

## **'All concrete shapes dissolve in light': photographing sculpture from Rodin to Brancusi**

In Rosalind Krauss's influential study of later nineteenth- and twentieth-century sculpture, *Passages in Modern Sculpture* (1977), the author repeatedly raises two key issues: one focusing on how some of the most innovative sculpture produced in this period sought to negotiate the 'juncture between stillness and motion, [between] time arrested and time passing', the other exploring how this work's increasing focus on sculptural surfaces could highlight the liminal tensions between an object's internal form and its external contextualization.<sup>1</sup> In addressing both issues, Krauss evokes the notion of 'dematerialization' to try to explain how even the most dense, solid and fixed sculptural object could also in some cases be implicated in spatial and temporal modes that emphasize transparency, insubstantiality and movement.

The notion of sculptural 'dematerialization' has most commonly been applied to works associated with a Minimalist aesthetic and produced in the 1960s and '70s.<sup>2</sup> But as Krauss suggests, the term also can be applied to a variety of artistic strategies deployed by sculptors in the later nineteenth and first half of the twentieth century, when the physical and metaphysical qualities of sculpture as a medium were being questioned ever more intensively by artists and critics working in a time not only of cultural but also of social and political upheaval. Although Krauss considers in passing the role played by photography and, to a lesser extent, film in the dematerializing tendencies of some of the sculpture produced in this period, this article will focus explicitly on how such two-dimensional media interrogated the very nature of sculptural materiality. Specifically, it will consider a number of artists, beginning with Auguste Rodin in the 1890s and continuing into the first half of the twentieth century with Medardo Rosso, László Moholy-Nagy, Naum Gabo and Constantin Brancusi, who used photography and, later, film to try to 'dematerialize' and thus redefine the art of sculpture itself. In the process sculpted works sometimes lost their very 'quality as objects'.<sup>3</sup> At the same time, this article will explore how these artists used photography and film to try to control the reception of their sculpture through such reproductive media, which could mediate between the objective reality of sculpted objects and the subjective responses of beholders.

One question that arises is what might have driven these artists to try to dematerialize their three-dimensional works through the medium of photography and, in some instances, film as well. Krauss, in her sensitive analysis

of these artists as well as others working in the same period, focuses almost exclusively on the aesthetic impulses that seem to have caused a radical shift in the understanding of sculpture from being a medium traditionally defined by its internalized solidity, stasis and clarity to an outwardly turned medium that actively sought to implicate beholders in its changeable surfaces, unstable contours and kinetic aspirations. More recently, scholars have linked Rodin, Rosso, Moholy-Nagy, Gabo, Brancusi and the works (photographic as well as sculptural) they produced to more general contemporary social, historical and intellectual contexts: the increasing availability of electric light and other technological advances; the political fall-out of the 'Affaire Dreyfus' in France in the 1890s; an interest around the turn of the century in the 'haptic' versus 'optical' reception of sculpture as discussed in the writings of the curator/art historian Alois Riegl and the sculptor/art theorist Adolf von Hildebrand; the development of radical new scientific and philosophical approaches throughout Europe in the first decade of the twentieth century as seen in Albert Einstein's theory of relativity or Henri Bergson's concept of multiplicity; the traumatic social, political and personal consequences of the First World War and the Russian Revolution in the 1910s; the inexorable rise of Fascism in Germany and Italy in the 1920s and '30s; and the general shift in the balance of power (cultural as well as economic and socio-political) from Europe to America in the years of and around the Second World War, driven in part by the emigration of so many artists, intellectuals and scientists.

One could, of course, try to suggest that the dematerializing tendencies seen in the work of Rodin, Rosso, Moholy-Nagy, Gabo and Brancusi were related or perhaps even a response to the 'disintegration' of the traditional social, political and cultural-scientific order in this period. But while the broad trends outlined above, as well as innumerable personal circumstances particular to the figures considered here, clearly played an important role in these artists' persistent interest in dematerializing the sculpted form, it would be simplistic and even disingenuous to attribute this tendency with any certainty to any single contemporary cultural-historical event or trend – or, indeed, even to a cluster of such events or trends. Rather than trying to make such tenuous connections, therefore, this article instead seeks to highlight the surprisingly central role played by photography and, to a lesser extent, film in radically redefining sculpture as a medium in this period in spite of – as much as because of – the heterogeneous circumstances in which the artists in question worked. Indeed, it may well be the growing awareness by avant-garde artists of the very qualities and possibilities of photography as a medium, especially when confronted by the materiality of sculpted forms, both traditional and 'modern', that precipitated the impulse to use photographic media to make 'all concrete shapes dissolve in light'.

### **Rodin and sculpture's shadowy substance**

By the time Rodin embarked upon his artistic career, hundreds if not thousands of photographic images had already been taken of statues and reliefs.<sup>4</sup> Indeed, some of the earliest known photographs depict sculptural subjects and, with the increasing availability of relatively cheap photographs, by 1863 the *Art Journal* could confidently claim that: 'Now . . . sculpture has been photographed into . . .

popularity'.<sup>5</sup> Many of the photographs taken of sculpture in the medium's first decades served a primarily documentary purpose. By the later nineteenth century, however, a number of artists, beginning with Rodin, started to use the medium to explore the complex ways in which photography could not only record the external appearance of three-dimensional art objects, but also could be used in a highly subjective manner to question long-held assumptions about the nature of sculpture – and of sculptural materiality – itself.

From the mid-1870s onwards, Rodin actively incorporated photographs and photographers into his artistic practices, although he apparently never actually took a single photograph himself.<sup>6</sup> Whether buying photographic reproductions of Michelangelo's figures for inspiration, selling carefully selected images of his own works to legions of admirers, or experimenting with alternative possibilities by sketching directly on photographs of his unfinished statues, the medium became increasingly important in the genesis, marketing and documentation of his sculptural oeuvre. In one instance, the sculptor even used photographic evidence to try to 'prove' his case when falsely accused of casting a figure now known as *The Age of Bronze* directly from life. To silence his critics, Rodin commissioned photographs of both this statue and the young soldier who had posed for him, thereby allowing viewers to appreciate by means of a photographic comparison the significant differences between the sculpture and its living model.<sup>7</sup> More significantly, Rodin also sometimes exhibited photographs in place of actual sculpted works, with the two-dimensional medium thus literally displacing the latter's three-dimensional presence.<sup>8</sup>

Rodin's imaginatively varied use of the photographic medium soon inspired younger contemporaries, such as Rosso, and, eventually, the next generation of artists whose careers began in the first decades of the twentieth century, including Moholy-Nagy, Gabo and Brancusi, as will be discussed below. Photography, however, was not just a helpful but humble tool. Rather, for Rodin and other photographically oriented sculptors, the medium could also serve to redefine sculpture itself by transforming solid, palpable and static three-dimensional matter and volume into an ever-changing and ever-changeable series of elusive surface textures and light effects. In other words, for these artists, photography could, under certain circumstances, seem to liberate sculpture from its very physical materiality and temporal stasis.

Many of the photographs first taken at Rodin's behest were relatively straightforward and sharply focused visual documents that sought to record individual figures or, occasionally, the studio environment as a whole from a fairly 'neutral' point of view, with the statues evenly lit and generally posed head-on. By the 1890s, however, Rodin's appreciation of the medium's possibilities, as well as the ongoing controversies, political as well as artistic, associated with his designs – his statue of Honoré de Balzac, for instance, had even been dragged into the aftermath of the infamous 'Affaire Dreyfus' – led him to intervene more and more actively in stage-managing and thus controlling photographic shoots.<sup>9</sup> In the case of Eugène Druet, one of his favourite photographers at the turn of the century, Rodin encouraged him to record works such as the *Eve* from the continuously reworked *Gates of Hell* or his notorious *Balzac* from a variety of



1. Eugène Druet, *Monument to Balzac (Rodin's 'Balzac' in half-length)*, c. 1898, gelatin silver photographic print, 29.6 × 39 cm. Musée Rodin, Paris (Ph. 379)

angles and in a mysteriously shadowed, disembodying half-light – an effect, Rodin claimed, that reproduced the back-lighting he used when modelling such figures, but that also would have recalled the experience visitors would have had during his carefully orchestrated studio tours by candlelight (fig. 1).<sup>10</sup> In such photographs, the three-dimensional figures seem to dissolve into their penumbral surroundings, as if on the verge of dematerializing into the ‘silence which surrounds things’ that Rodin’s works evoked for the poet Rainer Maria Rilke.<sup>11</sup>

