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Sculpture as the Sum of Its Profiles: François Willème and Photosculpture in France, 1859-1868

Robert A. Sobieszek

In conversation with Dujardin-Beaumetz, Auguste Rodin described his method of modeling a figure from a multiplicity of its profiles: "Lorsque je commence une figure, je regarde d'abord la face, le dos, les deux profils dans les quatre angles; puis, avec la terre, je mets en place la grosse masse telle que je la vois et le plus exactement possible. Je fais ensuite les intermédiaires, ce qui donne les profils vus des trois quarts; puis, tournant successivement ma terre et mon modèle, je les compare entre eux et les épure."[1] For Rodin, the perceived outline of a figure ended exactly where everything that was non-figure began, but this juncture was definitely a part of the body. The various postures and attitudes of the body were created by its own profiles.[2] He rotated the model, illuminating it so its silhouette would be clear throughout the revolution. Rodin observed the consecutive profiles through other than 360°, since he did not limit himself to just circling the figure but climbed up and down a studio ladder to gain differing points of view. By this process, the sculptor built up both an understanding and a representation of the figure. Apparently, Rodin was making use of this technique of sequential construction based on observation as early as his *Man with the Broken Nose* of ca. 1862-64. The method was also used by the sculptor for his first master work, *The Age of Bronze*, 1875-76.[3] Since Rodin discussed his notion of "profils comparés" only later in life, there is a question whether or not he arrived at it as an *ex post facto* defense against the critical attacks on his later, less "naturalistic" work. Because he consistently discussed the method only in conjunction with these two early works, however, it is safe to accept that he used it during the 1860's and early 1870's. In most of the literature on Rodin, it is described to stress the master's intense drive towards visual naturalism, usually underlined by his quoted aim "to capture life by the complete expression of the profiles."[4] But there has never been an attempt to determine whether this technique had any antecedents in nineteenth-century sculpture. Nor has it been made clear whence Rodin might have derived it. Was the modeling of a figure from its many profiles simply a universal practice of the sculptor's studio and not very significant in itself? Or was there some specific context in the sculpture of the early 1860's that might have been an immediate source for Rodin's idea and one that might have led him to adopt this way of conceptualizing the figure?

In 1861, the French mathematician and physicist, the Abbé François Moigno, published an article in *Cosmos*, the magazine he edited, in which he described certain aspects of figural silhouettes.

> Représentons-nous une statue dressée verticalement, et supposons que par l'axe vertical et central de la statue nous fassions passer une série de plans aussi verticaux; chacun de ces plans coupera la statue suivant une des ses silhouettes; l'ensemble de ces silhouettes constitue précisément [sic] le contour entier ou les formes extérieures entières de la statue. En vertu de la loi de continuité, il ne sera pas nécessaire pour reconstituer la statue d'avoir toutes ces silhouettes en nombre indéfini, il suffira d'en avoir un certain nombre, quarante-huit par exemple.[5]

Less than four years later, in 1864, the critic and novelist

I would like to thank Professor J. Kirk T. Varnedoe, now at the Institute of Fine Arts, N.Y.U., whose critical reading of this manuscript when he was at Columbia University and whose encouragement of the project were vital to the work's present form. Thanks are also due to the staffs of the George Eastman House and the Margaret Woodbury Strong Museums.

[1] H.-C.-E. Dujardin-Beaumetz, *Entretiens avec Rodin*, Paris, 1913, 11-12.

[2] Cf. *ibid.*, and B. Champigneulle, *Rodin*, trans. J. M. Brownjohn, New York [1967], 110-113.

[3] P. Sanders, "Auguste Rodin," in J. L. Wasserman, ed., *Metamorphoses in Nineteenth Century Sculpture*, Cambridge, Mass., 1975, 146, 153; also A. E. Elsen, *Rodin*, New York, 1963, 23; and J. de Caso and P. Sanders, *Rodin's Sculpture: A Critical Study of the Spreckels Collection*, San Francisco, 1977, 39, 44, n. 2.

[4] Dujardin-Beaumetz, *Entretiens*, 1; cited and trans. in Elsen, 23.

[5] Moigno, 549-50.

Théophile Gautier discussed the principle shared by both physics and sculpture that "tous les profils d'un corps réunis en donnent le relief."[6] Neither Moigno nor Gautier was addressing the early work of Rodin; rather, they were concerned with a relatively new phenomenon in the Parisian art world, "photosculpture" or "photo-sculpture," and with its inventor François Willème. Willème's process of making statues is now nearly unknown, yet it seems to have enjoyed a certain vogue during the 1860's and was frequently commented on in the press. Simply defined, photosculpture was the adaptation of photographic portraiture to the construction of three-dimensional portrait sculptures using photographic profiles taken from sequential positions encircling the sitter. The profiles were pantographically transferred into a three-dimensional matrix from which a mold could be made, and the finished or nearly finished statue was cast. The entire process was firmly based on the idea that the sum of all its profiles would yield the volumetric whole. According to Gautier, "L'idée est simple et vous frappe par son évidence; il n'en fallait pas moins une singulière ingéniosité pour tirer une statuette de vingt-quatre cartes photographiques ne présentant naturellement aucune épaisseur."[7] Although the idea may be simple, the process of photosculpture has been subject to various misunderstandings, even within the rather specialized arena of photographic history, and the relationships between it and the working methods of Rodin have never been suggested.

François Willème was born in Sedan on May 27, 1830,[8] and began drawing lessons at a local school. Most probably during the middle to late 1840's, he and his family moved to Paris. In the capital, he studied painting with F. E. Henri Philippoteaux (1815-1884), a former student of Léon Cogniet and a specialist in history and portrait subjects, best remembered for his monumental panorama *Le Bombardement du fort d'Issy* of 1873.[9] Willème also studied sculpture at this time, although we do not know with whom and exactly where. According to one source, he was making models for manufacturers of art bronzes,[10] and he apparently learned photography during the 1850's to document his statuettes. It was at this point that the potential in photography for accurately depicting volumetric forms and the relative ease of doing so began to appeal to Willème, just as another sculptor, A. S. Adam-Salomon (1811-1881), had earlier been attracted to the new medium for the same reasons.[11] But whereas Adam-Salomon gave up sculpture for photography, Willème envisioned the commercial and industrial applications of photography to the manufacture of sculpture.

In 1859, Willème conceived the idea of what he called "mechanical sculpture," a form of photographically derived sculpture with only minimal need for handwork. The process was simply an outgrowth of the idea that the sum of the profiles equals the whole volumetric figure.[12] Within one or two years, Willème developed his ideas for "photosculpture" proper; he took out patents on August 14, 1860, and April 6, 1861, and presented his new process to the Société Française de Photographie on May 17, 1861.[13] It took nearly two years to open his large studio at 42, Blvd. de l'Etoile (now Avenue de Wagram); he ran it until 1867 or early 1868 at which time his name no longer appears in the firm's advertisements.[14] Following this change, he returned to Sedan, entered into a partnership with a local photographer, Charles Jacquard, and continued to do photosculpture. After the devastating battle of Sedan in 1870, in which the French forces of Napoleon III were finally defeated by the Prussians and the Emperor was forced to capitulate, British assistance was given for the care of the wounded and for the rebuilding of the city. The city of Sedan, wanting to demonstrate its gratitude, commissioned an allegorical sculptural group to be presented to the British. Willème was chosen as the sculptor and he completed *L'Angleterre venant au secours de la France* (present whereabouts unknown).[15] This seems to be the only recorded instance of Willème treating a subject other than a portrait since his early attempts at art bronzes (of which, similarly, there is no record). Sometime after 1885, he and his wife retired to Roubaix, near Lille, where Willème died on January 29, 1905.

There are essentially two distinct yet similar processes involved in Willème's photosculpture: "mechanical sculpture," sometimes called "automatic sculpture," and "photosculpture" itself. The small ideal female bust con-

[6] Gautier, 7-8. Gautier's article was subsequently reprinted as "Photosculpture," *Le Monde illustré*, VIIème année, December 17, 1864, 396-98, accompanied by four engraved views of Willème's establishment by E. Morin and E. Rovens. By 1866, the article was included in a "mignon petit volume [sic] qui a l'intérêt d'un roman," along with the articles by P. de Saint-Victor, X. Aubryet, H. de Parville, and E. Lacan; see M. V., "La Photosculpture," *Le Monde illustré*, Xème année, December 15, 1866, 399; I have not located a copy of this volume.

[7] Gautier, 8.

[8] For the basic biography of Willème, see Cromer, 134-45.

[9] Vapereau, 1390; cf. also G. Bapst, *Essai sur l'histoire des panoramas et des dioramas*, Paris, 1891, 25.

[10] Lécuyer, 281.

[11] J. E. Buerger, "Nineteenth Century French Photography," *Image*, XXII, March, 1979, 28-29; also cf. Bibliothèque Nationale, *Lamartine: Le poète et l'homme d'État*, Paris, 1969, 290, Cat. No. 672.

