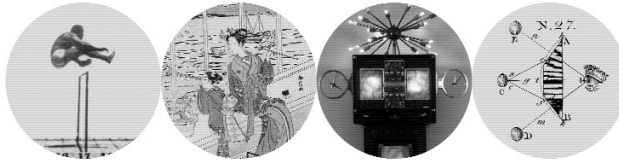


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Movement before Cinematography: The High-Speed Qualities of Sentiment

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Abstract

Cinematography, and the philosophical critiques it inspired, has come to represent modernity. The 19th century ended with reduced photographic time exposures. The 20th century began by marking itself on a new cinematographic strip. Yet by examining more carefully these narratives of modernity, it becomes clear that much falls between cinematographic frames, into its framelines. In particular, non-cinematographic philosophies of time and movement are erased from view. This article inquires into these philosophies and traces their influence on later critiques of cinematography launched by Henri Bergson and later transformed by Gilles Deleuze. It focuses on debates between the philosopher Félix Ravaisson and the revolutionary art critic Eugène Guillaume with the purpose of rethinking the relationship between philosophy and technologies of movement.

Keywords

art • Bergson • cinematography • Delacroix • pedagogy • photography • Ravaisson • science • Venus

Reason acts slowly . . . Sentiment does not – it acts in an instant.

(Pascal, 1958: 74, trans. modified)¹

Introduction

Few intellectual programs have had as much impact on philosophy and art as Bergson's critique of the cinematographic method. Rebel artists, ranging from Rodin to the Italian Futurists, stubbornly refused to employ

cinematographic views – sometimes by explicitly referring to Bergson.² Rebel philosophers, from Bachelard to Merleau-Ponty, continued a critique of space–time concepts in direct reference to Bergson’s texts. Even Deleuze’s self-described ‘assfuck method’ (Deleuze, 1977: 12, quoted in Massumi, 1987: x) aimed Bergson’s philosophy at a target dangerously close to Bergson’s very object of contempt: cinema.

A central project of these authors consisted of questioning dominant space–time models where events followed one another as in a cinematographic strip. They launched their critique from the vantage point of art or philosophy. According to a recent scholar, these critiques were ‘a symptom of the ideological stress accompanying rationalization and abstraction’ (Doane, 2002: 10). But what about the perspective from science? The view from the history of science leads us rapidly into periods where this cinematographic model was either highly contested or entirely absent. Furthermore, it complicates the conceptualization of these critiques as a symptomatic *reaction* to science, arguing instead that the very definition of movement was debated *within* science itself. The stakes were much higher: instead of reacting to science, a central intention of these thinkers was to question the boundaries between science, philosophy, and technology.

One philosopher in particular, Félix Ravaisson (1813–1900), held a decidedly non-cinematographic conception of movement which preceded and inspired Bergson. In contrast to later critiques of the cinematographic method, his philosophy was both institutional and state-sponsored. Most importantly, it was *of a piece* with contemporary scientific, official and pedagogical theories of the time. The artists and philosophers who followed Bergson contrasted starkly with an earlier generation whose non-cinematographic views on time and movement were based on contemporary science and established theories of knowledge.³

This article examines technical, pedagogical, and philosophical alternatives to cinematography which preceded and inspired Bergson. Topically, it deals with the historic educational reforms of the Third Republic in France, implemented in the 1880s. It focuses on unpublished debates between Ravaisson and the revolutionary artist and critic Eugène Guillaume, who famously opened the conservative Salon to modern artists and who thus created the necessary conditions for the establishment of modern art. Their confrontation elucidates an important shift: investigations about the relation of fixed images to movement were ejected from the domain of science and science policy only to flourish within art and philosophy.

Pre-figuring Phenomenology

Bergson first wrote extensively about Ravaisson in a notice given to the Académie des sciences morales et politiques, where Bergson would replace him. An expanded version of this text, titled *La Vie et l'oeuvre de Ravaisson*, was republished numerous times, appearing as the introduction to a

collection of essays by Ravaisson (*Testament et fragments*, 1933[1904]). It then sealed Bergson's oeuvre as the *last* chapter to Bergson's *last* book, *La Pensée et le mouvant* (1991[1934]). In this text, Bergson admitted that Ravaisson had been 'bergsonifié' (p. 1450, n. 1), but, let me add, conversely, that Bergson had also been 'ravaissonné'.

Today Ravaisson occupies a short footnote in the philosophers' gallery, where he is seen as having 'pre-figured phenomenology' (Billard, 1999: 53), becoming an inspiration for Heidegger.⁴ One of the reasons for his neglect derives from the fact that only a minor part of his life was spent as an official philosopher. His first contribution to philosophy was a prize-winning thesis on Aristotle but, despite this early success, he decided against becoming an academic philosopher.⁵ He instead dedicated himself to art, and submitted his work to the Salons (under the name Laché).⁶ Always chaperoned by powerful figures in government, in 1839 he became Inspecteur des bibliothèques, a position which he held for 15 years. During that time (in 1849) he was elected to the Académie des inscriptions et belles-lettres. In June 1870, Napoléon III called on him to become curator of antiquities and modern sculpture at the Louvre. Professionally, then, he was first and foremost a librarian, an antiquarian, and an artist who refused to become a philosopher. It was only in 1880, towards the end of his career, that he was elected to the Académie des sciences morales et politiques.

Ravaisson developed his taste, philosophy and reputation as an antiquarian and artist. Having lived under the shadow of the influential philosopher Victor Cousin, whom he detested, he was a sworn enemy of Auguste Comte, whom he feared. Sufficiently part of the philosophy establishment, he was also enough of an outsider to criticize it. It was to him that the Minister of Public Instruction, Victor Duruy, turned to write the influential report on the state of philosophy, *La philosophie en France au XIXe siècle* (1868). Ravaisson, it is important to note, also wrote the final report on drawing pedagogy (Ministère de l'instruction publique et des cultes, 1854[28 December 1853]).

