own astonishment before the hydraulic marvels of his own time, see his *Journal de voyage en Italie par la Suisse et l'Allemagne en 1550-1581* (Paris: Club Français du Livre, 1954), p. 109. For a general analysis of French seventeenth-century gardens and their relations to metaphysics, see Allen S. Weiss, *Mirrors of Infinity: The French Formal Garden and 17th Century Metaphysics* (New York: Princeton Architectural Press, 1995).

²⁵ In the medieval and renaissance traditions, the animal spirits are invoked to mediate the relation of body and soul, see David P. Walker's discussion in "Medical Spirits in Philosophy and Theology from Ficino to Newton," in *Arts du spectacle et histoire des idées* (Tours, 1984), pp. 287-300.

²⁶ For an analysis of dissection as a spectacle of display that renders visible the scientific gaze and the perspective of natural philosophy, see Francis Barker, *The Tremulous Private Body: Essays on Subjection* (Ann Arbor: University of Michigan Press, 1995), pp. 65-76.

²⁷ Jean-Claude Beaune, *L'Automate et ses mobiles* (Paris: Flammarion, 1980), p. 173.

²⁸ For an analysis of the clock as the prototype for automatic machines, see Lewis Mumford, *Technics and Civilization* (New York: Harcourt Brace & Co., 1963), pp. 14-18.

²⁹ According to Gary Hatfield, the vegetative soul controls growth, nutrition, and reproductive generation, while the sensitive soul governs sense perception, appetites, and animal motion. Descartes grants the vegetative and sensitive souls to animals alone, see Hatfield's "Descartes' Physiology and its Relation to his Psychology," *The Cambridge Companion to Descartes*, ed. John Cottingham (Cambridge: Cambridge University Press, 1992), p. 344.

³⁰ *Descartes: An Intellectual Biography* (Oxford: Oxford University Press, 1995), p. 278.

³¹ René Descartes, *Oeuvres Philosophiques*, ed. Ferdinand Alquié (Paris: Garnier, 1973), Vol. I, p. 480.

³² See Leonora Cohen Rosenfeld's discussion of these neo-platonic and mystical traditions in the works of Henry Cornelius Agrippa, and Marcilio Ficino in *From Beast-Machine to Man-Machine: Animal Soul in French Letters from Descartes to La Mettrie* (New York: Octagon Books, 1968), pp. xxiii-xxiv.

³³ In his letter to More, 5 February 1649, Descartes notes that animals do not possess thought, nor the ability to use speech (PWD, III, 366). In his letter to the Marquess of Newcastle, 23 November, 1646, he explains that he differs with the opinion of Montaigne, who attributes thought to animals (PWD, III, 302).

³⁴ See Descartes' letter to Plempius for Fromondus, 3 October 1637; PWD III, 62). For an analysis of La Mettrie's and d'Holbach's materialism, see Frederick Albert Lange's *The History of Materialism*, trans. Ernest Chester Thomas (New York: Harcourt, Brace & Co., 1925), pp. 49-91 and 111-123.

³⁵ Sérís refers to Descartes' letter to Henri More, 5 February 1649, wherein he states that "speech is the only certain sign of a thought hidden in a body" (PWD III, 366); see his *Langages et machines à l'âge classique* (Paris: Hachette, 1995), p. 24; my translation. Whereas Hiram Caton argues that Descartes should have posited thought, rather than speech as the true distinction between men and animals, see his *The Origin of Subjectivity: An Essay on Descartes* (New Haven: Yale University Press, 1973), p. 99.

³⁶ See Descartes' comments in *Meditation Six* and his *Reply to the Sixth Objection*. Also see his correspondance with Princess Elisabeth of Sweden, especially letters of 21 May and 28 June 1643; by 1645 the question of the union of the mind and the body becomes an inquiry into the passions. This discussion of the interaction of the mind and the body attains its fullest elaboration in *The Passions of the Soul* (completed 1645/6 and published in 1649).

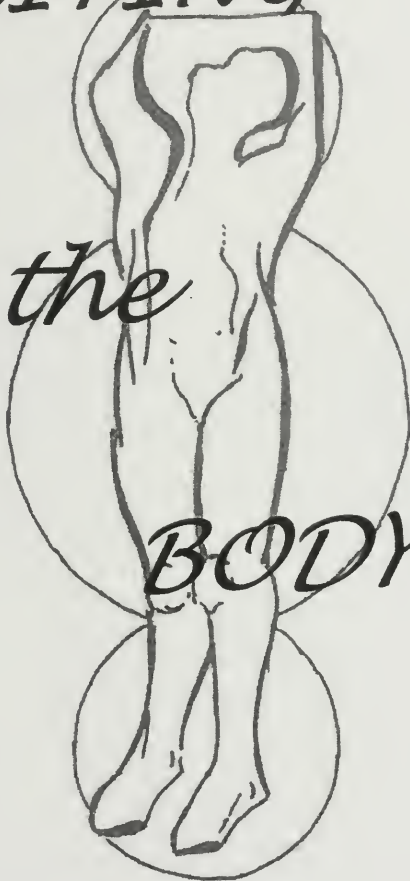
³⁷ My reading differs with Keith Gunderson's efforts to distinguish these two tests as 1) the language test and 2) the action test, see his *Mentality and Machines* (Minneapolis: University of Minnesota Press, 1985), 2nd. ed., pp. 8-17.

³⁸ However, this virtualization of the body will lead to the aggressive solidification of the body as the object of practical discourses, such as medicine and mechanics, that will attend to its administration, see Francis Barker, *The Tremulous Private Body*, pp. 93-94.

WRITING

the

BODY



PAROLES GELÉES

UCLA French Studies

Volume 16.1 1998

PAROLES GELEES

UCLA French Studies

*Ce serait le moment de philosopher et de
rechercher si, par hasard, se trouvait ici
l'endroit où de telles paroles dégèlent.*

Rabelais, *Le Quart Livre*

CONTENTS

Interview with Terence Cave	5
<i>Helen Chu and Steve Stella</i>	
<i>with an Introduction by Jean-Claude Carron</i>	
Virtual Bodies: Anatomy, Technology, and the Inhuman in Descartes	21
<i>Dalia Judovitz</i>	
Bodies of Enlightenment in Diderot's <i>Encyclopédie</i>	42
<i>Dianah Leigh Jackson</i>	
"XX+XX=XX": Monique Wittig's Reproduction of the Monstrous Lesbian.....	73
<i>Julie Scarlon</i>	
The Ghetto Novels of Guillaume Dustan	97
<i>Daniel Hendrickson and Marc Siegel</i>	