Paradoxically, however, the very works that seem most dematerialized in photographs are, when seen in the flesh, actually some of the most materialistic works made in this period, with surfaces marked by highly individuated textures, protrusions and voids that serve to highlight the very physical processes involved in their making. Krauss has argued that this emphasis on surface values and on the temporal processes of production shifts the beholder’s focus from a sculpture’s fixed, internal form as the locus of

its meaning to the much more transient ‘manifest intelligibility of [its] surfaces’.<sup>12</sup> This contrast is made even clearer by comparing the insistent materiality of the highly worked surfaces when seen close up with the dematerializing photographs of the statues as a whole increasingly favoured by Rodin. As Alex Potts puts it, Rodin’s sculpture thus becomes readable ‘both as material object, its hard metallic or plaster or stone surfaces here and there reflecting the light, and as shadowy presence immersed in an enveloping atmosphere’.<sup>13</sup>

In the case of Rilke, cited above, it seems likely that it was his familiarity with the dematerializing photographs that inspired his sense of an incorporeal silence when contemplating Rodin’s sculpture. Rilke, who served as the sculptor’s personal secretary in 1905–06, would certainly have been familiar with the actual plaster, marble and bronze figures. But he would probably have been equally familiar with their photographic reproductions, as confirmed by his use of lantern slides when lecturing on Rodin, as well as by the fact that photographs were displayed and sold at the sculptor’s exhibitions and were also readily available in postcard format for visitors to the studio.<sup>14</sup> In a lecture given by Rilke in 1907, he explicitly urged his audience to look at the slide projected on the wall behind him of ‘a gigantic *Balzac*’, a figure that for him seemed to be ‘surrounded by the whole atmosphere’.<sup>15</sup> In the same lecture, Rilke claimed that Rodin, master of ‘the problem of light’, created sculptures in which ‘the shadows melt and pass into a transparent *clair-obscur*’, an effect most readily observed in photographic images, rather than in the highly tactile and volumetric objects themselves.<sup>16</sup> Such comments seem to confirm that Rilke’s reactions to Rodin’s works were, at least in part, in response to slides or photographs as much as to the actual sculpted works.

The impact of the essentially Pictorialist photographs increasingly favoured by Rodin, in which his sculptures were transformed into almost impalpable beings emerging from an atmospheric veil of silent shadows, is even clearer in the case of the writer Charles Caffin.<sup>17</sup> Although Caffin could have seen Rodin's *Balzac* at an earlier date, his 1909 article in the journal *Camera Work* was written specifically in response to a series of photographs of the work exhibited in New York's Photo-Secession Gallery, not to a recent encounter with the object itself. Using words that recall Rilke's comments, Caffin evocatively described the 'silence [that] renders audible the footfall of incorporeal presences: the shadow seems to be the substance'.<sup>18</sup> Rather than the work of a studio employee, however, the photographs seen by Caffin were the product of an active collaboration between Rodin and the American photographer Edward (a.k.a. Eduard) Steichen. Steichen, who was first inspired to travel to Paris to meet Rodin after seeing a small photograph of the *Balzac* in a Milwaukee newspaper, may have been the junior partner in this enterprise in terms of fame and renown. But Rodin was clearly impressed by his visitor, hailing him as 'a very great artist', praise not usually accorded to photographers at this time.<sup>19</sup> Although Druet, possibly the author of the newspaper photograph that first caught Steichen's eye, had already depicted the *Balzac* around the time of its controversial unveiling in 1898 as a shadowy figure emerging from and submerging back into the studio's crepuscular darkness, the young American's series of photographs of the *Balzac* taken a decade later went even further in undermining the fixed, material reality of the statue (figs 2a, 2b, 2c).

Apparently at Rodin's suggestion, the plaster cast of the sculpture that had seemed 'harsh' and 'chalky' to Steichen by daylight was dragged into the garden, set on a rotating platform, and photographed using a variety of exposure times over the course of two long, sleepless nights.<sup>20</sup> The impressive results were first displayed at the Photo-Secession Gallery, then pared down to just three key images published in *Camera Work* in 1911 as a temporal and kinetic sequence that moved all around the figure.<sup>21</sup> Here, the passage of time and changes in the photographer's physical position, when paired with the atmospheric effects made possible by Steichen's use of gum bichromate prints, transformed the static, solid

2. Edward Steichen, three views of Rodin's *Balzac* (left to right): *The Open Sky*, 11 p.m., 25.2 × 22 cm; *Towards the Light, Midnight*, 19.3 × 21.2 cm; and *The Silhouette*, 4 a.m., 16.8 × 22 cm, 1908, gum bichromate photographic prints. Published in *Camera Work*, nos. 34–35, April–July 1911, pls. II–IV (photos: Musée Rodin, Paris, Ph. 235, Ph. 226, Ph. 224)



statue first into an unearthly ghost eerily melting into the surrounding sky, then, spinning around the figure, into an inky black silhouette that no longer bears any recognisable relation to the actual white plaster cast.<sup>22</sup> The ability of photography to transform the very materials of sculpture can also be seen in photographs of Rodin's celebrated *Burghers of Calais* taken by one of the sculptor's underlings, the photographer and *patineur* Jean Limet, also in about 1908. Once again, the slightly unfocused lens and rough surface textures of the gum bichromate prints leave viewers uncertain about even basic physical facts such as whether the hazy, mysterious figures are cast in dry white plaster or dark gleaming bronze.<sup>23</sup>

While the highly atmospheric images of Rodin's works taken by Druet, Steichen and Limet serve to dematerialize the figures, the grainy, roughly textured, and often technically imperfect photographs themselves recall the unfinished surfaces and purposefully preserved imperfections that were the hallmarks of Rodin's sculptural style. Likewise, Rodin's obsession with endlessly revising, revisiting and even replicating sculptural designs in different media and with slight variations in surface texture and scale, but without ever finally committing himself to a single, finished 'original', found its perfect echo in photographs that showed seemingly endlessly mutable figures from one slightly different angle after another.<sup>24</sup> In other words, the figures depicted within the photographs seemed to deny the very materiality of sculpture, while the physical qualities of the photographs themselves and their repetition of sculptural subjects as variations on a theme echo key aspects of the very real and very material objects Rodin produced in collaboration with his studio assistants.

### **Rosso and the impression of sculptural (de-)materiality**

Although the Pictorialist aesthetic that underlies Rodin's photographic preferences influenced many of his fellow artists, at least one disgruntled contemporary was convinced it was his own example that lay behind this new sensibility. Despite being nearly two decades younger than Rodin, Medardo Rosso was certain that his own roughly textured 'Impressionist' sculptures had actually inspired Rodin's most audacious and innovative works, including the controversial *Balzac*.<sup>25</sup> Rosso, who had left his native Italy for Paris in 1889, and Rodin initially had been friendly, mutual admirers, even exchanging sculptures as gifts in 1893.<sup>26</sup> Indeed, one of Rodin's favourite photographers, Jacques-Ernest Bulloz, may have photographed one of Rosso's works as well.<sup>27</sup>

But by the 1904 *Salon d'Automne* exhibition in Paris, held six years after the *Balzac* had been unveiled, Rosso had had enough. Convinced that this notorious statue owed much to his own impressionistic sculptural style, Rosso requested that his works be displayed near Rodin's in order to allow visitors to make their own comparisons. Rosso's submission to the *Salon* consisted of a few of his own small-scale sculptures and sculptural replicas, together with photographs of some of his other sculpted pieces. In order to be certain that there would be at least one Rodin exhibited near his works, Rosso also included in this display the sculpted torso that the former had given him as a gift more than a decade earlier. Rodin himself chose to be represented at the exhibition only by photographs of

his sculptures, including a very slightly cropped version of Druet's shadowy, half-length print of the *Balzac* (see fig. 1).