In 1852, soon after the Emperor took the throne, Victor Duruy formed a commission composed of the artists Delacroix, Ingres and Flandrin and presided over by Ravaisson to reevaluate the role of drawing in schools.⁷ The commission's recommendations were adopted throughout the Empire. Yet, starting in the mid-1860s, critics thought the pedagogical strategies instituted by the philosopher had gone too far. The sculptor Eugène Guillaume, who became Director of Fine Arts after already having established a brilliant career as Director of the École des beaux-arts and as member of the Académie des beaux-arts, led a campaign against him and tried to reverse his changes. Guillaume's influence was such that he became responsible for completely rewriting the rules of the Salon in 1878, when he included more artists in the jury and increased the importance of landscapes and *nature morte* – a change which was widely recognized as aiding the cause of modern artists. Being directly under the Ministry of Public Instruction, his position was the most important one in the arts.

Guillaume spearheaded an effort to introduce a new pedagogical method into drawing education, which its adherents called 'scientific' and its enemies 'materialistic' and 'pseudo-geometric'. Ravaissou lost the debate against Guillaume.⁸ In 1879, Guillaume's recommendations were accepted unanimously except for one vote and implemented a few years later.⁹

The impasse between Ravaissou and Guillaume, between their two pedagogical methods, between the two representational styles they advocated, between the values of the Second Empire and the Third Republic, resulted from two different theories of knowledge. Ravaissou's opposition to Guillaume's theories of representation was based on a different conception of form and movement and on a different alliance between science, truth, and geometry.

Cinematography

The decline in Ravaissou's influence and the ascendancy of Guillaume's follows directly the development of cinematographic technologies. Gustave Larroumet, Director of Fine Arts (1888–90), professor of literature at the Sorbonne (since 1891), and supporter of the Central Union of the Decorative Arts, followed the debate between them closely. In 1895, the year attributed to the invention of the cinematographic camera, he explained how the debate arose from contradictory views about the relationship of 'analysis to synthesis'. Guillaume's victory, Larroumet argued, depended on demonstrating that synthesis could be entirely decomposed by analysis – an operation which Ravaissou denied: 'M. Guillaume persuaded his colleagues and most of his adversaries that . . . *one must decompose by analysis the synthesis* that nature offers to observation' (Larroumet, 1895: 214, emphasis added). Guillaume's solution to the problem of 'analysis and synthesis' convinced his followers of the merits of a 'geometric' pedagogy.

The relation between 'analysis and synthesis' was quite different before 1895. For more than half a century after the invention of photography, numerous attempts to establish a connection between sequential photography (a method of analysis) and magic-lantern technologies (a technology of synthesis) had failed. In light of these failures, Ravaissou confidently stated *that movement was not composed of discrete moment summations*. Because of difficulties in achieving synthesis with photography and because of a generally perceived inferiority when it was compared to drawings that were used for this same purpose, the place of both of these technologies in science and art was uncertain and commonly contested. Consequently, the role of geometry in art, education and even science was profoundly questioned.

This situation started to change as the century progressed. Guillaume increasingly worked with a cadre of scientists and artists who had one thing in common: *an interest in pre-cinematographic technologies*. He followed the work of the astronomer Jules Janssen, inventor of the 'photographic

revolver' in 1874, and of the famous physiologist Etienne-Jules Marey, who in 1882 transformed Janssen's revolver into a *fusil photographique*. Guillaume also paired up with other famous scientists who worked with the magic-lantern, graphic and chronophotographic technologies pioneered by Janssen and Marey, including the famous scientists Mathias Duval (professor of anatomy at the École des beaux-arts), Paul Richer (known for his work on hysteria with Charcot), and Edouard Cuyer (professor of anatomy at the École des beaux-arts in Rouen who worked as Duval's *prosecteur*).¹⁰ He worked with the war hero and colonel Émile Duhousset, known for making drawings of running horses out of Marey's graphic traces and thus revealing previously unseen details of the horse's gallop.¹¹ Duhousset's advice to artists was simple: go buy a phenakistiscope (a rotating disk designed to give images the illusion of movement) at 'L'Illustration, 13 rue Saint-Georges' (Duhousset, 1884: 448) and train with it. These scientists and artists were all interested in technologies of synthesis and analysis. They were committed to working with magic-lanterns, traces, and chronophotographs.

Sentiment

Ravaisson's answer to the pedagogical dilemmas facing France was based on a different solution to the problem of form and movement. For this, he drew from the work of Leibniz, and cited him to prove that 'movement cannot be deduced from rest' (Ravaisson, 1882b: 677). While rest could be deduced from movement, the opposite operation was simply impossible. This simple maxim had numerous repercussions for life, for philosophy and for pedagogy. It was Ravaisson's main argument against reductionist and materialistic theories, his answer to the problem of induction, and the reason why science would always need art. Ultimately, it was also his proof for the existence of God. For Ravaisson, movement was life, volition and, therefore, divinity. Representations of movement were ultimately representations of 'grace' – the quality which brought all of these elements together. The only way of 'immobilizing movement' was to 'fix' grace (p. 680). Throughout his oeuvre, Ravaisson restated his views on movement in varied forms, but he always maintained that it was not a summation of static, discrete events.