[12] Willème, 2-3.

[13] [F. Willème], Notice of presentation of his technique at the meeting of May 17, 1861, *Bulletin de la Société Française de Photographie*, VII, June, 1861, 150-51.

[14] [F. Didot and S. Bottin], entries for "Photo-Sculpture," *Annuaire et almanach du commerce, de l'industrie, de la magistrature et de l'administration* ..., Paris, 1864-68. The first entry, 1864, cites the ownership as "Willème et Cie."; from 1865 through 1867 the entries read "Willème, de Marnyhac et Cie.," with a branch studio at 35, Blvd. des Capucines mentioned in 1867; in 1868, the entry appears for the last time but without Willème's name, "Charles de Marnyhac et Cie." I am grateful to Ms. Janet E. Buerger of the George Eastman House for this reference.

[15] Cromer, 144; a cabinet-sized albumen print of this sculptural group is in the collection of the George Eastman House, Rochester, N.Y.

sisting of a hundred pieces of shaped wood, presently in the collection of George Eastman House (Fig. 2), is a prototype of sorts and an example of Willème's mechanical sculpture. The process, designed for the copying and increased distribution of statues, was a means of duplicating sculpture cheaply which had certain advantages over the Collas machine of the 1830's (discussed below). First, the subject, which might be either living or inanimate, was photographed from as many as fifty positions on a circumference equidistant from the center of the subject. The photographs were then developed, printed, and used as models that were individually outlined onto sheets of wood, metal, or stone by the use of a pantograph. Since Willème almost always used a quarter-plate camera which accommodated a negative slightly less than ten and one-half centimeters high, the wooden bust in Figure 2 must have been slightly enlarged from the original photographic image as the facial features measure more than eleven centimeters high. The choices of material onto which the image was traced were limited to those which could be made into sheets, cut, planed, and then turned or stamped.[16] For the prototype, Willème selected wood, the most easily worked material. The fifty sheets of wood, each bearing the outline of one of the profiles of the subject, were then cut vertically in half and each of the half-profiles planed into a wedge-shaped section. The outline was then cut with a saw, furnishing a positive and a negative half-profile, as illustrated in figure 5, sheet 2, of Willème's U.S. patent specification of 1864 (Fig. 1). The resulting hundred pieces of positive half-profiles were then reassembled and tied together, forming a virtual likeness, indeed the literal sum of the figure's profiles. According to Willème, the real aim was to assemble the negative portions of the wooden sheets.[17] What was thus achieved was a cylindrical assembly of wooden pieces with a void in the center corresponding to the shape of the figure. The cylinder could consequently be used as a mold for further, cast examples. Moreover, as illustrated in figures 4 and 6, sheet 2, of the patent specification, the individual half-profiles, either positive or negative, could be used in their turn to generate multiple statues or mold (Fig. 1). Taking a pre-assembled cylinder of, say, fifty solid wooden pieces, one turned the cylinder on a lathe using a single half-profile as a model. After the hundred half-profile "editions" were completed, each of the turned cylinders was taken apart and the pieces reassembled with those of the other cylinders in the proper sequence around the figure, resulting in fifty wooden statues or fifty molds from which casts could be made. Willème apparently never put this process into any semblance of production; only the idea was formulated and a few examples constructed. The wooden bust in the George Eastman House Collection was most probably done for the sake of demonstrating the method, and was pro bly the same bust shown to both the Abbé Moigno in ly 1861 and the Société Française de Photographie later at same year.[18] This bust, and a profile relief portrait of the artist's brother (Fig. 3) constructed of more than fifty cast bronze pieces and in the same collection, can be dated between late 1859 and early 1861.

Willème's photosculpture proper was not put into any practical use until early 1863. In the interim, the principal problem was the financing of a studio large enough to accommodate life-size sculpture and photography. To this end, a corporation was formed, the "Société Générale de Photosculpture de France," headed by Willème and his associate Charles de Marnyhac.[19] Lécuyer gives a list of the principal stockholders: a certain Soubeyran, Edgar Aimé, the banker Isaac Pereire, and the lawyer and publisher Paul Dalloz.[20] Up to early 1863, nearly all the critical articles on Willème reported that photosculpture was feasible and that the sculptor needed only a studio in which to operate; by April of that year, Henri de Parville could describe the studio's interior in detail as well as furnish a variety of "street gossip" about its shape.[21] The previous January, Paul Dalloz published a major article on Willème's invention in the magazine he edited, *Le Moniteur universel*,[22] and about this essay de Parville wrote:

> Sans son initiative [Dalloz's article] qui a vaincu les résistances, fait tomber toutes les doutes, nous en serions sans doute à la conception théoretique; l'invention restée dans ses limbes serait encore décriée de la plupart, inconnue de plus grand nombre. Le rôle de la Presse scientifique n'est pas seulement de décrire ce qui est, mais surtout et avant tout de faire naître les idées, de

[16] Willème, 2, sheet 2 of two sheets of mechanical drawings.

[17] *Ibid.*, 2.

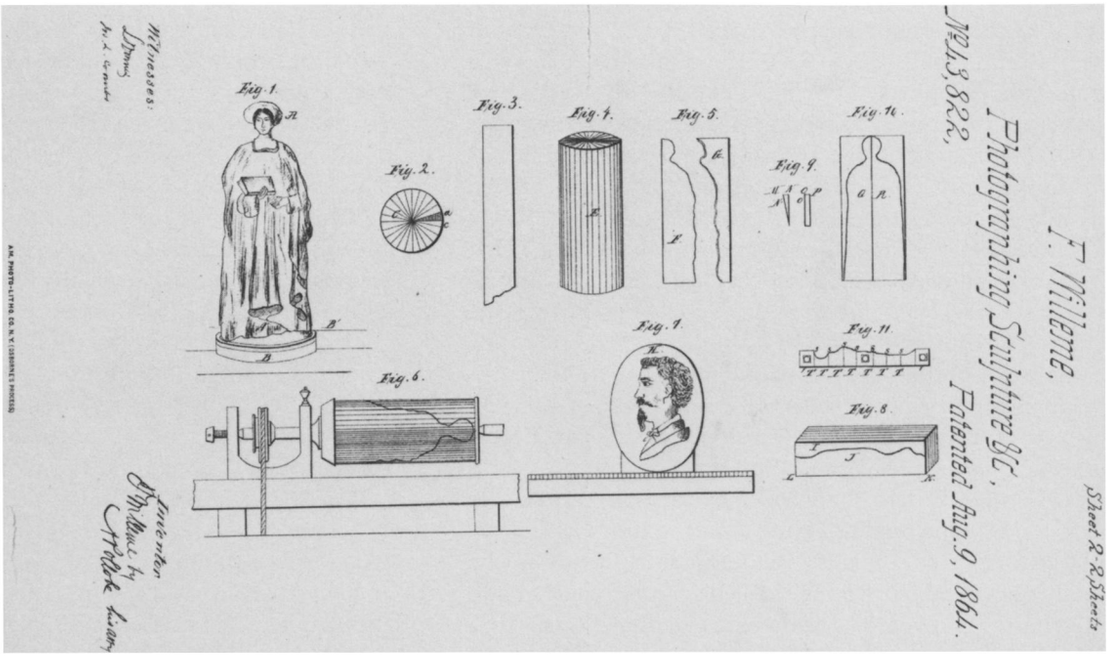
[18] Moigno, 550; [Willème], Notice (as cited in n. 13), 151.

[19] Since de Marnyhac's name appears on the corporation's letterhead stationery, it is assumed that a direct partnership was in effect; cf. below, n. 22.

[20] For the stockholders in the corporation, see Lécuyer, 281; Lécuyer gives only the surnames of the stockholders. Soubeyran might have been the French pharmacist, J.-Léon Soubeiran; see Vapereau, 1632. Both Emile and Isaac Pereire were bankers. Emile was a noted patron of the arts who helped support the posthumous exhibition of Paul Delaroche's paintings in 1856. Isaac, however, had his photosculpture portrait made by Willème; for this reason, I suggest he was the stockholder; see Vapereau, 1375.