The exhibition committee did, in the end, hang Rodin's photographs near Rosso's installation. But this simply confirmed the Italian sculptor's suspicion that his much better-known colleague was appropriating the artistic strategies he had developed without due acknowledgement, as suggested by the note Rosso scribbled alongside a photograph of this curious multi-media ensemble: 'Confrontation at the Salon, Paris'.<sup>28</sup> The point is reiterated by Rosso's handwritten additions to the photograph of his name and most of his own works' dates of conception, thereby giving textual support to the visual evidence of his claimed chronological precedence vis-à-vis Rodin. Equally tellingly, Rosso later seems to have produced a photo-montage that restaged this 'confrontation', with his own works now almost crowding out Druet's photograph of the *Balzac* and a print of another sculpture by Rodin (fig. 3). This collage may well have influenced photo-montages that subsequently appeared in publications by the artist's personal friends, including the critic Ardengo Soffici, although it is unclear whether Rosso himself produced these images or merely advised his colleagues.<sup>29</sup> In his writings, Soffici not only effusively praised Rosso as the 'precursor, inspiration [illuminatore], and in a certain sense teacher of Auguste Rodin', but reprinted essays by like-minded critics who similarly published photographic comparisons

3. Medardo Rosso (attributed), photo-montage of works by Rosso and Rodin, all originally exhibited at the 1904 *Salon d'Automne* in Paris. (clockwise, from upper left corner: Rosso, framed photograph of a detail of his *Impression d'omnibus*; Rosso, pasted-on photograph of his *Bambino alle cucine economiche*; Druet, framed photograph of Rodin's *Balzac* [see fig. 1]; Druet, framed photograph of Rodin's *La douleur* on a columnar base; Rosso, framed photograph of another detail of his *Impression d'omnibus*; Rosso, *La rieuse* in a glass display case). Museo Medardo Rosso, Barzio





4. Medardo Rosso (attributed), three photographs of Rosso's *Ecce puer*, c. 1906. Museo Medardo Rosso, Barzio

purporting to prove to those who had been unable to visit the *Salon d'Automne* that 'Rosso and not Rodin was the pioneer of impressionism in sculpture'.<sup>30</sup>

Rosso likewise clearly believed that a visual (and virtual) confrontation with his famous rival effected in large part through the medium of photography would prove his point, namely, that his example had pushed Rodin to produce figures that would, in Rosso's own words, allow beholders 'to forget matter' itself.<sup>31</sup> However, one could argue that it was the highly atmospheric *photographs* taken of both Rodin's works and Rosso's own sculptures that produced these dematerializing effects, rather than the often insistently material objects themselves. Indeed, even more than Rodin, the surfaces of Rosso's compositions are texturally extremely varied and conspicuous, with their prominent pittings and protrusions the result of his highly complex and idiosyncratic multi-media sculptural techniques.<sup>32</sup> Like Rodin, however, the dematerialized figures depicted within the photographs taken of Rosso's works stood in stark contrast to the highly material qualities of the prints themselves. Although there has been much





debate as to whether all the photographs associated with Rosso were actually taken by his own hand, there is no doubt that, unlike Rodin, he was an active and highly interventionist photographer who happily scratched, painted, cropped – one could even say ‘sculpted’ – negatives and prints at will.<sup>33</sup> The resulting dematerializing photographs, which made his sculptures seem to dissolve into a misty, nebulous haze, were thus themselves insistently material objects, with an emphasis on surface textures that recall the actual sculptures themselves.

This paradox can be seen in the numerous photographs taken of Rosso’s *Ecce puer* (or *Behold the Child*), of which just three are illustrated here (figs 4a, 4b, 4c).<sup>34</sup> Rosso began working on this bust of a young boy in about 1906, the only wholly new subject developed by the artist between 1900 and his death in 1928. The composition was apparently conceived after Rosso caught a brief glimpse of the young son of one of his patrons pressing his face through a thin curtain. However, this fleeting impression of a veiled being is perhaps most effectively evoked not by the highly textured sculpture itself, but rather when the bust is seen through yet another veil, that of the photographic medium. Indeed, it is only in the conspicuously hand-crafted photographs of this very material work that the young boy is finally fully transformed into an almost insubstantial ghost or mere shadow barely discernible through the sheer curtain.

At the same time, the obvious technical imperfections and hand-crafted elements of the photographic prints mirror the modifications, flaws and blemishes of the sculpture, which existed in multiple versions in a variety of media. In turn, this multiplicity is also reflected in the photographs, which vary only slightly in their lighting, angle, surface texture and exposure time, thus effectively creating new, virtual multiples. Like Rodin, Rosso’s inability ever to call a halt to the process of artistic elaboration and definitively finish a particular composition in three dimensions was reflected in his use of photography, which allowed for almost infinite variations of an individual sculptural subject to be produced with comparatively little effort.<sup>35</sup> This tendency is also reflected in Rosso’s habit of constantly altering the titles given to his compositions. In the case of *Ecce puer*, the work was first commissioned as the *Portrait of the Young Alfred Mond*, then referred to by the artist as *Impression of a Child*, before finally gaining the title by which it is now generally known.<sup>36</sup>

While Rosso’s dematerializing images of sculpture depicted in highly material photographic prints gave him the freedom endlessly to revisit and revise his sculptural compositions, like Rodin, he too jealously guarded the right to

determine the nature of these variations. Rodin insisted on approving and eventually co-signing all photographs issued by his in-house photographers; similarly, Rosso was convinced that he alone could ensure that a 'correct' impression of his sculpture would be transmitted through photography.<sup>37</sup> In a letter written to Carlo Carrà near the end of his life, Rosso made this stance explicit: 'I cannot allow other photographs to be taken. I want those of mine and no others. I also believe these are the best. I don't want, desire any others . . . I want only my own.'<sup>38</sup> Once again like Rodin, with his highly orchestrated studio tours by candlelight, Rosso also sought to control the experience visitors had when coming to his workshop. Like the elaborately stage-managed lighting and sculptural arrangements evident in the photographs taken of his works, Rosso was keen to position studio visitors in a carefully choreographed performance in which he served as the all-powerful ringmaster-cum-magus, thereby ensuring that beholders of both the studio and the photographs would encounter his sculptures only from the distanced and dematerializing points of view he had intended.<sup>39</sup>

Throughout his life, Rosso repeatedly claimed that 'material does not exist. By making something, one makes the observer forget the material. Nothing is material in space.'<sup>40</sup> But it was only thanks to his manipulation of both the photographic medium and the experience visitors had when entering his studio that his complex and insistently material sculptures and, especially, sculptural surfaces managed to shed their physical qualities and be transformed instead into a series of disembodied impressions no longer connected to the actual realities of the wax, plaster or bronze originally used. Indeed, he once claimed that: 'A work of sculpture is not made to be touched, but to be seen at such or such a distance, according to the effect intended by the artist . . . we should rely entirely on the visual impression . . . and not on the touch of our fingers.'<sup>41</sup>

It is not surprising, then, that he was pleased to learn that his friend and admirer Edgar Degas had mistaken a photograph of a now-lost sculpture known as *Impression of an Omnibus* for a painting. Ironically, this sculpture, now known only through grainy photographic prints, seems to have first been conceived as a three-dimensional embodiment of a two-dimensional lithograph by Daumier.<sup>42</sup> Like many of the photographs of Rodin's figures, the pictures taken of Rosso's works allowed sculptural media and sculptural surfaces to seem to disappear, mutate and metamorphose into something completely new that was not necessarily evident or even visible when looking at the actual sculptures themselves. As Krauss puts it, Rosso's photographs thus always seem to 'gesture toward the unseeable side of objects.'<sup>43</sup> Indeed, it was the shadowy impression of a sculpture, best captured in photographs, rather than the solid, physical object itself that ultimately fascinated Rosso: 'That shadow on the ground is more important than the shoes. So let's deal with the shadow and forget the shoes.'<sup>44</sup>

### **'An almost immaterial substance': Moholy-Nagy, sculpture and light**

By the time Rosso died in 1928 – ironically, the result of an infection sustained after stepping on a broken glass photographic plate – photography's ability to dematerialize what was solid and real had begun to fire the imagination of a new

generation of sculptor-photographers who had embarked on their careers in the aftermath of the First World War and the Russian Revolution. One of the most successful in articulating the possibilities of the photographic medium in this respect was László Moholy-Nagy, whose varied artistic interests and necessary practical responses to the rapidly changing political situation of inter-war Europe led to a peripatetic existence encompassing his native Hungary as well as Austria, Germany (where he famously taught at the original Bauhaus), Holland and England before he finally emigrated to Chicago in 1937 to found the 'New Bauhaus'.<sup>45</sup>