Working with Pascal's dualisms, the philosopher counterposed the *esprit de géométrie* against the *esprit de finesse*. But Ravaisson's invocation of Pascal was particularly original in its relation to the question of how to represent movement. To prove that sentiment trumped all other methods, Ravaisson seized on its high-speed qualities as described in the *Pensées*: 'Reason acts slowly. Sentiment does not – it acts in an instant' (Pascal, 1958: 74, trans. modified). This *temporal asymmetry*, between reason and sentiment, informed his discussion on the distinction between logic and aesthetics, body and soul, matter and spirit, and the objective and the subjective. It affected the relations between geometry, photography, and movement.

Ravaisson's meditations had practical consequences. While students, previously, were taught only geometrical drawing, his method focused on

direct drawing. To learn how to represent movement, students should begin by representing the most perfect embodiment of 'grace': the human figure. Once this had been mastered, students could easily move down to draw first animals, then plants, minerals and finally end with basic geometric figures:

From this arises the universal and incontestable fact, that whoever can draw the human figure can easily draw all other figures, from those of the animal which most resemble humans, to those of the less complicated minerals, and to those, even simpler, considered by the most elementary geometry. (Ravaisson, 1882b: 677)

To start pedagogy with geometrical exercises, instead of ending with them, was a mistake because geometry was inadequate for portraying the wonders of life:

If geometry can serve to construct, at least to some extent, the sort of figures that represent brute objects, it cannot furnish, for living things, even in infinite and more important terms, more than an insufficient approximation. (p. 672)

Children, Ravaisson explained, should learn to represent 'grace' and its human embodiment, 'character'. They should commence by tackling physiognomy and expression. These representations of movement constituted the ultimate, superior genre in art. Their superiority was not composed of anything inferior. It was unreachable from below: 'inferior genres do not lead to superior ones; superior ones, in contrast, explain inferior ones, and he who knows the former *knows the latter virtually*' (p. 677; emphasis added).

Ravaisson considered the idea that movement was composed of summations of static infinitesimal slices both wrong and dangerous. Students should tackle the most difficult challenge first – not the simplest one: 'the first model that one should place in front of [the student] should be the one that would convey most forcefully the idea of movement, of life and grace' (p. 679). They should start by studying the human figure because 'the human form explains to us all the other forms, because it is the visible figure of the spirit' (p. 679). This pedagogical advice was directly connected to a hierarchical relationship between form and movement, where form was secondary and derivative: 'Forms', he explained, are 'durable vestiges of movement . . . they are like immobilized movement' (p. 680).

Ravaisson's non-cinematographic conception of movement was consonant with that of certain romantic authors, such as Goethe, who marveled at artists who could capture 'pregnant' instants that showed 'simultaneously, the past, the present and the future' (Goethe, 1812: 184; quoted in Hadot, 1995: 232). This conception showed profound affinities with Epicurean and Stoic philosophies that devised spiritual exercises to capture fleeting instants. Although exercises of this kind are exclusively associated with ancient or later Ignatian philosophy, Ravaisson called on students to turn to them. As 'in antiquity', students should perform 'exercises' analogous to those 'which

were grouped under the name of *gymnastics* but which were instead concerned with forming ‘the spirit’ (Ravaisson, 1882a: 122). His pedagogy imitated the ‘ancients’, who ‘would employ more time, in the interest of the spirit, to corporal and spiritual exercises. They would concentrate more on games and rest . . . than on labor’ (Ravaisson, 1887: 517).¹² Through Ravaisson, these exercises and games informed the pedagogy of drawing during the Second Empire.

Ravaisson turned to lines, to ‘grand lines that create the beauty of forms, which are the same that create the grace of movement’ (Ravaisson, 1882b: 680). Following his own art teacher, he vouched for the existence of ‘metaphysical lines’, of ‘supra-physical lines’ that embodied movement. In detail, he described

this sovereign line that commands all other lines, and that therefore does not reveal itself to the eyes than through these other lines, this line that lets itself be divined rather than show itself, and that does not exist so much for the eyes than for the imagination and thought. (p. 680)

He admired the masters of those lines, predictably, Titian (whom he copied), Michelangelo, Raphael, Fra Bartholommeo, and Corrège. He was absolutely enthralled by Leonardo da Vinci as both a thinker and an artist. He detested those who placed undue weight on geometry, amongst whom he cited the Swiss pedagogue Johann Heinrich Pestalozzi, Louis Benjamin Francoeur (author of *L'Enseignement du dessin linéaire*), the professor and artist Alexandre Dupuis, as well as the work of ‘modern artists of a second class, such as Luca-Cambiaso’ (p. 676; see Dupuis, 1836). Nothing fascinated him more than Greek art. He particularly adored the Venus de Milo, and sheltered her in the basement of the Louvre when she was threatened during the Commune fires of 1871.

Geometry against Movement

In direct contrast to Ravaisson, Guillaume believed in ‘an impersonal, necessary and exact aspect of drawing, besides the search for beauty, which is the geometric aspect, and that can be taught and learned with precision’ (Conseil supérieur des beaux-arts, 1876: 17). He proved to be exactly as he described himself, an artist ‘of the most militant sort’ who kept insisting on the *impersonal* quality of drawing: on the ‘grammatical and impersonal element’ (Commission de l’enseignement du dessin, 1879a, 21 July: 19–20). Students should learn how to draw by first learning geometry. They should ‘begin with geometrical drawing [*dessin linéaire*] before arriving at imitative drawing’ (p. 20).¹³ He wanted truth (which he associated with perspective) and not verisimilitude (which he dissociated from it).

Guillaume complained that current pedagogical techniques were too ‘empirical’. He explained what he meant by empirical in an article advocating

radical changes: 'by empirical we understand that which is not based on any knowledge or application of the rules of perspective and anatomy' (Guillaume, 1882: 688). He protested how the current 'empirical' method 'consisted of repeatedly imitating with servile fidelity lithographs, engravings and photographs' (p. 688). The empirical method was, perniciously, one of spectators.