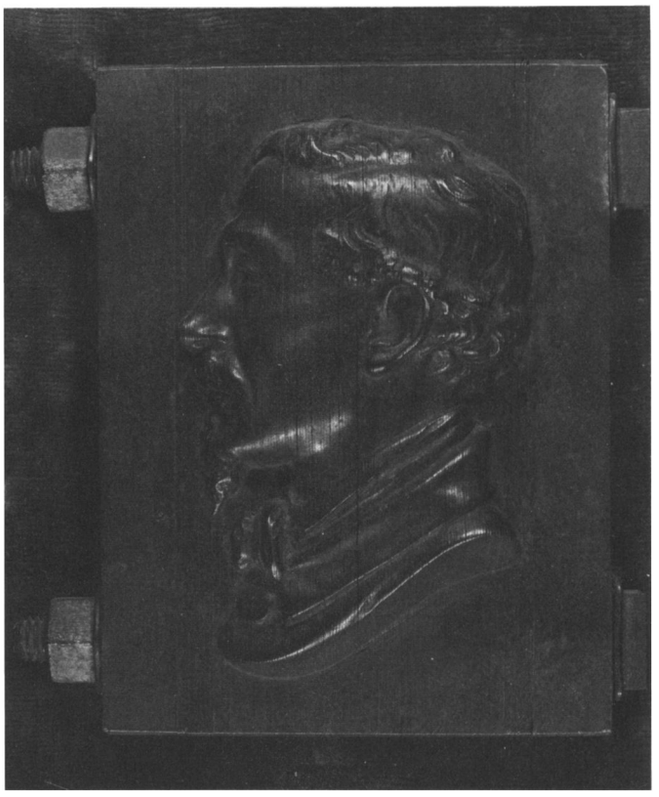
[21] De Parville, unp.

[22] P. Dalloz, "Photo-sculpture," *Le Moniteur universel*, January 13, 1863, 57. That Dalloz was using his position as a publisher and editor to further his interests is clear from his alleged intent to put pressure on the editor of the London *Times* to publish something about photosculpture in London; in a letter to Antoine Claudet dated May 14, 1864, Charles de Marnyhac wrote: "Je regrette que le Times ne se soit pas encore décidé à parler de la photosculpture, mais Mr. [sic] Dalloz m'a promis d'écrire au directeur et cette recommandation nous assurera le succès." This letter, and all letters from de Marnyhac to Claudet cited here, are in the collection of the George Eastman House, Rochester, N.Y.



1 Willème, *Photographing Sculpture &c* (from U. S. Patent Specification, 43,822, 1864, sheet 2)

2 Willème, untitled mechanically produced bust, ca. 1859-1861, oak and twine. Rochester, George Eastman House Museum (GEH)

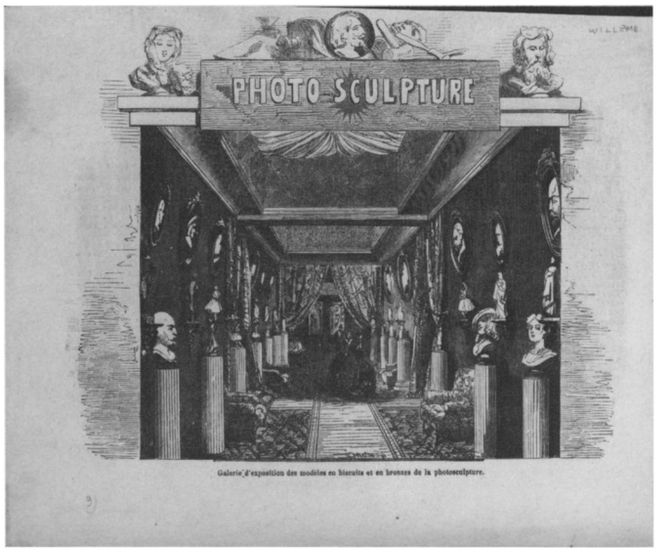


3 Willème, mechanically produced relief profile of the artist's brother, ca. 1859-61, bronze. Rochester, GEH

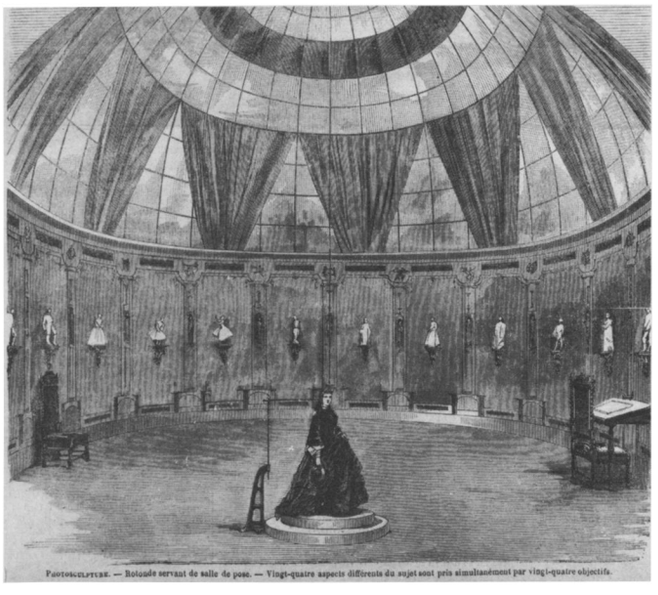
deviner la portée d'une invention, de la faire triompher des obstacles et de doter ainsi la société de nouveaux bienfaites ... nous ne saurions séparer [Dalloz's] nom de celui de M. Willème.[23]

The sort of idealism that de Parville demonstrated when discussing the role of the scientific press reflected a faith in technological progress more than in the powers of the fourth estate, since the "Décret organique sur la Presse" of

[23] De Parville, unp.



4 E. Morin, Willème's exhibition gallery (from *Le Monde illustré*, December 17, 1864)



5 E. Morin [?], Willème's studio (from *Le Monde illustré*, December 31, 1864)

1852 had seriously limited the effectiveness of the social and political press.[24] Furthermore, the critic failed to consider that Dalloz might have had less than purely disinterested motives when he published his article, since he was a principal stockholder in the photosculpture corporation.

When a large circular cupola was first erected at 42, Blvd. de l'Etoile, constructed of metal mullions with blue

6 Willème, twenty-four sequential photographs of child model, ca. 1863-67, albumen prints. Rochester, GEH

and white panes of glass, it was thought to be a conservatory, a zoo for small animals in the English style, an aquarium and, only finally, a photographic studio.[25] Precisely what form of photographic studio was hardly made clear when the large lettering appeared on the façade: "Photosculpture." The first floor consisted of an entry hall, a small salon filled with works of art (Fig. 4), and a photographic laboratory. The studio proper was reached by a flight of stairs in the center of the hall. The vast rotunda, ten meters in diameter, was quite unlike any conventional photographic studio (Fig. 5). The dome of glass, with draperies attached to its lower course, dominated the interior. The room was empty, save for a two-tiered circular platform in the very center with a starburst painted on its top, and a silvered plumb bob suspended from the dome over the platform's center. Around the edge of the platform were twenty-four fairly large numerals and around the circular wall were twenty-four bracketed consoles supporting examples of Willème's photosculpture. Discreetly hidden beneath the consoles were an equal number of small windows behind which, in an encircling corridor, were placed twenty-four quarter-plate cameras. Each camera had a primitive shutter arrangement in front of the lens; these shutters, in turn, were all interconnected, so that a single cord could be pulled to obtain two dozen simultaneous exposures. The subject, standing in the center of the studio atop the platform, was photographed twenty-four times from as many positions around the wall in about ten seconds (Fig. 6).

[24] On the "Décret," see Hatin, *Histoire du journal en France: 1631-1853*, 2nd ed., Paris, 1853, 304-09.

[25] The description of the studio has been taken from the de Parville and the Gautier articles, both *passim*; and from contemporary photographs.

Forty-eight hours later, the client received the finished photosculpture portrait.

De Parville summarized Willème's invention succinctly: "... un sculpteur et le soleil deviendront deux collaborateurs qui travailleront ensemble pour façonner en quarante huit heures des bustes, des statuettes d'une fidélité inconnue jusqu'ici, d'une hardiesse de contour, d'un modelé admirables."[26] Some clients felt that the process of photosculpture was as fast as that of ordinary photographic portraiture in the 1860's, where the client could often receive finished prints after only a slight wait. According to Gautier, "la statue n'apparait pas aussi vite que l'image; il faut un peu plus de temps et de travail pour la dégager de son bloc."[27] The finished product could have been a statuette measuring forty, forty-five, or fifty-five centimeters high; a medallion either full or half-life size; a bust measuring either full or half-life size; or "petits bustes, dits bustes-cartes."[28] The client had a choice of materials as well; the sculptures were offered, according to Paul de Saint-Victor, in terra-cotta, biscuit, bronze, and alabaster, and they could even be metal-plated by galvanoplasty.[29] Unquestionably, the substance used most often for the finished work was plaster of Paris, as indicated in the critical sources and by the extant examples.