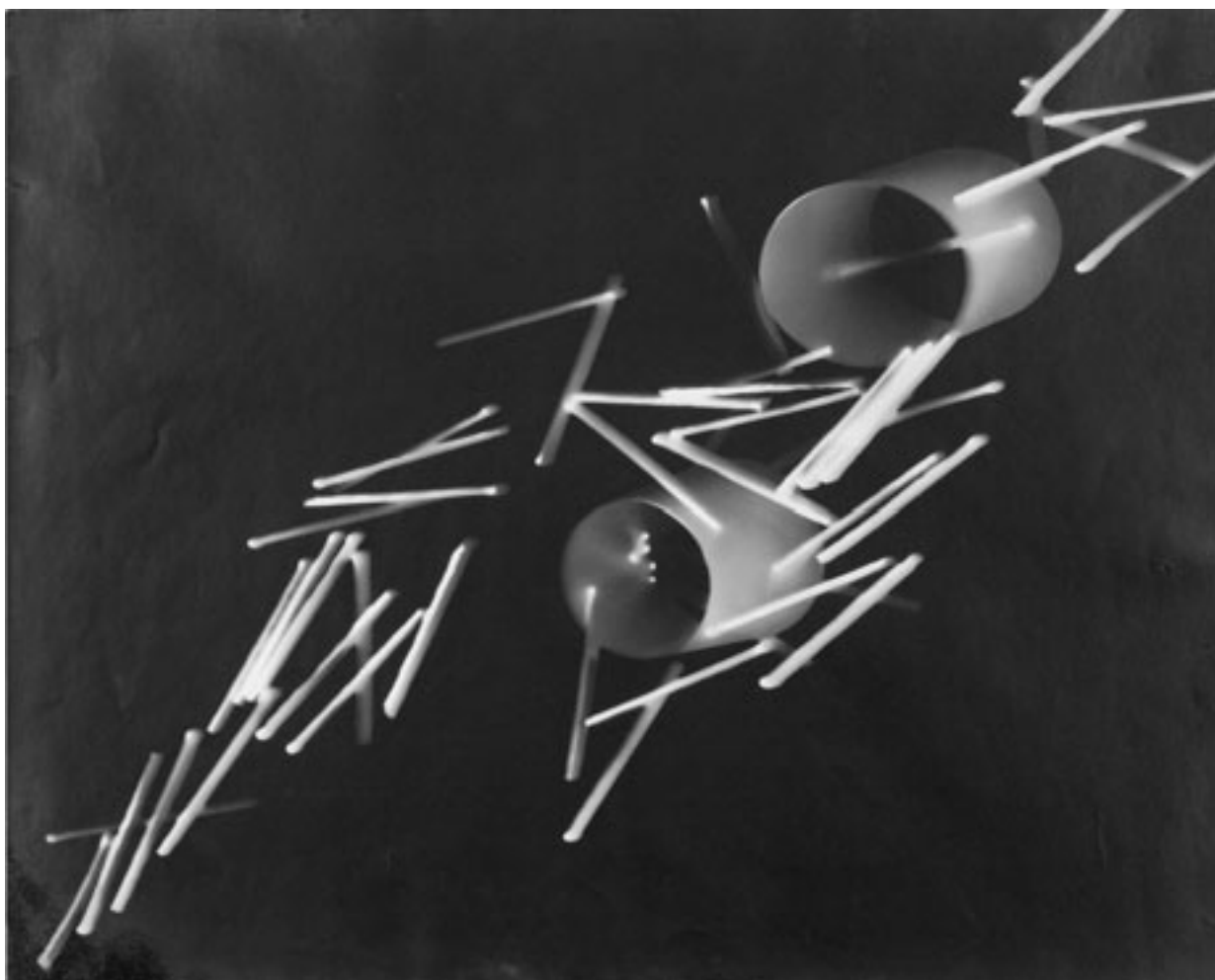
Although Moholy-Nagy always presented himself first and foremost as a painter, he worked as a photographer, filmmaker and graphic designer as well, and produced three-dimensional sculptures in media ranging from metal to plastic. He also used 'sculptural' materials such as Formica, Plexiglas, Bakelite, Galalith, aluminium and cardboard as supports for his paintings, which he then cut, incised and bolted together in layers, sometimes with the addition of 'found' objects such as glass-headed pins or spiral bindings, thereby creating multi-layered, semi-sculptural objects.<sup>46</sup> In an article published in 1936, he even claimed that he had continued to work as a painter mainly because he had been unable to finance the production of three-dimensional 'kinetic' objects like those he had designed earlier in his career.<sup>47</sup> One year after making this statement, Moholy-Nagy moved to the USA where, in the years before his premature death in 1946 at the age of 51, he was finally able to resume his sculptural practice alongside his many other artistic and pedagogic activities.

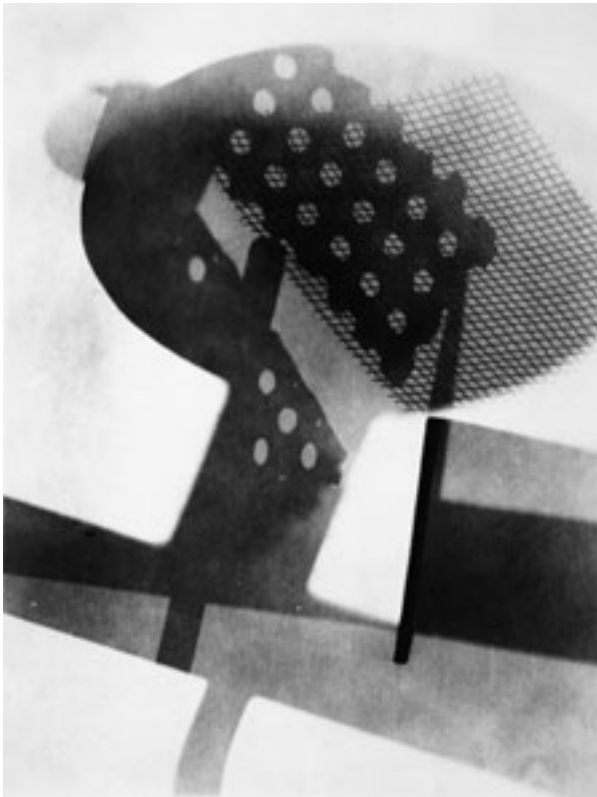
Moholy-Nagy's ability to shift from working in two to three dimensions and back again was very much tied to his understanding of photography as a medium. Already in 1927, he had boldly claimed that 'this century belongs to light', with photography giving light itself a 'tangible shape'.<sup>48</sup> Moholy-Nagy was well aware, however, that while photography could effect the 'concretization of light', it also could dematerialize any three-dimensional object it encountered.<sup>49</sup> Thus, through the medium's 'materialization of light', it could turn matter itself into 'an almost immaterial substance'.<sup>50</sup> For Moholy-Nagy, this paradox seems first to have become apparent when he began developing a new photographic technique he dubbed the 'photogram' (a.k.a. 'photogramme'), which he believed to be 'the most completely dematerialized medium'.<sup>51</sup>

Unlike conventional photography, which relied on light passing through a camera's aperture, a photogram was made by allowing light to strike small, solid objects placed directly on light-sensitive photographic paper – in Moholy-Nagy's own words, a kind of 'writing with light' that had 'a dematerialized effect'.<sup>52</sup> His earliest photograms date to 1922 and were produced in association with his first wife, Lucia. In technical terms, they closely resemble the artist Man Ray's own camera-less technique, the 'rayograph', first developed in 1921. Although Moholy-Nagy soon became aware of Ray's work, he does not seem to have seen any rayographs before embarking on his own photographic experiments. Indeed, his second wife, Sibyl, cited Kurt Schwitters's Dadaist 'rubbish' collages composed of urban detritus as a key influence on the development of the photogram, not Ray's images, which were only available in published form from December 1922 onwards in any case.<sup>53</sup>

For Moholy-Nagy, photograms effectively gave a fixed, material presence to light itself, while denying the specific materiality of the three-dimensional found objects used in the process. They became, in his words, 'sublime, radiant, almost dematerialized' things.<sup>54</sup> Significantly, in a note scrawled on the back of a photogram made in about 1924, Moholy-Nagy stated that he had used napkin rings and matches to generate the image, then asked: 'But is that important in the end? How the light flows . . . and what becomes of the whole has nothing anymore to do with the original material' (fig. 5).<sup>55</sup> By using multiple light sources when producing many of his photograms, the silhouetted shape of the 'original material' also could be doubled, dislocated and disoriented, an effect seen in a number of photographs, intaglio prints and oil paintings made by Moholy-Nagy in the early and mid-1920s as well.<sup>56</sup> But it is the photograms in particular that most clearly evoke Schwitters's description of his own collage projects: 'I use discarded cogwheels, tissue paper, can tops, glass splinters, labels and tickets. By being balanced against each other, these materials lose their characteristics . . . They are de-materialized. A significant art product has no longer an outward relationship to the material elements that formed it' (fig. 6).<sup>57</sup>

5. László Moholy-Nagy, *Untitled* (with text on verso), c. 1924, photogram. The J. Paul Getty Museum, Los Angeles (photo: © Hattula Moholy-Nagy, Ann Arbor)





6. László Moholy-Nagy. *Untitled*, c. 1922–30, photogram. Bauhaus-Archiv, Berlin  
(photo: © Hattula Moholy-Nagy, Ann Arbor)