The dichotomy facing the pedagogical policies of the Third Republic was strengthened by the growing personal antagonism between Guillaume and Ravaisson. In 1876, they confronted each other face to face, exchanging acrimonious words during the meetings of the Conseil supérieur des beaux-arts under the presidency of Chennevières, Director of Fine Arts (1873–8). Their different positions revealed a social and political split with epistemological implications. This split was connected to disagreements about how to learn from France's defeat at the hands of the Prussians and to debates about political representation.

Guillaume criticized the drawing pedagogy that had been established under the defeated Second Empire and preached a return to an education based on geometry and perspective. He complained about the excessive focus on 'sentiment' and sought instead to return to the 'positive principles' of a unitary 'method' (p. 684). Otherwise, he warned, 'drawing would rest in the domain of the *a-peu près*: its exactitude and imperfections would have no judges other than our sensations. The artist will never obtain certitude' (p. 684). Entirely convinced that artists should 'combat empiricism' by following scientists, Guillaume lamented how 'in the art of drawing' many believed artists should stay 'content with appearances'.

Guillaume placed a premium on geometry and on the utilitarian aspects of drawing. He remarked how those who 'dream of artistic vocations are the exception' and insisted lessons should be 'addressed to the masses' (p. 689). Most students, he argued, 'will be *ouvriers*' (p. 689). For this reason 'habits of precision and exactitude that make great artists as much as good *ouvriers*' (Conseil supérieur des beaux-arts, 1876: 17) needed to be meted out. Chennevières, the president of the Conseil, agreed with Guillaume's utilitarian focus insisting that the goal of the commission 'was not at all about forming artists'. Rather it should find a way

to furnish the children of peasants and artisans the means for becoming, by themselves, good workers, be it in the city or in the countryside, by giving them a simple and clear means for thinking with precision through drawing, which is as useful for most trades (ploughers, stone carvers, carpenters, joiners, gardeners, etc.) as knowing the alphabet. (p. 6)

Every peasant's son should be armed with a ruler and compass.

Science and Movement

Ravaisson could not disagree more with Guillaume's focus on a utilitarian education tailored for the 'masses'. Knowing full well that his advice was directed to 'a population destined for *métiers*' where, arguably, training in 'industrial drawing' was sufficient, the philosopher insisted that even amongst the *foule*, drawing should be 'considered independently of its technical usage' (Ravaisson, 1882b: 683). Direct drawing, although not as immediately applicable as industrial drawing, was an 'important means of general education' (p. 683). But the philosopher was attacked for his elitism. After all, he had refused to become a professor, 'preferring a life *plus mondaine*, more elevated and more brilliant, far from the near impoverishment of professors' (Billard, 1999: 14). He came from a family 'habituated to occupying great positions in the State' (p. 6). The uncle who raised him had not only been conseiller d'État and ministre du Trésor under the first Empire, but he had been personally congratulated by the great Napoleon.

Guillaume mocked Ravaisson's lofty ideals about the power of 'sentiment' for social regeneration, noting how 'one could not honestly believe that drawing will effect, in the countryside, the *régénération du peuple*' (Conseil supérieur des beaux-arts, 1876: 17). Critics accused Ravaisson of being delusional. The armchair philosopher housed at the Louvre suffered from 'many illusions on primary school teaching and on the condition under which teaching is carried out, especially in the countryside' (p. 19, comment by Jourdain, secrétaire général). It was easy for him to disdain the Commission's simple views. But the philosopher did not capitulate to these attacks. The transcriber of the *procès-verbaux* explained why Ravaisson refused to endorse Guillaume's plan: 'The project issued from a point of view which was too material, too realistic, and which M. Ravaisson could not accept' (pp. 16–17).

Ravaisson tried to break the logic of his opponents' arguments by insisting that he too was on the side of science, immodestly following the steps of 'Descartes, Leibniz and Pascal' (Commission de l'enseignement du dessin, 1879b, 25 July: 21). He claimed that the members of the Commission wanted to teach something that was 'neither art nor science'. This comment made the aristocratic art critic Henri Delaborde uncomfortable. The *conversazione* turned almost violent. He 'did not share Ravaisson's opinion that the type of drawing which will be taught . . . will not be either art or science. It will certainly be a science, doubtlessly an elementary one, but a true science' (Conseil supérieur des beaux-arts, 1876: 20–1). The philosopher, however, did not relent. He continued to attack Guillaume's holier-than-thou scientism, arguing that his contradictors did not know the first thing about theories of knowledge. As a philosopher, he found their clichéd use of terms like 'science', 'truth', 'geometry', and 'perspective' naïve. Ravaisson raised harder questions. What exactly did Guillaume mean by empirical? What did he mean by geometry? What was the relation of perspective to vision, mathematics and truth? He asked, 'is there not exactitude in the drawing of a profile or of a head?', and explained:

Geometry does not have the monopoly of this quality [exactitude]. Let's not forget, by the by, the words of Pascal: if Geometry has its exactitude, there is also another one which is greater and truer, that of the spirit. (Commission de l'enseignement du dessin, 1879b, 25 July: 22)

But when Ravaisson tried to take the discussion to epistemological levels Guillaume always interrupted him, insisting that 'abstract reasoning should have no place here. One must first of all be distrustful of this untimely philosophy [sic]' (Commission de l'enseignement du dessin, 1879a, 21 July: 18).

Ravaisson's claims on science were incendiary. Immediately after the philosopher brought up the topic, the transcriber of the meeting minutes could only write: 'At this point the discussion lost its individual character and degenerated into a kind of conversation in which many members took part at the same time' (Commission de l'enseignement du dessin, 1879b, 25 July: 27).