Photosculptures were produced by a method similar to, but rather different from that of Willème's mechanical sculpture. First, only two dozen photographs were found to be necessary in defining the entire volumetric figure, instead of fifty. Second, and more important, the penultimate figure or *ébauche* was not assembled like the wooden bust described above, but rather was modeled or carved. It is at this point that Willème's process comes closest to Collas's reducing and enlarging machine. The twenty-four photographic portraits were developed and kept as glass-plate negatives instead of being printed out as positive prints. Hence if the quarter-plate negative were ever felt to be too diminutive, it could be enlarged by use of a solar enlarger. Theoretically, one of the advantages of the process was that microscopic subjects could be transformed into sculpture in very large proportions.[30] As far as can be determined, however, such enlarging of very small images was never undertaken. The portrait negative plate was projected onto a translucent screen of frosted glass, behind which a studio assistant could view the enlarged projection. With a fairly elaborate system of double pantographs (Willème stated he preferred only a single one), the assistant or assistants followed the contours of the subject's profile outline with one end of the pantograph, as can clearly be seen in an engraving (Fig. 7) published in Gautier's pamphlet of 1864,[31] as well as in a photograph of Willème's modeling studio in the collection of the George Eastman House (Fig. 8). The second arm of the pantograph held a carving blade or stylus that could easily cut into modeling clay. By tracing the outline of the photograph profile on the screen, the carving arm would translate the motion's configuration into the block of clay of desired height. Two pantographs, set at right angles to one another, with two screens, could easily delineate two profiles at the same time. The block of clay was correspondingly turned on a rotating base as different profiles were treated by the assistant, so that after all twenty-four were traced out with the pantograph a corresponding twenty-four profiles were articulated in full 360° around the clay. An *ébauche* was created that bore a virtually complete likeness to the subject. This was the end of the first phase of modeling. The second aspect to be treated was the depiction of those physiological details which were not rendered by the outlines of the head or general figure, such as the interior forms of the ears and nostrils, or the hollows between arms and body. Again, the photographic negatives were projected, and again the complete cycle of twenty-four were gone through, with the assistant following those interior details and those shadowed areas representing gradual concavities in the form of the subject.[32] The *ébauche* was now complete. For relief sculptures, of course, only one half of the profiles would have been used.

The next step was the most crucial for the critical acceptance of photosculpture as art by the critics of the 1860's. At this stage, Willème or the master sculptor carefully smoothed the linear junctions between the twenty-four carved profiles and united them into a harmonious and just likeness.

> Pour lui donner tout le fini désirable, il vaut mieux cependant qu'elle soit terminée par un artiste! Mais alors, alors seulement, commence le rôle du sculpteur; à lui de retoucher les lignes, de corriger les contours, de parfaire l'oeuvre. ... En lui évitant les détails matériels, l'ébauche, elle permet à sa pensée de se développer à l'aise, à l'inspiration de suivre son cours. L'art doit assurément y gagner.[33]

The finished clay portrait was subsequently treated as any *modèle* in a sculptor's studio. A mold was made from it, and as many plaster of Paris statues cast from the mold as desired (Fig. 9). Most commentators said that forty-eight hours were needed to complete the work; de Parville claimed it was closer to three or four days. Not only was time saved but there was a commensurate economic gain. For the same work that would take a conventional sculptor four months to finish, de Parville added that "on peut avoir dès maintenant pour 500 fr. ce qu'un artiste ne donnerait pas pour 3,000 fr." As usual, Gautier was more ex-

[26] De Parville, unp.

[27] Gautier, 6-7.

[28] *Ibid.*, 13-14.

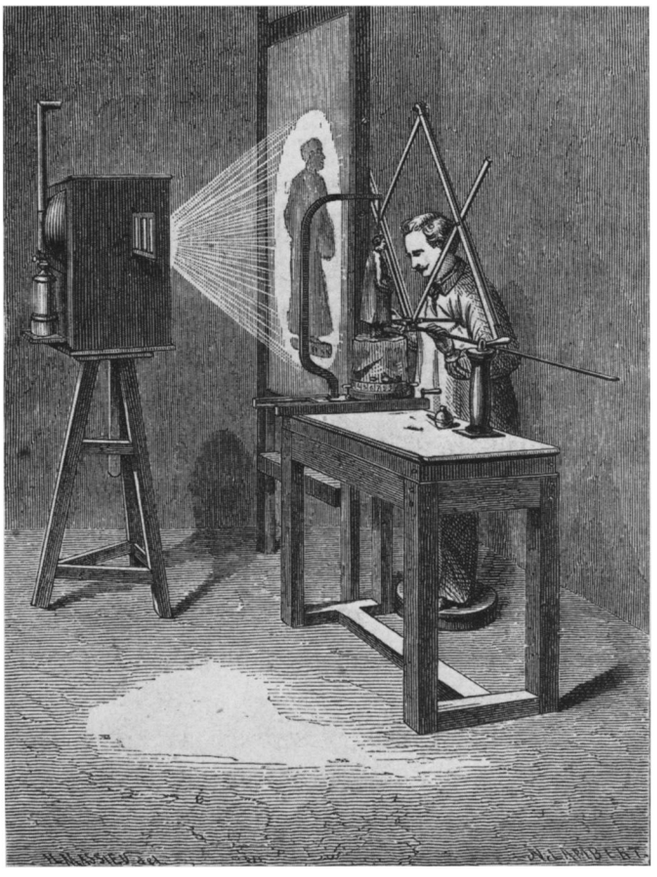
[29] De Saint-Victor, unp.

[30] Willème, 2.

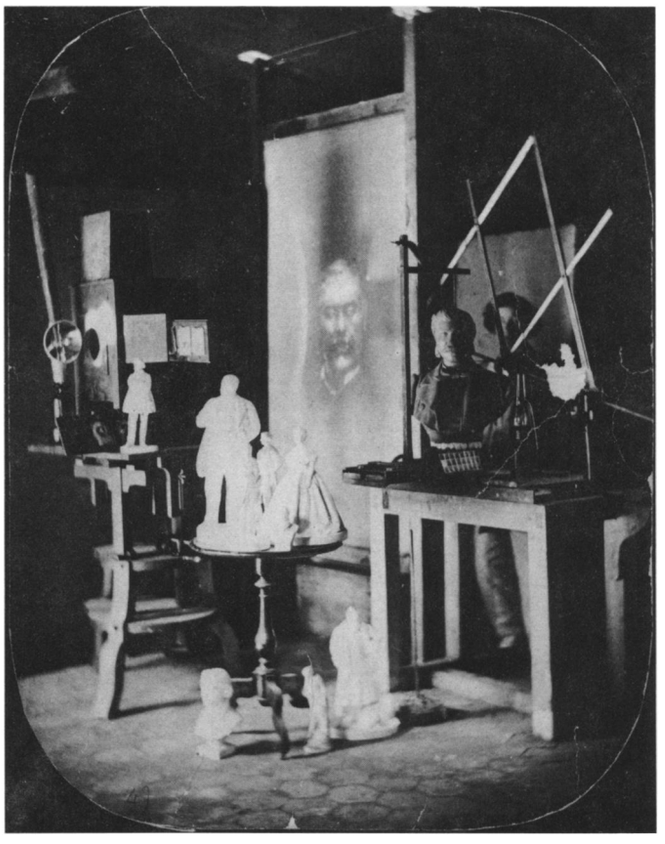
[31] Cf. the engraved illustration in Gautier, 7.

[32] Cf. Moigno, 549.

[33] De Parville, unp.



7 N. Lambert and H. Massieu, Willème's modeling studio (from Gautier, *Photosculpture*, Paris, 1864)



8 Willème, studio still life with assistant, ca. 1863-67, albumen print. Rochester, GEH

pansive and saw the inexpensiveness of photosculpture as reflective of the modern world. "Ce n'est pas tout, le siècle, bien que dépensier, est èconome. L'art pur lui semble cher."[34] By 1864, one year after de Parville's article, the highest price for a work of photosculpture was 500 F. for a life-sized bust, and the largest full-figure statuette cost only 280 F.

Photosculpture was also part of the modern world insofar as it represented a merging of art and technology. The familiar expression "les beaux-arts appliqués à l'industrie" was generally current with manufacturers and artists during the Second Empire.[35] In a way, Willème's photosculpture, like photography itself, was the exact reverse: the application of industry or technology to the fine arts, a veritable "marriage de l'art et de l'industrie."[36] The marriage involved, on the one hand, the mechanical tools of photography and the pantograph, and, on the

9 Willème, self-portrait photosculpture, ca. 1863, plaster. Rochester, GEH

[34] Gautier, 10.

[35] See K. B. Hiesinger and J. Rishel, "Art and Its Critics: A Crisis of Principle," in Philadelphia Museum of Art, *The Second Empire, 1852-1870: Art in France under Napoleon III*, Philadelphia, 1978, 30, and *passim*.