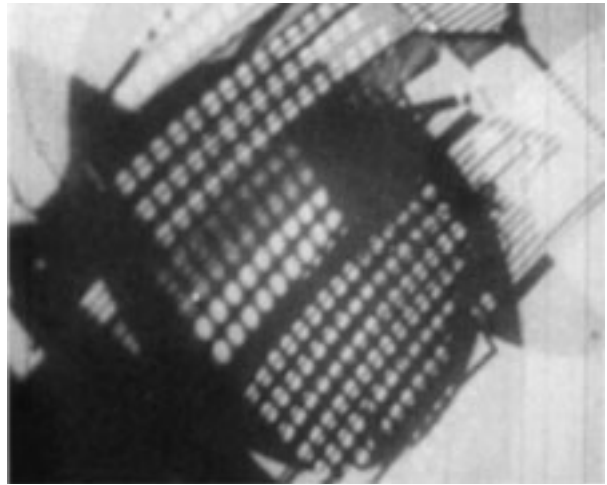
In contrast, Ray's camera-less images, which at first glance can sometimes appear quite similar to Moholy-Nagy's photograms, attest to his Surrealist fascination with the unconscious. Unlike Moholy-Nagy's generally abstract images, Ray's prints often feature still readily recognizable objects, thereby allowing them to retain potentially revealing associations for the viewer. Moholy-Nagy was well aware of this essential difference, explaining that for him, photograms were about the 'optical miracle of black into white . . . [which] result[s] from the dematerialized radiation of light without any literary secrets or secret associations . . . Photograms have to . . . signify . . . nothing but themselves', thus avoiding the 'disadvantage[s] of having complexes of material associations'.<sup>58</sup> Tellingly, Moholy-Nagy's own caption for a rayograph clearly depicting a hand and an egg states, in contrast, that Ray's image 'transforms the everyday object into something mysterious', but, implicitly, still identifiable.<sup>59</sup>

In his sculptural constructions and multi-media installations, Moholy-Nagy further explored the possibilities of using light as a 'medium of plastic expression' and, conversely, of transforming plastic material into 'light compositions', the latter phrase used specifically in reference to the transparent Plexiglas constructions he produced in the last years of his life in the early and mid-1940s.<sup>60</sup> Interestingly enough, such metamorphoses were often realized or at least confirmed through photography and, occasionally, in film. In the case of Moholy-Nagy's late Plexiglas works, he seems to have favoured photographs of these pieces taken against dark backgrounds, with the lighting appearing to transform their edges and perforations into two-dimensional white lines and their planes into merely 'virtual volume[s]' (fig. 7).<sup>61</sup>

In a similar vein, both film and photography were used to dematerialize an elaborate installation piece known as the *Light-Space Modulator* (a.k.a. *Licht requisit einer elektrischen Bühne* or *Light Prop for an Electric Stage*) first conceived by Moholy-Nagy in 1922, the same year he developed his photogram technique, but only completed in 1930.<sup>62</sup> Seen in the flesh, this work is a highly tactile and almost aggressively three-dimensional object constructed of a variety of metallic, glass and plastic surfaces and protrusions engineered into a shiny, spiky mass. But by setting the piece on a rotating base and illuminating it in a darkened room with an artificial light source that produced shadows that danced around the walls, Moholy-Nagy claimed he had been able to create a 'light-sculpture' made of 'plastics, glass, wire-mesh, latticework and perforated metal sheets . . . [whose] surfaces, although opaque in reality, looked like transparent sheets when moving'.<sup>63</sup> Similarly, Krauss agrees that 'the radiance of electric light . . . undermine[d] the physicality of the object'.<sup>64</sup> In both cases, however, it is likely



7. László Moholy-Nagy. *Space modulator with perforations and its virtual volume*, 1940, Plexiglas. Published in L[ászló] Moholy-Nagy, *Vision in Motion*, Chicago: Paul Theobald, 1947, fig. 329 (photo: Bodleian Library, University of Oxford, shelfmark 17568 d.109; © Hattula Moholy-Nagy, Ann Arbor)

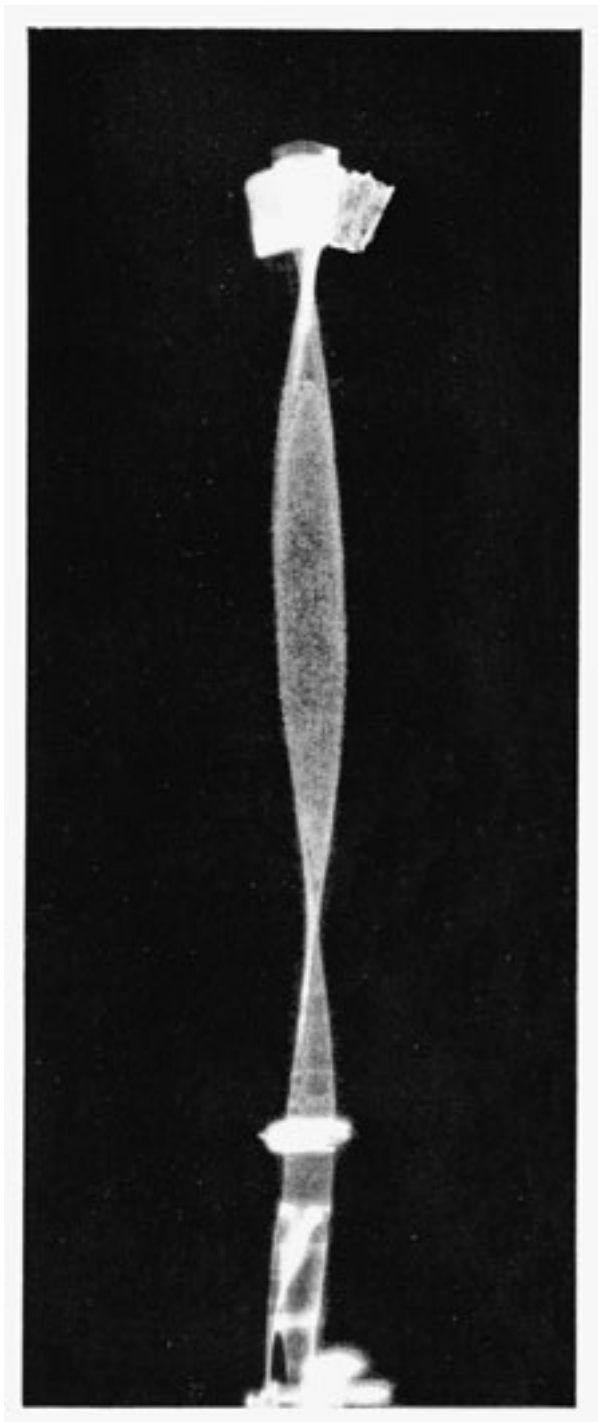


8. László Moholy-Nagy, *Lichtspiel: Schwarz-Weiß-Grau*, 1930, still photograph taken from 16 mm film. Bauhaus-Archiv, Berlin (photo: © Hattula Moholy-Nagy, Ann Arbor)

that it was the *film* Moholy-Nagy made of the piece in motion, rather than the moving object itself, that made the work seem so completely dematerialized and so highly kinetic. Indeed, even though Moholy-Nagy's first experience of the work in motion was almost like 'magic' and made him feel like 'a sorcerer's apprentice', he admitted that it was only after taking photographs and, especially, producing a five-and-a-half-minute film (entitled *Lichtspiel: Schwarz-Weiß-Grau* or *Light Display: Black-White-Grey*), in which he 'tried to translate its action into photographic "light" values', that finally 'all [the work's] concrete shapes dissolve[d] in light' (fig. 8).<sup>65</sup> In the film, Moholy-Nagy deployed a range of techniques (many echoing those also used in his photographs, photograms and photomontages of the same period) that served to undermine the tactile, three-dimensional presence of the work: disorienting angles, often on the diagonal; dark shadows and bright highlights that seem to change from negative to positive images and back again; unexpected shifts between overall views of the piece and dramatic close-ups; and playful switches from sharply focused to fuzzily blurred shots of the object. Once again, therefore, it was through the two-dimensional media of photography and, in this case, film that the disembodied, dematerialized essence of a three-dimensional work seems to have been finally fully realized.

Similarly complex exchanges between two and three dimensions, between motion and stasis, between transparency and opacity are also evident in Moholy-Nagy's so-called 'three-dimensional paintings' and in his curved and perforated Plexiglas pieces. The former, often constructed of superimposed planes of translucent or transparent materials, were occasionally set on rotating turntables, as was also the case for his *Light-Space Modulator* and, indeed, for Rodin's *Balzac*

9. Photograph of Naum Gabo's *Kinetic Construction (Standing Wave)*, c. 1919–20. Published in [László] Moholy-Nagy, *The New Vision: From material to architecture*, trans. D. M. Hoffmann, New York: Brewer, Warren & Putnam, 1932, fig. 113 (photo: Bodleian Library, University of Oxford, shelfmark 17568 d.108; The works of Naum Gabo © Nina Williams)



when photographed by Steichen. For Moholy-Nagy, the three-dimensional paintings seemed to be 'more transparent than transparency itself', while he described his works in Plexiglas as 'a kind of sculpture-painting' composed of light (see fig. 7).<sup>66</sup> It is thus not surprising that certain motifs such as circular perforations, diagonal compositions and latticework meshes seem to appear and reappear or, better yet, reverberate amongst Moholy-Nagy's two- and three-dimensional works, works that themselves often seem to hover

somewhere between one dimension and the next (see figs 6, 7, 8).