In 1879, ignoring Ravaisson's vivid protests, the new Commission established 'an exact coincidence between studies on drawing [*dessin*] and mathematical studies' (Conseil supérieur des beaux-arts, 1876: 15), ending a long struggle which had commenced in 1865 at the heart of the Union Central des beaux-arts appliqués à l'industrie (see Figure 1).¹⁴

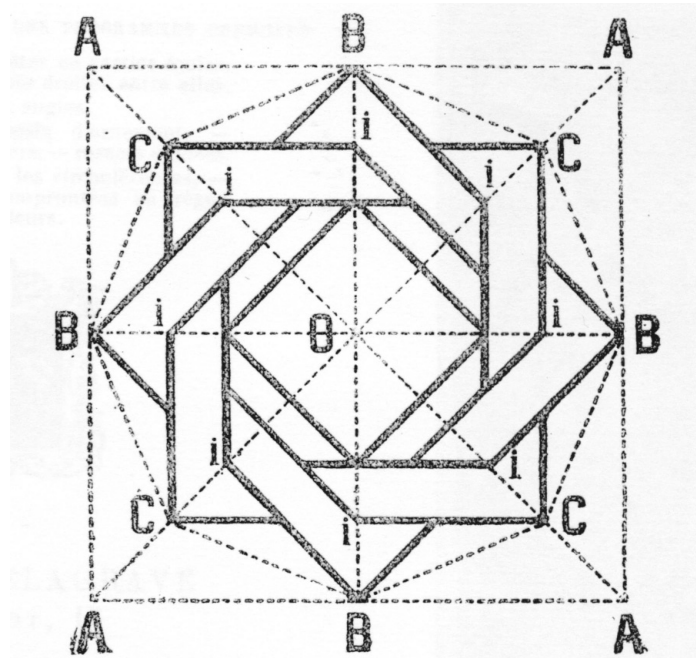


Figure 1 Arabesque from a typical *dessin linéaire* exercise instituted after Guillaume's educational reforms. Source: Charvet (1883: 151)

'Direct Intuition'

Years after the Commission on the pedagogy of drawing first met, Ravaissou rethought his early ideas. He first published them in 1882, as separate articles under the rubrics of 'Art' and 'Dessin' in the *Dictionnaire de pédagogie et d'instruction primaire* (edited by the famed reformer Ferdinand Buisson), and they were followed by a reply from Guillaume.¹⁵ In the report, Ravaissou expressed the 'duty not to refuse to popular schools an education designed to arouse the *esprits d'élite* which could be contained there' (Ravaissou, 1882b: 683). Denying students the right to liberal studies, he argued, would split the world into 'a multitude doomed to barbarism' (which he compared to slaves) and a 'privileged class' (p. 683). Lessons, such as Guillaume's, that focused on utility would only 'favor vanity and egotism' (Ravaissou, 1882a: 123). By teaching children useless activities, in contrast, educators could cultivate in them a 'spirit of disinterestedness' and 'when needed, of self-denial' (p. 123). Otherwise, France risked having 'a rogue and badly reared populace' (p. 123). Education should be 'no other than that which fully fits the old and traditional qualification of "liberal"'. Students should be educated by virtue of being 'surrounded by objects of a perfection worthy of a divine qualification' (Ravaissou, 1882b: 684).¹⁶ Schools should be 'temples, where lessons come from divinity' (p. 684). Fighting 'material interests' through his 'spiritual' pedagogical methods was Ravaissou's simple answer to the complicated *question ouvrière*.¹⁷

Ravaissou also articulated the epistemological consequences of the debate. He agreed that there were two distinct and increasingly polarized pedagogical options, which he described in philosophical terms. While one was 'mathematical' dealing with 'quantities', the other one was concerned with 'qualities' grasped through 'sentiment or direct intuition':

everything can be considered from two different points of view . . . where one can be called the point of view of logic, and the other one of aesthetics; a distinction where one finds again the one of the body and the soul, or matter and spirit, and still this other one, familiar to philosophers, the objective and the subjective. (pp. 672–3)

In contrast to Guillaume, Ravaissou did not believe that he was caught between these two options and forced to lean on one or the other. Methods based on 'logical deduction or mechanical operation' needed those that consisted of grasping reality 'by direct intuition'. Guillaume disagreed.

Photography before the Photogram

The virulence of the encounter can be further understood by seeing how the simple alliance of science, truth and geometry upheld by Guillaume and members of the Commission was frequently questioned – in philosophical and even scientific circles. It was especially of concern in debates about how

to portray movement, where agreement, even among scientists, was hard to come by. Astronomers, for example, tried unsuccessfully to create some consensus on this issue (Canales, 2002). Even Marey's successes in determining the successive stages of the horse's gallop were highly uncertain.¹⁸

The place of photography in science and pedagogy was particularly controversial. Guillaume sought to exclude it entirely from his pedagogical program. He grouped it next to dangerous 'empirical' techniques based on 'verisimilitude' instead of 'truth'. Following Guillaume, members of the Commission

absolutely rejected all kinds of photographic models as equally dangerous from the point of view of pedagogy as from the point of view of taste. Photography is inevitably an unintelligent and unfaithful translation of the work of both sculptors and painters, and it should not be placed under the eyes of children. (Conseil supérieur des beaux-arts, 1876: 29, comment by Préfet de la Seine)

On this issue, the artists Lehman, Cabanes and Henriquel Dupont all agreed, saying it should only be used as an inexpensive way of reproducing prints and drawings. For them, the inferiority of photography's scientific qualities was evident when compared to the obvious merits of geometry.