[36] De Saint-Victor, unp.; cf. also Hermant, 426-27.

other hand, the art of traditional sculpture. The aim was principally to produce accurate likenesses in sculpture that would be efficiently achieved and cost little.[37] In itself, however, this aim was not new with Willème's photosculpture. There was an ample tradition in France of the use of mechanical devices to produce accurate portrait likenesses that were also "bon marché," beginning with the invention of the physionotrace in 1783 by Gilles-Louis Chrétien (1754-1811), a "musicien du roi."[38] The physionotrace was an instrument with which a portrait silhouette could be fashioned, but a silhouette also replete with interior details. The sitter was positioned within a large wooden framework to one side of which was fastened a viewing device connected to a pantograph. The artist, keeping his eye fixed on the movable viewer, traced the details of the sitter's side profile with one end of the pantograph. The other end followed with either a pen or a stylus, producing a drawn likeness on paper or on a coated etching plate. Because the image was delineated by the shorter arm of the mechanism, it was greatly reduced from life-size. By the early nineteenth century, the simple physionotrace was modified to a rather complex system of metal wires that accomplished the same function.[39] The eighteenth-century physionotrace was essentially an "instrument dont on se sert pour dessiner avec exactitude le profil d'une figure."[40] The only difference between it and Willème's mechanics was a third spatial dimension.

Another, and probably more direct, French antecedent of Willème's process was the sculptural reducing and copying machine invented by Achille Collas (1795-1859) around 1836.[41] During the late 1820's, Collas, who may be called an industrial designer for lack of a better term, worked on machines to assist the etcher in sketching skies and large flat landscape areas. In the early 1830's, he developed a machine that would carefully copy the relief and the chiaroscuro of medallions onto engraved plates, calling it a "gravure numismatique." His collection of etched plates of medallions and coins, *Le Trésor de numismatique et de glyptique*, appeared in four volumes from 1831 to 1836. This publication was sponsored in part by Paul Delaroche and Henriquel Dupont and was a clear demonstration of his technique's effectiveness. In 1829 he began work on the design of what has been labeled the Collas process: the mathematically precise reduction or enlargement of sculptural objects in full relief with the aid of a mechanical device.[42] Collas's device was quite simple (Fig. 10): a number of rulers were attached to a simple wooden frame, similar to a "pantographe-rapporteur." With a rounded point on one arm of the mechanism, the operator followed each contour of the sculpture to be copied; the opposite arm held a sharpened point which, corresponding to the movement of the first arm, carved the same outline into a mass of wet plaster. Turning the original model as well as the plaster and continuing to trace the shape of the original, the operator reproduced a shape that would be accurately duplicated in a size that was directly related to the combined lengths of the instrument's arms. Collas's first success was a two-fifths reduction of the Venus de Milo which he made and about which the critic Jules Janin wrote: "l'inventeur est un de ces hommes de génie ... ce que l'imprimerie a fait pour le poème d'Homère, M. Colas [sic] a su le faire pour la *Vénus de Milo*. Il l'a vulgarisée; il l'a mise à la portée de tous."[43] The Collas machine was the primary vehicle for the proliferation of serial sculpture and sculptural editions of varying sizes beginning in the late 1830's and 1840's. Such manufacturers of art bronzes as Barbedienne made extensive use of the Collas process, and since, as we are told, Willème made models for some unnamed manufacturer of art bronzes during the late 1840's, it is more than likely that he at least knew of the Collas machine. Some two decades later, Willème's photosculpture seems to have been nothing more than the application of photography to Collas's engineering.

A third machine, the "physionotype," patented by the French inventor Pierre-Louis-Frédéric Sauvage (1785-1857) in 1836 but probably invented some years earlier,[44] is partially relatable to Willème's process but not, as has been proposed, a direct antecedent.[45] Although detailed descriptions of Sauvage's machine are difficult to locate, a schematic illustration of it (Fig. 11) was published on the reverse of an entrance ticket to an exhibition of

[37] Willème's most succinct statement of his aims with photosculpture is found in F. Willème, "La Sculpture photographique," *Le Moniteur de la photographie*, I, July 18, 1863, 34-36: "J'ai pensé qu'en me servant de deux choses connues, de la photographie et du pantographe, je pouvais obtenir de la sculpture exactement semblable au modèle (vivant ou inerte), l'obtenir plus promptement, à des frais moins grands, et par des ouvriers n'ayant aucune connaissance de l'art de la sculpture ... L'avantage de mon système est que cette sculpture est créée exactement semblable au modèle, que tout le monde peut sculpter par ce procédé; qu'elle est obtenue plus promptement, à moins de frais, et que le modèle vivant ne pose que quelques secondes."

[38] For more on Chrétien and the physionotrace, see H. Vivarez, *Un Précurseur de la photographie dans l'art du portrait à bon marché: Le Physionotrace*, Lille, 1906; for the redating of Chrétien's invention see G. Cromer, *Nouvelles précisions, nouveaux documents sur le Physionotrace*, Lille, 1928, 9-10.

[39] For a description of a later model of the physionotrace, see Vivarez, 13.

[40] *Ibid.*, 13.

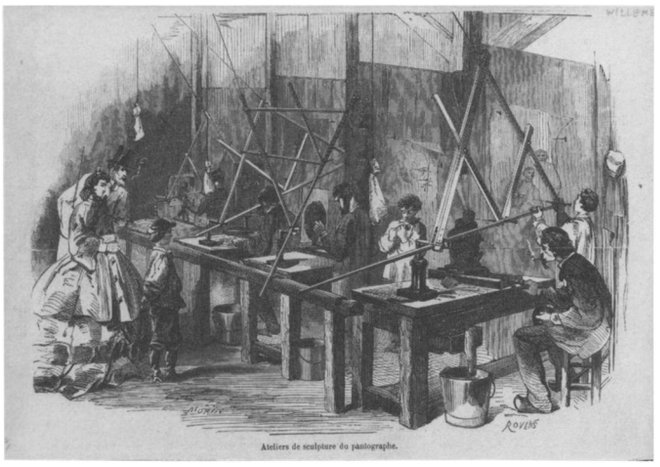
[41] A. Jacquemart, "Nécrologie [Achille Collas]," *Gazette des beaux-arts*, III, 1859, 60. For earlier examples of pantographic sculpture machines in Great Britain, by J. Watt, J. Hawkins, and B. Cheverton, see M. Bogart, "In Art the Ends Just Don't Always Justify the Means," *Smithsonian*, X, June, 1979, 105-07.

[42] Jacquemart, 60; cf. also Vapereau, 409.

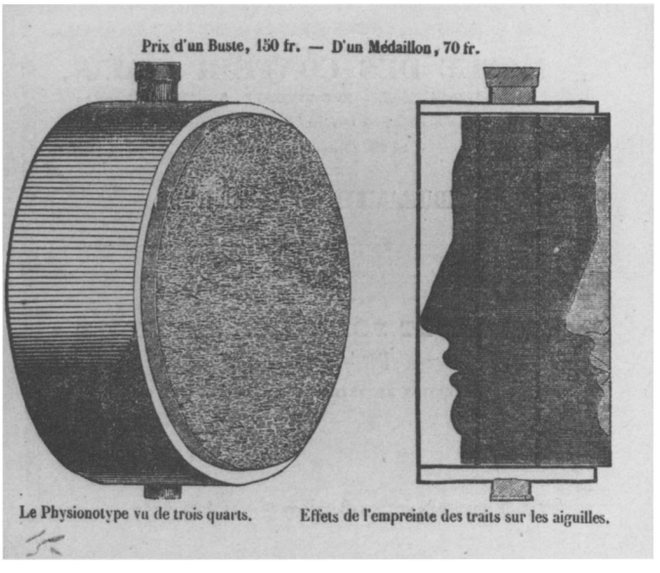
[43] J. Janin, "Exposition des produits de l'industrie," *L'Artiste*, 2nd ser., III, 1839, 17-23; cited in J. de Caso, "Serial Sculpture in Nineteenth-Century France," in Wasserman (as cited in n. 3), 20, n. 41.

[44] For the dates of Sauvage's invention, see de Caso, 20, n. 42; a slightly earlier date is suggested in Vapereau, 1570.

[45] Cromer, 135.



10 E. Morin and E. Rovins, pantographic studio (from *Le Monde illustré*, December 17, 1864)



11 Attrib. to F. Sauvage, physionotype, ca. 1836-39, engraving on reverse of exhibition ticket. Rochester, GEH

physionotype busts and relief portraits at the Musée des Contemporains in Paris, most probably held in the late 1830's.[46] The device consisted of an oval metal frame approximately forty centimeters high. Within it were a large number of thin metal rods, not unlike knitting needles but without sharpened points. The rods were of equal length, held slightly apart and parallel by two screens through which they were passed. One end of the bed of rods was exposed and the other was covered with a supple skin. The sitter's face was slowly brought into contact with the exposed rods and depressed into the frame up to the level of the ears. The displaced rods would, of course, conform to the configuration of the sitter's face as would the now-stretched skin opposite. A wax *moulage* was made from the formed skin and this, in turn, was used to cast a plaster relief of the sitter. For a full bust, another impression was made of the rear of the subject's head, the two *moulages* were combined and a cast, either hollow or solid, was made. The products of Sauvage's work can be seen in the background of Daumier's lithograph, *Grande Exposition de l'Industrie et des blagues contemporaines*, of 1839, in which are exhibited four Messerschmidt-like beaked heads on a shelf under which is the work "Physionochipe" [sic].[47] The slang suffix, "-chipe" most probably refers to thievery or, rather, the act of nabbing; a synonym of the period was "enlever." Sauvage also worked on a "réducteur, ou nouveau pantographe" between 1824 and 1836, which allowed him to reduce or enlarge any given model mathematically.[48] This instrument bears a closer resemblance to Collas's and Willème's machinery than does the physionotype, and as such might be yet another French predecessor to photosculpture. In both of his inventions, however, Sauvage's ultimate aim was the same as those of his fellow sculptors: the convenient, veristic, and inexpensive manufacture of portrait sculpture.