### Gabo's 'virtual volumes'

The ability of photography and film to transform the material into the immaterial and back again, as well as to add elements of time and motion to otherwise static objects, is a reoccurring theme in Moholy-Nagy's literary and artistic oeuvre. But it also permeates the sculptural practices, photographic strategies and theoretical pronouncements of a number of other important early twentieth-century artists including the Russian-born Naum Gabo (a.k.a. Naum Neemia Pevzner).<sup>67</sup> Like Moholy-Nagy, whom he met in London in the mid-1930s, Gabo was compelled by both the tumultuous inter-war political situation in Europe and his own artistic inclinations to lead a nomadic existence for many years, including stays in Russia, Germany and England, before eventually settling in the USA in 1946.<sup>68</sup> While still living in Russia in the winter of 1919–20, Gabo produced his *Kinetic Construction (Standing Wave)* (a.k.a. *Kinetic Sculpture [Pendulum]* or *Kinetic Model*), a work that consists of a vertical metal rod made to vibrate by a small electrical motor located in its base.<sup>69</sup> Commenting on this object, Moholy-Nagy observed that it was only thanks to a 'blurred photograph' of this work silhouetted against a dark background that one could see 'several phases of motion superimposed. (What would elsewhere be regarded as an unsuccessful photograph is in this instance a good demonstration of the processes of motion, of the resulting virtual volumes.)' (fig. 9).<sup>70</sup> Krauss has evocatively described the 'virtual volume' of the sculpture as being like an 'illusion of a diaphanous column'.<sup>71</sup> Paradoxically, however, the effect would perhaps have been most successful when looking at a *photograph* of the work, which permanently fixed the object's full range of



10. Naum Gabo, *Linear Construction in Space No. 2*, 1970–71 (first version designed c. late 1940s), Perspex and nylon monofilament. Tate, London (photo: The works of Naum Gabo © Nina Williams/Tate, London 2006)

oscillation, rather than when standing before the piece itself.

In 1920, the year in which he completed this project, Gabo articulated his own beliefs about sculptural dematerialization and the important role played by time and motion in the production of art works in a manifesto co-authored with his brother, the sculptor Anton Pevsner:

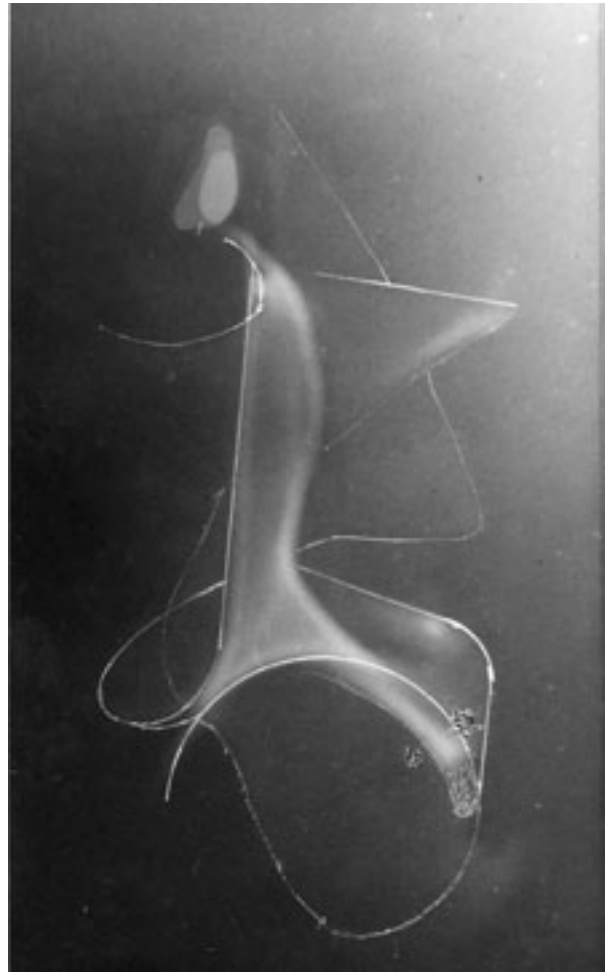
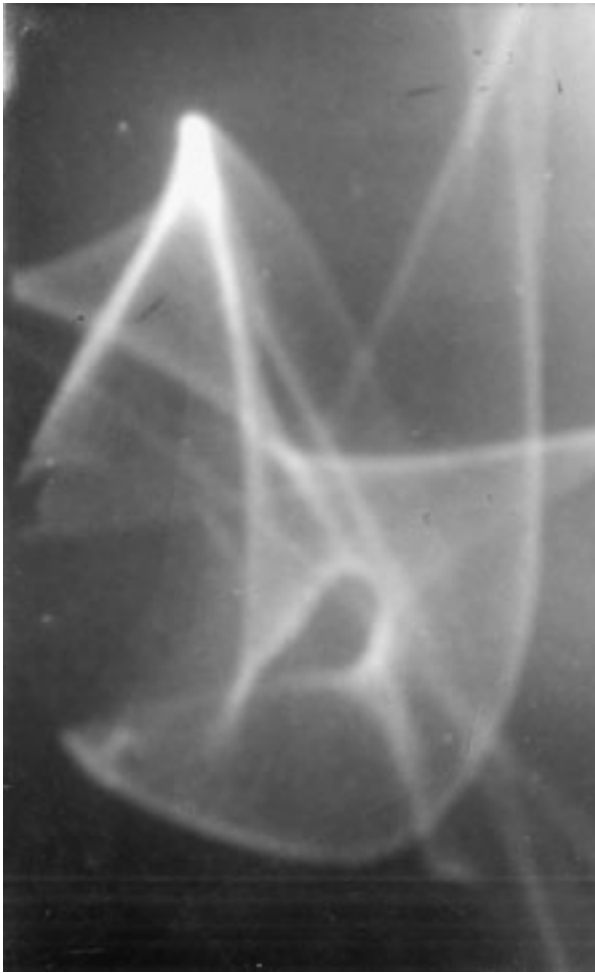
*The realization of our perceptions of the world in the forms of space and time is the only aim of our pictorial and plastic art . . . We renounce volume . . . We renounce . . . mass as a sculptural element . . . We renounce the thousand-year-old delusion in art [of] . . . static rhythms . . . We affirm . . . a new element [of] . . . kinetic rhythms as the basic forms of our perception of real time.<sup>72</sup>*

The links between such abstract theorizing and the *Kinetic Construction* in particular were made even clearer when Gabo described the work in 1930 as: ‘The creation of an immaterial spatial body through a material line (rod) moving in space’<sup>73</sup>

The interconnections of temporality, kineticism and the dematerialization of solid matter are also evident in Gabo’s practice of occasionally installing his paintings on revolving turntables (as Moholy-Nagy also did) or in works such as his nearly transparent *Linear Construction in Space No. 2*, designed in the later 1940s, with various versions constructed of tautly strung nylon filaments that were intended to twist and turn slowly in space while suspended a few centimetres above a dense and solid base (fig. 10).<sup>74</sup> A similar interest in combining time, motion and the disembodied effects of diaphanous or reflective media was already evident in the bright spotlights and shiny, transparent materials Gabo deployed when designing (together with Pevsner) the stage sets and dancers’ costumes for *La Chatte*, a ballet staged by Diaghilev’s *Ballets Russes* in Paris in 1926–27.<sup>75</sup> From the mid-1920s onwards, Gabo regularly used transparent and relatively flexible materials such as Plexiglas, Perspex, cellulose acetate and nylon filament to produce geometrically complex sculptures that seemed on the one hand to be dematerialized due to their lack of solid or opaque surfaces, while on the other hand allowing light itself to be fixed into a kind of permanent plastic form thanks to the light-trapping properties of the reflective media used.

Once again, however, this paradox is perhaps more apparent in *photographs* of Gabo’s works than in the physical objects themselves. Especially when photographed against a black background, the bright lines of light that pick out the sculptures’ edges, curves and strings seem to reduce the three-dimensional objects to the same kinds of linear patterns seen in the *Opus* wood engravings he produced in 1950.<sup>76</sup> Even more striking are the similarities the engravings and the photographs of his sculptures have with the photographs Gabo himself may have





11. Naum Gabo. Two photographs of light reflections, 1941 or c. 1950s. Tate Archive, London (photo: The works of Naum Gabo © Nina Williams/Photo Tate Archive)

taken as early as 1941 (and definitely by the 1950s) of moving beams of light projected onto reflective surfaces (figs 11a, 11b).<sup>77</sup> Already in 1923, Moholy-Nagy had considered photographing rays of light projected onto a screen, but he apparently never followed through with this idea.<sup>78</sup> Intriguingly, some photographs of Moholy-Nagy's Plexiglas works from the early and mid-1940s also bear a remarkable resemblance to Gabo's light photographs.<sup>79</sup> Gabo may have been inspired to take the latter photographs in the first place by the transparent sculptures he had designed in the later 1930s with twisting and curving forms that echo those seen in his light images. The photographs of light patterns, in turn, could have given further momentum to Gabo's interest in exploring spiral shapes in both wood engravings and sculpted works, yet another example of the materializing, dematerializing and rematerializing exchanges that could occur between two- and three-dimensional media in this period (see figs 10, 11a, 11b).