While Guillaume and the Commission sought to exclude photography from educational programs, Ravaisson revealed the paradoxes and contradictions in their arguments. The philosopher reminded them how photography had certain scientific qualities – values which were allegedly cherished by Guillaume and his group: 'That which proves the exactitude which photography has reached is the trust placed on it today by scientists who use it to study physical phenomena of the most complicated sort' (p. 31). How could Guillaume and his followers claim to be introducing a scientific education at the same time they were rejecting photography?

Ravaisson, in contrast, defended the use of photography in drawing education. In the 1850s, in the process of revolutionizing pedagogy by giving a new importance to 'sentiment' and 'intuition', he advocated that students practice by copying 'artistic' photographs. He insisted that the best way to learn how to draw was by having students copy ancient masterpieces (or photographs or casts of them) and then move to exegetical exercises based on close, internal and iterative studies of a handful of masterpieces. Delacroix agreed with this aspect of his methodology, which he also found fun, emancipatory and a good counterweight to traditional geometrical methods.

The idea of copying photographs in order to learn how to draw was present in an enormously popular book with a politically provocative title: *Drawing without a Master* by Elisabeth Cavé. Delacroix, who reviewed the book for the *Revue des deux mondes*, agreed with her main message: 'It does not matter if a machine is the professor' (Delacroix, 1850: 1142).¹⁹ Her methodology was radically different from the one Guillaume and the

Commission advocated, commonly associated with the pedagogy of Pestalozzi.

Guillaume's position with respect to photography was diametrically different from his views on emerging pre-cinematographic technologies. For him, graphic and burgeoning cinematographic technologies curbed the dangers of verisimilitude and empiricism with much needed truth and exactitude. He accepted photography as a legitimate representation of form only in the shape of the cinematic photogram, of an image that could form part of a cinematographic sequence. By the early 1880s, new successes in relating sequential photography to technologies of synthesis offered photography a wholly new epistemological status – one which would slowly distance it from the merely empirical.

The turn in pedagogy away from the methodology advocated by Ravaisson was accompanied by an increased use of cinematographic technologies that compensated for photography's otherwise 'empirical' failures. Photography's fate as a form of evidence was completely dependent on this new cinematographic conception of it. It was, most importantly, tied to the decline of Ravaissonian exercises. While the philosopher sought to relate form to movement spiritually and artistically, his adversaries tried to relate it mechanically, with emerging cinematographic technologies.

Arming Venus

Ravaisson searched for lines; he tried to find

the line that expresses better than any other, the character of a force that, despite yielding to obstacles, continues its course, pliable and immutable at the same time, such as is the soul of an organism, to which she does not abandon herself other than to come back and retake it incessantly, among the dispersion of its powers, the conscience of its flawless identity. (Ravaisson, 1882b: 680)

This 'supra-physical line' produced mundane effects. For example, by concentrating on the bust of the *Vénus de Milo*, he solved the long-sought riddle of the position of her missing arms.²⁰

The philosopher aided himself with all the available historical documents of the statue, but the answer was not found there. His hypothesis was chiefly based on *physiognomy*: 'One can arrive much faster at the true interpretation of the *Vénus de Milo*, if, to understand her, one latches on to the essential, which is the character of her physiognomy, from which the rest follows' (Ravaisson, 1892: 193). His understanding of Greek sculptures as representations of grace and movement led him to add Mars next to her. By concentrating on her 'grace', he then resolved the mystery of her lost members.²¹