Sauvage's physionotype machine was a device for the mechanical duplication of a human portrait in three dimensions without the aid of a pantographic translation. A rather strange variation on Willème's photosculpture was likewise an attempt to obviate the need for the pantograph. The invention was patented in 1865 by the London-based French photographer Antoine François Jean Claudet (1797-1867), and was given the name "plastimonographe" precisely to differentiate it from Willème's "pantographe."[49] Claudet, one of London's most successful portrait photographers and a member of both the Royal Photographic Society and the Société Française de Photographie, was introduced to Willème's studio in November of 1863. By the spring of the next year, he had entered into an arrangement with the Société Générale de Photosculpture in Paris to promote the idea of photosculpture in England. Willème's company had certain doubts about the viability of such an attempt, but Claudet's being French helped greatly. Charles de Marnyhac, Willème's partner, wrote to Claudet on February 17, 1864, saying: "Malgré le peu de goût qu'ont les

[46] An example of his ticket is in the collection of the George Eastman House; a slightly different device is described in *ibid.*, 135.

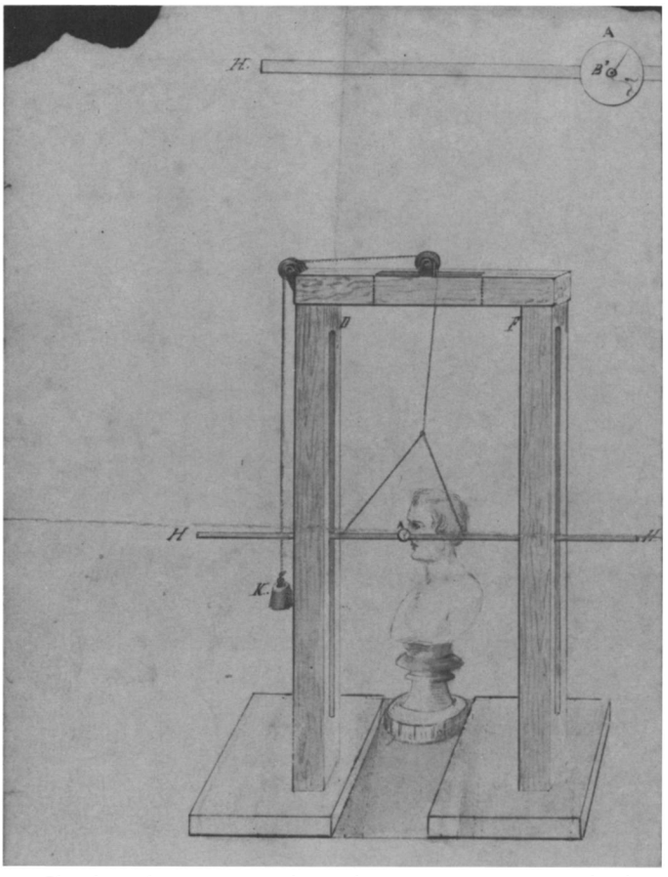
[47] L. Delteil, *La Peintre-graveur illustré*, XXI (*Honoré Daumier*, II), Paris, 1925, Cat. No. 556.

[48] Vapereau, 1570.

[49] A. Claudet, "Description de la photoplastigraphie, nouveau procédé de photosculpture," *Bulletin de la Société Française de Photographie*, XI, April, 1865, 103; this is the basic source on Claudet's involvement in photosculpture.

Anglais pour les arts, je crois cependant que la Photosculpture est appelée [sic] à un grand succès chez eux, admirateurs ou plutôt accapareurs de toute industrie nouvelle ... vous êtes Français et que je compte plus sur un compatriote que sur un Etranger pour faire connaître, propager et répandre une invention française."[50] In the same letter, de Marnyhac also told Claudet that he was sending to London an example of photosculpture as well as a copy of Gautier's article as it appeared in *Le Moniteur universel*. Through the spring of that year, the business relationship grew. Claudet sent to de Marnyhac the negatives he took of his subjects; the Paris establishment would then return the manufactured, three-dimensional sculpture.[51] These statues, for the most part busts, were subsequently exhibited in September of 1864 and included the likenesses of Sir Charles Lyell, Sir Charles Eastlake, Sir David Brewster, and others.[52] During the course of 1864, Claudet founded a parallel photosculpture society in London for the purpose of acquiring the rights to the British patent for Willème's process.

In late 1864 or early 1865, Claudet experimented with certain modifications of Willème's photosculpture. The modifications were significant enough, he thought, to warrant his taking out his own patent, but not before offering the rights of ownership to his own society, which refused them for unclear reasons. Claudet took out both a British and a French patent in early 1865, at about the same time that he broke with the British society. In an address to the Société Française de Photographie, he explained his conviction that the changes he engineered made his plastimonograph simpler, more exact, and less expensive than Willème's pantograph.[53] Instead of projecting the individual images onto a screen from which they were transferred to the clay by the pantograph, Claudet projected them directly onto the clay. To focus the two-dimensional image on the volumetric mass of unformed clay, he placed a thin, U-shaped sheet of metal vertically around the central axis of the clay. After the image was focused on the perpendicular plane of the metal, the clay was carved following the projected outline. The metal sheet was then removed, the clay rotated, the metal sheet relocated, and another image projected and carved until all twenty-four were completed. Finishing and casting procedures were identical to Willème's. Obviously, this method was quite awkward and failed to deal with those "interior" details that were crucial to the portrait's likeness. Two variations were, therefore, proposed by Claudet. First, and strikingly least feasible, the image was to be focused on a thin plane of vapor or smoke formed just in front of the clay; the sculptor would then follow the outline of the image and cut into the clay through the smoke screen. Claudet admitted that there were some problems in maintaining the stability of the vaporous screen. The second variation is illustrated in a drawing (Fig. 12) in the Claudet Collection at the George Eastman House. A wooden frame supporting a horizontal bar was placed immediately in front of the clay. The bar could be moved laterally and vertically; in the center of the bar was positioned a reflective metal disc with a central dot or circle painted on it. The dot corresponded to the carving tool attached to the side of the disc facing the clay. In a darkened room, the projected image of the subject's head was focused onto the plane in which the disc was located; the sculptor used the disc as a minuscule screen on which



12 Claudet, plastimonograph machine, ca. 1864, pen and ink, watercolor. Rochester, GEH

[50] Autograph letter signed (a.l.s.) Charles de Marnyhac to Antoine Claudet, February 17, 1864, in collection of George Eastman House, Rochester, N.Y.

[51] Claudet, "Description," 99, also cf. a.l.s., Charles de Marnyhac to Antoine Claudet, February 29, 1864, and April 17, 1864, in collection of George Eastman House, Rochester, N.Y.

[52] A. Claudet, "Photo-Sculpture," *The British Journal of Photography*, XI, September 23, 1864, 366.

[53] Claudet, "Description," 100.

to follow the outline of the image and, thus, to carve the clay. Claudet's ideas are interesting if for no other reason than to demonstrate the vital popularity of photographic sculpture in the 1860's; there even seems to have been a photosculpture studio in New York in 1867, operated by Huston and Kurtz.[54] Photosculpture in England, at least Claudet's verson of it, did not last beyond 1866; after this date there is no mention of it in the photographic press.[55]

A large number of machines to assist artists were designed in France during the reigns of Louis Philippe and Louis Napoleon; Willème's was merely another attempt to ally modern technology with the fine arts. The Comte de Laborde summarized this course of events and suggested that they had resulted in the democratization of art. "L'intervention des machines a été, dans cette propagande de l'art, une époque et l'équivalent d'un révolution; les moyens reproducteurs sont l'auxiliaire démocratique par excellence. ... et, si l'on me disait qu' ... après la machine qui sculpte et la machine qui coud, on a trouvé une mécanique qui peint, je n'en serais pas surpris et j'y applaudirais.[56] De Laborde's positivistic optimism was not shared by every critic. Concerning the sculptural machines of Collas and Sauvage, Francis Wey found grave limitations.