In a 1942 review of a Gabo sculpture entitled *Spiral Theme*, the influential art critic Herbert Read described the piece as 'hovering . . . between the visible and the invisible, the material and the immaterial', while in his 1956 book *The Art of Sculpture* (dedicated to, among others, Gabo himself), Read stated that the artist had used transparent plastics as though they were 'material[s] of crystal purity . . .

to create forms in light itself', thus allowing space to be defined by light rather than by 'gross material substance'.<sup>80</sup> As we have seen, such effects were confirmed by and, indeed, perhaps most fully realized in the photographs taken of Gabo's sculptures. Thus, photography could be deployed to dematerialize and activate sculptures made of transparent media, while at the same time fixing light, motion and even time itself when used to capture abstract patterns of light, whether on reflective surfaces or on the surfaces and edges of sculptures, or when giving permanent visual form to the vibrations associated with a piece such as the *Kinetic Construction* (see fig. 9).<sup>81</sup>

### Brancusi: challenging materiality and championing multiplicity

While Gabo only occasionally took his own photographs, another emigré artist, the Romanian-born but Paris-based sculptor Constantin Brancusi, was a much more consistently active photographer who used the medium to produce literally hundreds of images of his sculptures, his studio and himself.<sup>82</sup> Like Rodin and Rosso, both of whom he knew personally, Brancusi was highly sensitive as to how and by whom his works were photographed.<sup>83</sup> Also like his two older colleagues, Brancusi turned photographs of and visits to his studio into elaborate and carefully staged ritual performances, further ensuring that he retained complete control over the visual reception and, he hoped, interpretation of his sculptures.<sup>84</sup> Although he began taking the occasional photograph as early as 1901, it seems to have been his reaction to images of his works produced by the American

photographer Alfred Stieglitz in the 1920s that led him to insist that only he should and could properly photograph his own sculptures, which he soon began to do prolifically. Man Ray described the defining episode as follows: upon seeing a Stieglitz print of one of his sculptures, Brancusi admitted that it

was a beautiful photograph . . . but it did not represent his work. Only he himself would know how to photograph it . . . [The photographs he subsequently took] were out of focus, over or underexposed, scratched and spotty. This, he said, was how his work should be reproduced. Perhaps he was right – one of his golden birds had been caught with the sunrays striking it so that a sort of aurora radiated from it, giving the work an explosive character.<sup>85</sup>

It is unclear which specific photograph Ray was referring to, but its subject must have been one of the bronze versions of Brancusi's *Oiseau dans l'espace* (a.k.a. *Bird in Space*), a work he repeatedly photographed in the later 1920s and early '30s with 'explosive' bursts of light appearing to emanate from the highly polished and reflective surfaces (fig. 12).<sup>86</sup>

12. Constantin Brancusi. *Bird in Space*, 1927, gelatin silver photographic print. Musée national d'art moderne, Centre Georges Pompidou, Paris (photo: CNAC/MNAM Dist. RMN © Bertrand Prévost)



The photographic imperfections noted by Ray recall the grainy, highly textured prints and equally tactile sculptural surfaces associated with Rosso and Rodin, both of which contrasted with the hazy, dematerialized sculptures depicted within these images. In the case of Brancusi, however, the tactile, hand-crafted qualities of his photographic prints were in sharp contrast to the often slippery smooth and glistening surfaces of the actual sculptures. Indeed, *Bird in Space* was so perfectly polished that in 1926 a US customs clerk, as is well known, tried to have the piece taxed in the same category used for machine-made metal kitchen utensils and hospital implements.<sup>87</sup> Interestingly enough, similar issues were raised when Moholy-Nagy tried to import his *Light-Space Modulator* into the USA in the later 1930s.<sup>88</sup> However, Brancusi's sculptures, despite their appearance to the contrary, were actually the result of a laborious process of hand-polishing and finishing undertaken by the artist himself, something Moholy-Nagy had already commented on in 1929.<sup>89</sup> At the same time, and in this case very much like Rodin and Rosso, both Brancusi's sculptures and his photographs were produced in series, with only the scale or material (in the former case) and the lighting or angle (in the latter case) varying between one version and the next. In other words, individual hand-crafting, even if not immediately evident, was paired with serial production and multiplication in Brancusi's two- and three-dimensional working practices.<sup>90</sup>

While most 'professional' photographs taken of Brancusi's works after his death emphasize their geometric clarity and dense, immobile and seemingly impenetrable materiality, his own reflection-filled images make it obvious that he himself did not perceive his sculptures to be stable, solid, static objects – something that is also noticeable when comparing photographs made under Rosso's impetus with those taken posthumously.<sup>91</sup> The particular problems involved in photographing Brancusi's works without producing reflections is suggested by an incident in the 1920s when an unnamed photographer was caught covering some of the artist's sculptures in powder shortly before a shoot in order to eliminate such visual effects. Predictably, an enraged Brancusi threw the man out of his studio, now even more determined to forbid anyone other than himself from photographing his works.<sup>92</sup> Once again, therefore, it seems to have been primarily through the medium of photography that Brancusi's own vision of his works as disembodied and ever-changing aesthetic entities was perhaps most fully articulated.

In Brancusi's photographs of a bronze version of *Bird in Space*, flashes of light dissolve the solid, unitary wholeness of the sculpture at various points along its long, slim shaft, producing what one French writer in 1920 called 'radiant photos' (see fig. 12).<sup>93</sup> Paradoxically, in such photographs, the bases beneath *Bird in Space* often seem more solid than the sculpture itself.<sup>94</sup> Another tactic was to use one or two strongly directed light sources to illuminate the sculpture, thereby allowing shadows to be cast by the piece, something also seen in some of Moholy-Nagy's photograms. The resulting images, with their flickering black-and-white vertical lines, could make the actual material object difficult to distinguish from its shadowy and dematerialized *Doppelgänger*. Brancusi printed both negative and positive photographs of *Bird in Space* as well, thereby further disorienting and



destabilizing his viewers' material certainties and assumptions, a strategy also sometimes used by Moholy-Nagy.<sup>95</sup>

In a similar vein, Brancusi occasionally seems to have deliberately double-exposed photographs so as to further disembody his sculptures, while also introducing temporal and kinetic dimensions to his work. For instance, four different versions of the chunky *Endless Column*, two of *Fish*, and one of *Bird in Space*, as well as several other pieces (some, like *Leda*, displayed on mirrored surfaces), were photographed by Brancusi in the mid-1940s in an apparently intentional double-exposure of his studio, with the sculptures appearing to shudder and vibrate in unison (fig. 13).<sup>96</sup> In this image, a kind of dematerialization through multiplication occurs, first by the initial serial (re)production of individual sculptural compositions shown in different versions or in mirror reflections, and then, again, by the doubling of the photographic exposure.

At first glance, such double-exposures, which make the sculptures seem to oscillate, recall the photographs taken of Gabo's *Kinetic Construction* (see fig. 9). Now, however, it is the camera, rather than the sculpture, that moves. But in both cases, the artists sought to introduce an element of time and a sense of motion into the traditionally static and seemingly time-less art of sculpture, with photography thus serving to realize and document the works' dematerialization. In another strategy that recalls the practices of Gabo, Moholy-Nagy and even Rodin's photographic collaborator, Steichen, Brancusi displayed a gleaming bronze cast of *Leda*, a sculpture produced in multiple versions, on a reflective (and hence further multiplying) base that could be rotated (see the lower right corner of fig. 13). He then filmed the piece from a succession of different angles and subsequently rephotographed the film negative, often blurring the piece's smooth contours even further in the process.<sup>97</sup> According to Moholy-Nagy, Brancusi rotated his *Fish* as well, a work that also exists in various material and photographic versions, in order to see 'vision in motion'.<sup>98</sup> Once again, therefore, Brancusi had used two-dimensional media to introduce destabilizing temporal and kinetic elements to a solid, sculpted object, in the process generating new and ever-changing versions of a composition that itself existed as a multiple.