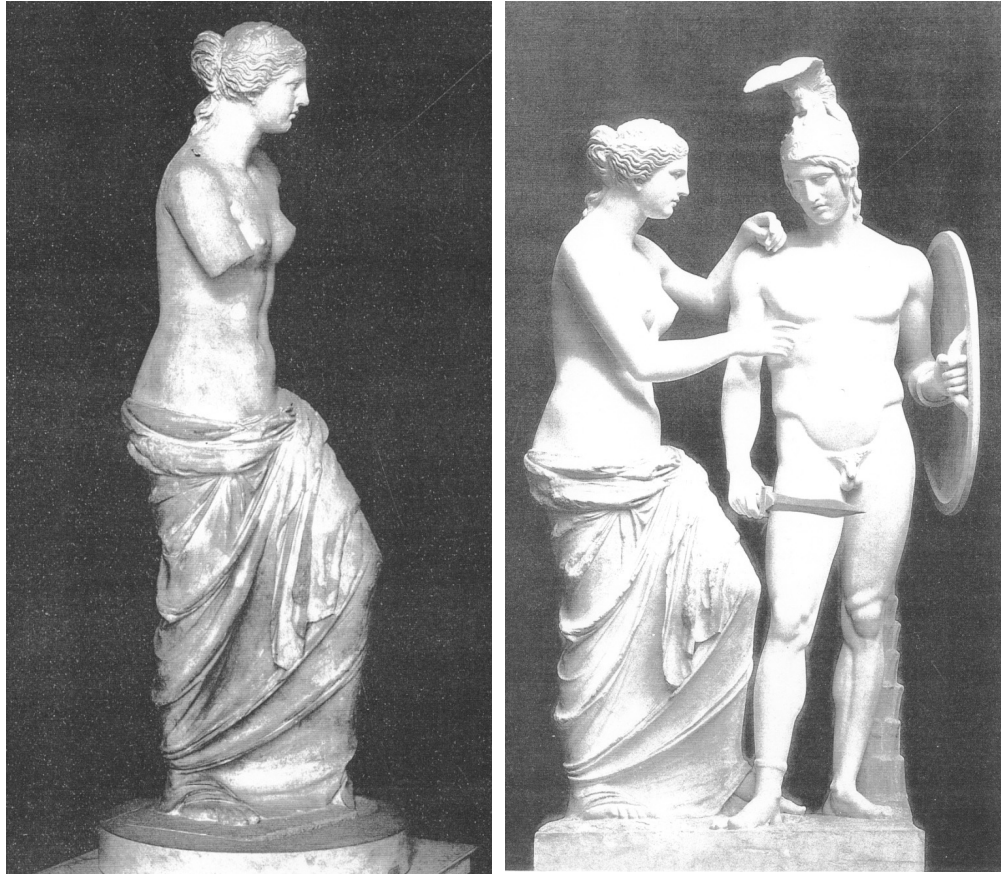


Figure 2 Venus de Milo – the figure on the right shows the complete statue as conceived by Ravaissou. *Source:* Ravaissou (1892: 145 and 256, Plates 1 and 9).

Bergson (1959a) recounted how: 'In seeing him modeling and remodeling the arms of the deity, some people smiled' (p. 1476). But others took him extremely seriously. 'Twenty generations of students have learned by heart' (p. 1468) the last pages of his *La philosophie en France au XIXe siècle*. Bergson did not hide the effects that Ravaissou had on him – effects due less to his thesis on Aristotle and work on Pascal, than to his report on drawing. He would particularly borrow Ravaissou's answer to the problem of form. Even after Guillaume's victories in governmental circles and even when faced with improved cinematographic technologies, Bergson continued to defend a maxim that he learned from Ravaissou: 'Forms are made for movement; movement is the end and reason of forms' (Ravaissou, 1882b: 680).

Conclusion

The photograph *before* and the photograph *after* the photogram capture two different views of the relation of analysis to synthesis. The view – dominant

into the 20th century – that synthesis is composed through the summation of discrete moments of analysis, was highly contested during the second half of the 19th century.²² In its place stood an alternative philosophy of form and movement, where ‘sentiment’ and ‘spirit’ played essential roles. Representing movement was the shared task of scientists, artists, pedagogues, philosophers and objects that inspired them spiritually.

The debate between Ravaissou and Guillaume can be compared to other more illustrious scientific controversies. Like other debates in science, it involves a reshuffling of the institutional boundaries between disciplines and, with them, of the boundaries between nature and politics.²³ For example, while artists had once considered themselves authorities with respect to the problem of form, they were eventually displaced. Similarly, philosophical investigations into the nature of geometry and perspective were edged out from discussions on education policy – labeled as ‘untimely’ meditations in the course of their debate. This label shows us the precise moment when understanding the relation between movement, images, and objects was circumscribed within philosophy. It shows us the time when alternative, non-cinematographic solutions to the problem of analysis and synthesis were rejected from educational policy, constituting a pivotal moment for modern aesthetics and modern science.

Ravaissou’s portrayal as a proto-phenomenologist in contemporary historiography obscures exactly one of the essential characteristics of his philosophy and its importance. His meditations on movement emerged in the context of the visual technologies of his time, when state-of-the-art instruments were built to combine photographs with magic-lantern machines. An important segment of the scientific community agreed with Ravaissou’s maxim that movement was not simply a summation of instantaneous sections.

The situation was entirely different with Bergson, who criticized the cinematographic method in the face of advanced cinematographic technologies. Although his frequently cited comments on the cinematographic method are mostly taken from *L’Évolution créatrice* (1907), similar references persist into *Les Deux sources de la morale et de la religion* (1932) and *La Pensée et le mouvant* (1934) – well into the interwar years of complex cinematographic techniques (Bergson, 1959b: 1205, 1259–60). Yet even Deleuze failed to see that Bergson continued to apply his critique with no regard to cinematographic advances. In *Cinema 1*, referring to fixed camera techniques, Deleuze (1986) claimed that ‘it was at this primitive stage that the Bergsonian critique was directed’ (p. 24). This misconception has led scholars to surmise that ‘Perhaps [Bergson] simply never encountered the innovations that might have changed his mind’ (Douglass, 1999: 214).

This outlook shuts out an important aspect of Bergson’s philosophy and significantly narrows our view of the relation between philosophy and technology. When Bergson (1998) says that ‘In order that the pictures may be animated, there must be movement somewhere. The movement does indeed exist here; it is in the apparatus’ (p. 305), he directs our attention back to a working machine that is inescapably entangled with the rest of reality.

Technology works by *shifting* the place of movement elsewhere, and, in doing so, it alters – but it does not eliminate – the object of philosophical inquiry. Because of these shifts, a philosophy of movement can never become technologically outdated.