> Il est des procédés, tels que le physionotype, ou l'invention de M. Collas, au moyen desquels on obtient le moulage exact d'une tête. Ces procédés, je les suppose plus parfaits encore, et mis en usage pour façonner le buste de quelqu'un: ce résultat sera d'une précision mathématique ... Le produit de cette pratique sera-t-il l'idéal de la ressemblance? Non. Cet objet sera repoussant, l'aspect du modèle ne l'est pas. On contemplera une chose barbare, une parodie grimacière de la vie, sans physionomie, sans animation; et l'imagination offensée ne reconnaîtra point là le personnage tel qu'elle se plaît a se le représenter. La ressemblance est donc autre chose. La ressemblance est, non la reproduction méchanique, mais une interprétation. ...[57]

Nearly every critic who reviewed the products of photosculpture expressed the fear that the new process would injure the art of sculpture. This apprehension was customarily countered by explaining that the mechanical side of photosculpture only eased the sculptor's routine work with the materials and the *ébauche*; the genius and talent of the artist were transferred to the work at the point of the final handwork and finishing. The advantage of the mechanical process was that it allowed the sculptor an amount of freedom to conceptualize and cultivate inspiration.[58] Paul de Saint-Victor put it simply: "La photosculpture donne le corps, la Sculpture y met l'âme, et de leur collaboration résulte souvent une oeuvre parfaite."[59] Photosculpture was simply a tool for the sculptor to use in the same fashion that photography, according to Baudelaire, was a handmaiden to the art of painting, and was not an art in itself. Gautier followed this notion and applied it to both photography and photosculpture: "L'art ne doit voir dans la photosculpture et la photographie que de dociles esclaves qui prennent des notes pour son compte, lui préparent le travail, font les besognes ennuyeuses, et lui désencombrent de tout obstacle matériel le domaine de l'idéal."[60] Again, for Gautier, it was the artist who gave to the mechanical product the "vie de l'âme" and the interpretation that were essential for art. He concluded his commentary with the inverted compliment: "Si ce n'est pas un chef-d'oeuvre, c'est au moins une merveille!"

With the exception of the physionotype, earlier sculpture machines were developed to satisfy and possibly created a demand for small-scale reproductions of art that would fit comfortably into a domestic salon.[61] There was equally a tremendous vogue for portrait busts during the reign of Louis Philippe, as signalled by the Salon *livrets* and Grandville's satiric cartoon of 1836, *Museum Dantanorama*. In the 1830's, the portrait bust became a common source of revenue for many sculptors, and it is within this context that Sauvage's physionotype should be seen.[62] Undoubtedly, Willème was merely adhering to a well-established popular idiom when he created his Photosculpture de France. Nearly all of his photosculptures are portrait likenesses. Besides the forty-centimeter-high, full-figure self-portrait, there is a forty-five-centimeter-high plaster cast of an unidentified standing male figure in the collection of the George Eastman House. The Paris collection of M. Gérard Lévy contains five plaster or biscuit busts of unidentified subjects (Fig. 13), a copper-plated relief bust of the Duc de

[54] B. Newhall, "Photosculpture," *Image*, VII, May 1958, 105.

[55] There were subsequent developments in photosculpture elsewhere and afterwards; cf., e.g., anon., "Talk in the Studio," *The Photographic News*, X, July 13, 1866, 335, where the invention of a new method by the photographer of Pompeii, G. Luzzatte, is signaled. Cf. also Lécuyer, 282-84; and W. Baier, *Quellendarstellungen zur Geschichte der Fotografie*, Halle (Saale), 1964, 218-19, for later modifications and developments in photosculpture.

[56] Cited in de Caso's article in Wasserman (as cited in n. 43), 20, n. 40.

[57] F. Wey, "Théorie du portrait: I," *La Lumière*, I, April 27, 1851, 46.

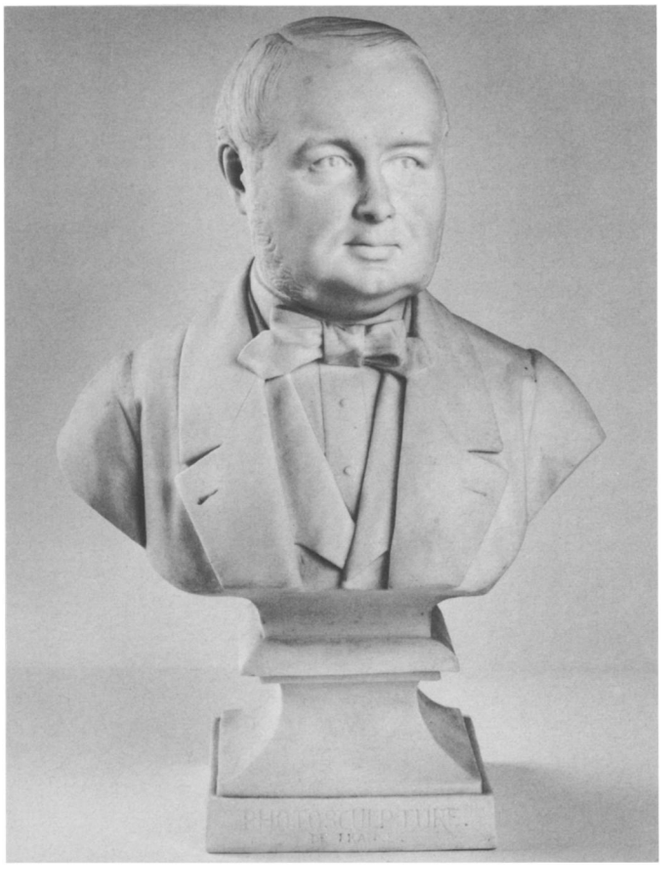
[58] De Parville, unp.; cf. above, n. 33.

[59] De Saint-Victor, unp.

[60] Gautier, 9-10.

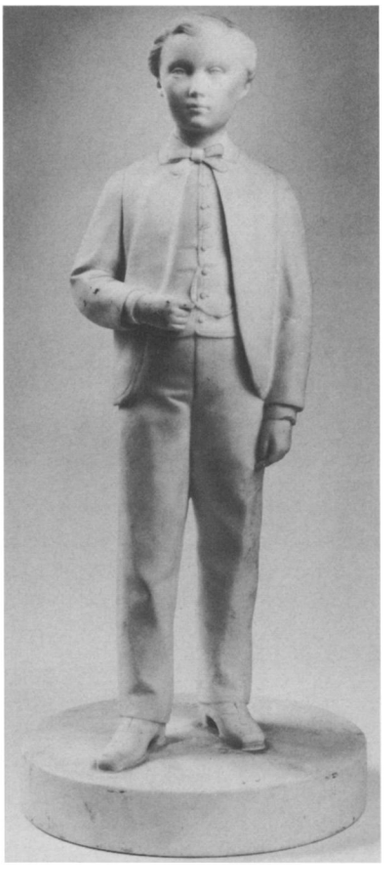
[61] Cf. L. Benoist, *La Sculpture romantique*, Paris, n.d., 32.

[62] Cf. *ibid.*, 128; Grandville's lithographic cartoon appeared in *Le Charivari*, February 28, 1836, and was directed against the museum of sculptural busts founded by J.-P. Dantan.



13 Willème, photosculpture bust, ca. 1864-67, biscuit. Paris, Collection Gérard-Lévy

15 Willème, photosculpture figure, ca. 1864-67, plaster. Rochester, Margaret Woodbury Strong Museum



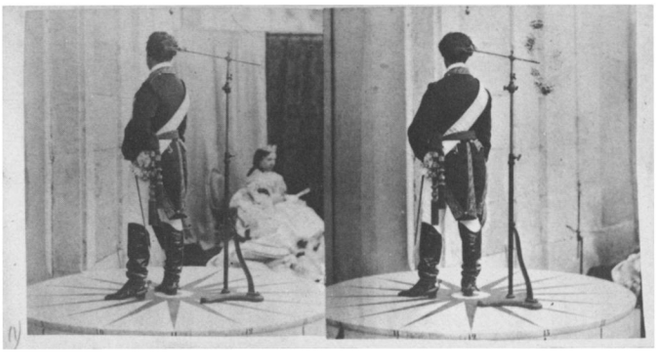
14 Willème, photosculpture figure, ca. 1864-67, biscuit. Paris, Collection Gérard-Lèvy

Morny, and a full-length biscuit figure of a standing young boy (Fig. 14). There is another plaster in the collection of the Margaret Woodbury Strong Museum, Rochester, New York, depicting a standing female figure wearing an elaborate crinoline gown and holding a fan (Fig. 15). The critics of the 1860's frequently listed the most notable personalities who had their photosculptures made: the Duc de Morny, Ferdinand de Lesseps, the actors Geffroy, Leroux, Bressant, and Guichard; and there was a group portrait of the Queen of Spain, Isabella II, and her family. A double mounted photograph in the George Eastman House records a moment in the sitting session for this last group (Fig. 16). Willème was invited to Madrid to photograph the royal family; the photographs show a somewhat makeshift studio in which the King stands atop the double dais while the Queen waits her turn in the background. The two images of the King represent profile numbers 11 and 12.[63] Photosculpture, in short, was directly linked to modern life since its subjects, like those of photography, were necessarily a part of contemporary society and, by consequence, ultimately realistic. Paul de Saint-Victor explained that "grandiose sculpture" was not

[63] Cf. Cromer, 143; Cromer here is the primary source for Willème's trip to Spain: "Willème exécuta tous ses clichés à la Cour d'Espagne, et fut, en cette occurence, l'hôte de la famille royale; il opéra en plein air, à l'aide de poses successives."

within the purview of the new process; it could not treat gods, goddesses, or heroes, nor could it properly depict the nude which, for him, was the basis of all great art.[64] "Les portraits en bustes ou en statuettes, quelques goups gracieux simplement composés resteront sa spécialité." The social restrictions behind the belief that photosculpture could not portray nudes are far more interesting than any supposed technical ones, and have as much to do with the model's physical presence before the cameras as with any given model's lack of perfect, ideal beauty and form. The imperfections of the living human model, however, did not prevent at least one attempt to achieve a photosculpture of a young woman posed as a non-portrait figure and garbed in a wet, semi-transparent Grecian-styled gown (Figs. 17 a, b, c).[65]

It has been held that the second half of the nineteenth century witnessed a spectacle of stylistic disunity and extreme eclecticism in French sculpture.[66] Although this view is correct if later work is compared to the sculpture of the earlier half of the century, it is correct only in terms of style. What it fails to account for is the noticeable growth of interest in subjects of modern and everyday life within the various stylistic approaches that characterize sculpture at least during the Second Empire. Photosculpture was "avant tout un art intime et un art mondain."[67] Photosculpture's primary values were its ability to record a living likeness faithfully, to capture the look of detailed fashions, and to render the appearance of silks, velvets, and laces (as can be seen in the Strong Museum figure).[68] The portraits Willème made of the actors from the Comédie-Française were not neutral likenesses, but topical depictions of the actors in certain very recognizable roles. Similarly, Willème produced a number of portraits of contemporary dancers (present whereabouts unknown), which one may imagine would have been comparable to those figural statuettes of dancers by Auguste Barre (1811-1896) and Jean-Pierre Dantan (1800-1869). "Citons encore des groupes de ballets immobilisés, sur la pointe du pied, dans les attitudes les plus fugitives et les plus gracieuses de la danse."[69] It would be doubtful, given the surface appearance of the portrait plasters, that these photosculptural ballet figures by Willème approached the qualities of material expressiveness and spatial tension in-



16 Willème, *Don Francisco de Asís de Borbón*, two sequential photographs ca. 1864-66, albumen prints. Rochester, GEH

herent in Degas's treatment of the same subject some fifteen years later. Though one would stop short of labeling Willème as the sculptor of modern life, the subjects he treated, such as figures in everyday costumes and ballet dancers arrested in movement, were the same subjects that were found attractive by many artists of his and subsequent generations. His unheroic figures from the contemporary worlds of society and entertainment were given him, of course, in part by the exigencies of the photographic medium. However, while he could have idealized or allegorized his figures by the simple manipulation of costume, accessories, or pose, he strove instead to emphasize and capitalize on the realism of the new medium.

In view of the amount of press coverage of Willème's photosculpture between 1861 and 1866 and the display of his statues in the vitrines of such prestigious photographers as the Bisson Frères,[70] in the monumental edifice for the Société Générale de Photosculpture on the Boulevard de l'Etoile, and in the pavillion for photosculpture at the Exposition Universelle of 1867,[71] it is difficult to conceive that Rodin would not have been aware of photosculpture. That he was a friend of Charles Aubry, a photographer, and Théophile Gautier, a critic of Willème, further underlines this probability. Technically, photosculpture was the construction of a sculptural figure by the sum of all its profiles. Early in his career, Rodin systematically observed the model throughout all of its

[64] De Saint-victor, unp.

[65] Newhall (as cited in n. 54), 101-03. No statue of this figure seems to be extant, but a number of the negative plates for it are now in the George Eastman House Collection; because of the provenance of these negatives and because of incidental details such as the numbers on the circular platform and the chair in the background, there seems to be ample evidence that these images are the product of the New York photosculpture establishment and not from Willème's studio.

[66] Benoist (as cited in n. 61), 237.

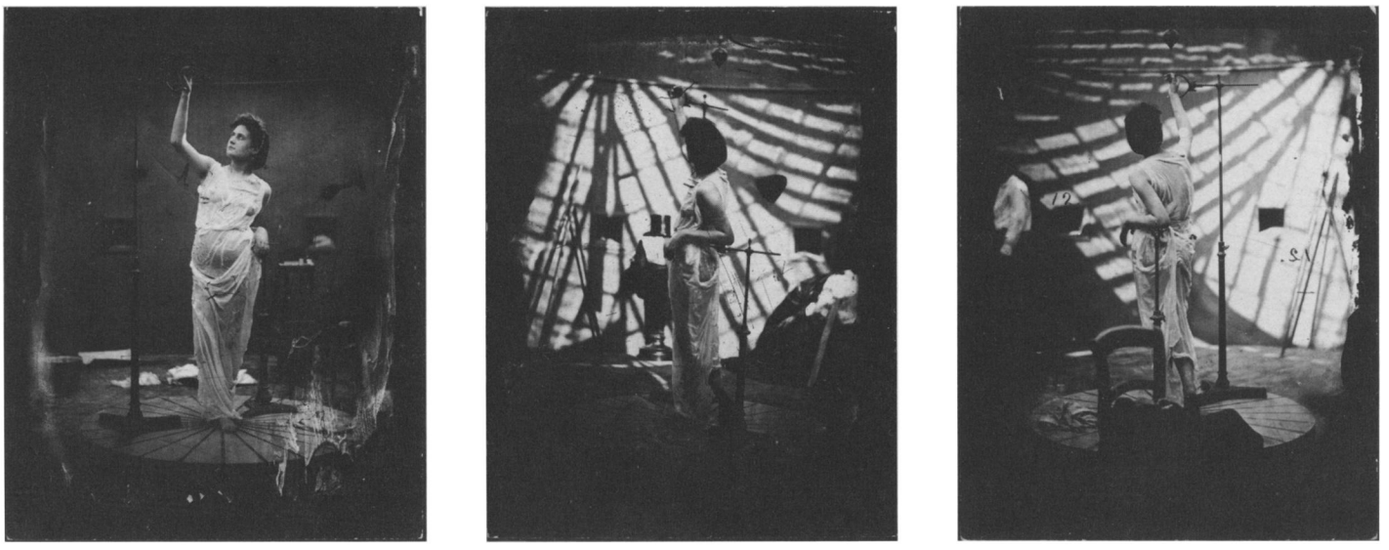
[67] De Saint-Victor, unp.

[68] Hermant, 427, cited X. Aubryet's "seul terme convenable pour qualifier une oeuvre si parfaite: on dirait une robe petrifiée."

[69] De Saint-Victor, unp. For descriptions and illustrations of Barre's and Dantan's works along this line, see P.-A. Lemoisne, "La Collection de M. Alexis Rouart," *Les Arts*, March 1908, 24-26; also cf. C. Millard, *The Sculpture of Edgar Degas*, Princeton, 1976, 74, fig. 75; and P. Fusco and H. W. Janson, *The Romantics to Rodin: French Nineteenth-Century Sculpture from North American Collections*, Los Angeles and New York, 1980, Cat. No. 4, 112-13. It is interesting that Gautier, 4, cited the names of Barre, Duret, and Millet in his immediate reaction to Willème's photosculpture.

[70] Gautier, 3.

[71] There is an engraving by Bertrand in the George Eastman House showing the pavillion situated on the Exposition grounds.



17a, b, c Attrib. to Huston and Kurtz, model in wet drapery, ca. 1867, three photographs from various positions, ca. 1864-67, modern prints from glass plate negatives. Rochester, GEH

profiles, sketched them, and united them in his finished works. That he did so in such a personally significant work as the *Man with the Broken Nose*, ca. 1862-64, is notable in the correspondence of dates between it and the height of the publicity around Willème's photosculpture. Following Rodin, Antoine Bourdelle discussed his notion of "profils rassemblés," but added that simply assembling them would amount to engineering and that the artist was compelled to regard the "vie intérieure" of the subject and make note of what he called the law of intimacy.[72] Willème, of course, was not a direct source for Bourdelle, but it is quite possible that he and his idea of photosculpture provided the germ of an idea for a far greater and more influential French sculptor, Auguste Rodin, as well as the precedent for the aesthetics of assembled profiles in nineteenth-century sculpture.

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