Notes

1. All original French texts in this article are translated by the author.
2. Rodin did not conform his famous statue of St John the Baptist to the rules of locomotion shown by chronophotography. He stubbornly claimed that 'it is the artist who is veridical and the photograph which lies, since in reality time is not arrested'. In his famous conversations with Paul Gsell, Rodin is credited with asking his friend, 'Have you attentively examined the instantaneous photographs of walking men?' Rodin then proceeded to criticize them, saying how they looked 'bizarre' and 'paralyzed'. He defended the work of Géricault who 'they critique . . . because in his Course d'Epsom, which is at the Louvre, he has painted horses which gallop *ventre à terre*'. Rodin's interlocutor Gsell could not help but accuse him, after hearing his reasons for rejecting chronophotographic poses, of not 'copying Nature with the greatest sincerity' (Rodin, 1924: 83–91). If anything, by virtue of their rebelliousness and their taste for shock-effects, the futurists and the avant-garde only reified the 'rules' for portraying motion which Bergson fought against. Seurat continued painting the horse in the classic style as late as 1891; Baudelaire, famously, sided with Delacroix and his un-photographic portrayal of horses; Duchamp rebelled against snapshot instantaneity and showed movement through the use of sketch-like consecutive figures. The futurists also explicitly denounced traditional ways of portraying movement, particularly of their beloved speeding things. For the reaction of Rodin, Degas, and Seurat to chronophotography see Braun (1992: 72, 254). For a commentary on the absence of chronophotographic gaits in the paintings of Seurat, see Crary (1999: 276–8). For the futurists, see Sturgis (2000: 57).
3. For Bergson's views of the cinematographic method in the context of the science of his time, see Canales (2002).
4. For Ravaisson's influence on Heidegger, see Towarnicki (1993, 1997). For the most complete bibliography of Ravaisson's writings and work on him, see Dopp (1933).
5. *De la Métaphysique d'Aristote*, submitted to the Académie des Sciences Morales et Politiques in 1833 and published in 1837 as *Essai sur la Métaphysique d'Aristote* (Paris: Imprimerie Royal). His doctoral thesis was *De L'Habitude: Métaphysique et moral* (1838).
6. He studied under the painter Broc and the 'dessinateur' Théodore Chassériau (1819–56), both students of David.
7. Also included were Meissonier, the sculptors Simart and Jouffroy, the architect Viollet-le-Duc, de Belloc (Director of the École impériale de dessin) and Adolphe Brongniart (inspecteur general de l'enseignement supérieur pour les sciences). Ingres, Simart and Flandrin would not participate. See D'Enfert (2003: 214, n. 73).
8. 'When the time came to fix the official programs for drawing education in primary schools and in écoles normales, the Conseil supérieur de l'instruction publique, after having thoroughly weighed the pros and the contras, pronounced itself in favor of the method recommended by M. Guillaume' (Buisson, 1887: 580).
9. The new stipulations passed under Jules Ferry. See the following official study books: Charvet (1883); Pillet (1883).

10. Since 1867, Duval and Carlet used a zoetrope with pictures painted from photographs, and Duval arranged drawings of human and horses' gaits in a zoetrope, later repeating these experiments with Marey's pictures of horses. In 1878, he and others (Uchatius, Dagui, Reynaud) used a projection zoetrope with images painted after photographs. Duval's attempts to place Marey's drawings on a zoetrope are mentioned in Braun (1992: 30, 48). Marey described Duval's experiments in *Le Mouvement*. Richer considered himself to be a member of the collective effort of applying the 'photochronographic method inaugurated by Marey' to the arts. He took Muybridge's photos, Marey's methods, and Duval's experiments with the zoetrope as a starting point for art pedagogy (Richer, 1895: 16).
11. During the Franco-Prussian war, Duhousset was one of the last to resist the Prussians, and famously replaced General Raoult on the front in one of the last hard-fought battles. He was captured during this last battle and interned in Stuttgart, where he continued studying horses while in captivity. He was also famous for reorganizing the Persian army and was known for ruthlessly suppressing the Mascara rebellion in Algiers, earning for this the title of officer in the Legion of Honor. He was also the author of the pictures and diagrams of the criminologist Alphonse Bertillon's world famous *Signaletic Instructions* and known as the first person to replace the traditional style used by portraitists and by anthropologists with the side and front views used in the mug shot. For Guillaume's relationship with Duhousset, see Duhousset (1881, 1890). Amongst the artists who trained themselves with zoetropes, Duhousset named Gérôme, Claude, Goubie, and Guesnet. Duhousset's work with zoetropes is mentioned in Braun (1992: 30, 48) and Duhousset (1884: 449). For description of Duhousset's and Cuyer's oeuvres in the École written by one of their contemporaries, see Lemaistre (1889: 128–31).
12. Ravaissin's views on Greek pedagogy appeared in Ravaissin (1920).
13. His goal was to 'force the eye to see with precision, and to be able to later use perspective as a verification that substitutes verisimilitude with truth' (Commission de l'enseignement du dessin, 1879a, 21 July: 20).
14. For Guillaume's comment on the Union Central, see Guillaume (1895: 358).
15. Henri Bergson (1959a) explained how it was rewritten in 1882, when 'the author was in complete possession of his philosophy' (p. 1469).
16. 'The first thing to do, in all cases, for the constitution of drawing of a school of any sort, is to place a certain number of reproductions of masterpieces in casts, engravings or photographs, which will awake within the spirit the idea of perfect beauty' (Ravaissin, 1882b: 684).
17. Ravaissin contributed to this theme in Ravaissin (1886; 1887: 518).
18. The polemic against Marey is briefly mentioned in Colin (1886: 40). Traces, Colin argued, added nothing new to previous methods since they lacked 'imitative harmony'.
19. Delacroix's review was translated and reprinted in Cavé (1868). Although Delacroix collaborated with Ravaissin, he eventually distanced himself from a philosophy he considered 'neochristian'; see Towarnicki (1997: 18).
20. His first article on the Vénus de Milo was Ravaissin (1871). For a recent account of Ravaissin's work with the Venus, see Curtis (2003).
21. 'Greek artists always searched for grace, and this was what distinguished them completely from those of the regions that surrounded them' (Ravaissin, 1892: 243). Her 'grace came from the movement by which she descended, to put it some way, from her sovereign heights to share her empire with a hero' (p. 245).

22. Critiques of this view of time have been most famously undertaken in science and philosophy by Ilya Prigogine together with Isabelle Stengers, and in history and philosophy of science by Rheinberger (1997: 179–82).
23. For a debate involving Bergson and Einstein that focuses on the shifting boundaries between nature, science and politics see Canales (2005). Understanding these shifts significantly expands on scientific controversy models inspired by SSK (Sociology of Scientific Knowledge).

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