### 'Why not just show the photographs?'

In 1949, Brancusi asked: 'Why write [about sculpture]? . . . Why not just show the photographs?'<sup>99</sup> In a similar vein, in 1928 Walter Benjamin cited Moholy-Nagy's claim that: 'It is not the person ignorant of writing but the one ignorant of photography who will be the illiterate of the future'.<sup>100</sup> Although all the artists discussed here did write about their work, in some cases extensively, it was in fact through photographs and, occasionally, film that they were perhaps most eloquently able to elaborate a 'new vision' (to use one of Moholy-Nagy's catchphrases) of sculpture unshackled from the constraints of time, space and even matter itself.<sup>101</sup> Often using new materials and new techniques in both their sculptural and photographic practices, artists from Rodin to Brancusi skilfully deployed two-dimensional media to re-envision their three-

13. Constantin Brancusi, *Studio with four versions of 'Endless Column', two versions of 'Fish', 'Bird in Space', 'Leda' (lower right), and other works*, c. 1943–46, gelatin silver photographic print. Musée d'art moderne, Centre Georges Pompidou, Paris (photo: CNAC/MNAM Dist. RMN © Jacques Faujour)

dimensional compositions, in the process creating new, virtual and constantly changing versions of their designs while, paradoxically, also giving a fixed and permanent form to light, motion and even time itself in the resulting images. Displaying at times an almost obsessive desire to control the visual (re)presentation of their work for beholders – whether in film, photography, or studio visits – these artists imaginatively used such strategies to expand the boundaries of what it meant to be a sculpture. Thanks to their inspired use of photographic media, sculpture was no longer limited to solid, static and impenetrable objecthood, but rather could now be transformed into a mobile and ‘almost immaterial substance’.<sup>102</sup>

I would like to thank Sebastiano Barassi and Michael Harrison for inviting me to contribute a short essay to their 2004 exhibition catalogue, *Immaterial: Brancusi, Gabo, Moholy-Nagy*, which was further developed and expanded into the present article. I am particularly grateful to Dr Barassi for his helpful suggestions when preparing my original essay. I also received very useful comments from anonymous reviewers of earlier drafts of this article. My discussion of Medardo Rosso has benefited greatly from Francesca Bacci-Melcher’s recent dissertation on the artist, which she allowed me to read in draft form. I am also thankful to Michael Archer for kindly lending me his copy of the Rosso catalogue edited by Gloria Moure and to Ursula and R. Stanley Johnson for drawing my attention to the catalogue *Rodin en 1900*. Finally, I am most appreciative to the following for generously waiving their photographic reproduction fees: Hattula Moholy-Nagy, Nina (Gabo) Williams, the J. Paul Getty Museum, the Bauhaus-Archiv, the Bodleian Library, and the Tate Picture Library and Archive. For the quotation in the title, see note 65 below. Unless otherwise indicated, all translations are my own.

1 Rosalind Krauss, *Passages in Modern Sculpture*, Cambridge, MA, 1977, p. 5 and *passim*.

2 See, for instance, L. R. Lippard, *Six Years: The Dematerialization of the Art Object from 1966 to 1972*, New York, 1973, and, more recently, R. J. Williams, ‘Dematerialization’, *After Modern Sculpture: Art in the United States and Europe 1965–70*, Manchester, 2000, pp. 81–99.

3 The phrase was used regarding the photography of art in general by A. Malraux, *Psychologie de l’art: Le musée imaginaire*, Geneva, 1947, p. 130. On sculpture’s ‘objecthood’, see also M. Fried’s influential 1967 essay, ‘Art and objecthood’, in G. Battcock (ed.), *Minimal Art: A Critical Anthology*, Berkeley, 1995, pp. 116–47,

and the critiques by Krauss, as at note 1, pp. 201ff., and, more recently, A. Potts, *The Sculptural Imagination: Figurative, Modernist, Minimalist*, New Haven, CT, 2000, pp. 178–206.

4 On the photography of sculpture in general, see G. A. Johnson (ed.), *Sculpture and Photography: Envisioning the Third Dimension*, Cambridge, 1998, esp. p. 16, n. 2, for earlier references; J. Hall, ‘Beyond photography’, *The World as Sculpture*, London, 1999, pp. 325–47; and D. M. Kosinski (ed.), *The Artist and the Camera: Degas to Picasso* (exh. cat.), Dallas, Dallas Museum of Art, 1999.

5 Quoted in T. Fawcett, ‘Plane surfaces and solid bodies: reproducing three-dimensional art in the nineteenth century’, *Visual Resources*, 4, no. 1, 1987, p. 8.

6 On Rodin and photography, see esp. A. E. Elsen, *In Rodin’s Studio: A Photographic Record of Sculpture in the Making*, Oxford, 1980; K. Varnedoe, ‘Rodin and photography’, in A. E. Elsen (ed.), *Rodin Rediscovered* (exh. cat.), National Gallery of Art, Washington, DC, 1981, pp. 202–47; H. Pinet (1998), ‘“Montrer est la question vitale”: Rodin and photography’, in Johnson, as at note 4, pp. 68–85; H. Pinet, *Rodin sculpteur et les photographes de son temps*, Paris, 1985; and Jane R. Becker, ‘Auguste Rodin and photography: extending the sculptural idiom’, in Kosinski, as at note 4, pp. 91–115.

7 See R. Butler, *Rodin: The Shape of Genius*, New Haven, CT, 1993, pp. 99–108, and Elsen (1980), as at note 6, pp. 157–58 and pls. 2–5.

8 See *ibid.*, p. 13; Pinet (1998), as at note 6, p. 78; and *Rodin en 1900: L’exposition de l’Alma* (exh. cat.), Musée du Luxembourg, Paris, 2001, pp. 272, n. 341.

9 On the links contemporaries made between the ‘Affaire Balzac’ and the ‘Affaire Dreyfus’, despite Rodin’s personal aversion to politics, see Butler, as at note 7, pp. 321–28.

10 On Druet’s photographs, see Varnedoe, as at note 6, pp. 205–06

and 215–24; Pinet (1998), as at note 6, pp. 76–77; and *idem*, ‘Eugène Druet, homme-orchestre et gardien du temple’, pp. 274–82, and Sylvester Engbrox, ‘Eugène Druet, homme du XXe siècle’, pp. 283–39, both in *Rodin en 1900*, as at note 8. On Rodin’s use of back-lighting and his studio tours, see Elsen (1980), as at note 6, p. 24, and J. Wood, ‘Close encounters: the sculptor’s studio in the age of the camera’, in *Close Encounters: The Sculptor’s Studio in the Age of the Camera* (exh. cat.), Henry Moore Institute, Leeds, 2001, p. 14.

11 R. M. Rilke, *Rodin and Other Prose Pieces*, trans. G. C. Houston, London, 1986, p. 46. Rilke published essays on Rodin in 1903 and 1907. On Rilke and Rodin, see Butler, as at note 7, pp. 370–78, and Potts, as at note 3, pp. 77–101.

12 Krauss, as at note 1, p. 26 and *passim*.

13 Potts, as at note 3, p. 85.

14 See Elsen (1980), as at note 6, p. 215; Butler, as at note 7, pp. 372–78; and P. Curtis, *Sculpture 1900–1945*, Oxford, 1999, p. 3. The slides used by Rilke were probably taken by Jacques-Ernest Bulloz. On Bulloz, see Varnedoe, pp. 224–25.

15 Rilke, as at note 11, pp. 50 and 53.

16 *Ibid.*, p. 53.

17 On Rodin’s links to Pictorialist photographers, see Varnedoe, as at note 6, pp. 239–42, and H. Pinet, ‘Rodin et les photographes américains’, in *Le Salon de Photographie: Les écoles pictorialistes en Europe et aux Etats-Unis vers 1900* (exh. cat.), Musée Rodin, Paris, 1993, pp. 13–19.

18 C. H. Caffin, ‘Prints by Eduard J. Steichen—of Rodin’s “Balzac”’, *Camera Work*, no. 28, October 1909, p. 23. See also Becker, as at note 6, p. 104.

19 Trans. in Varnedoe, as at note 6, p. 231.

20 *Ibid.*, pp. 229 and 235.

21 See *Camera Work*, nos. 34–35, April–July 1911, pls. II–IV.

22 On the gum bichromate process, see M. Hiley, ‘The photographer as artist: a turn of the century debate’, *Studio International*, 190, no. 976, 1975, pp. 7–9.

23 As noted by Varnedoe, as at note 6, p. 242; see also Varnedoe, figs. 9.70–9.72, and S. Barassi, ‘New visions for a new world’, in *Immaterial: Brancusi, Gabo, Moholy-Nagy* (exh. cat.), Cambridge, Kettle’s Yard, 2004, pp. 10–11.

24 On originality and multiplication in Rodin’s work, see esp. L. Steinberg, ‘Rodin’, *Other Criteria: Confrontations with Twentieth-Century Art*, Oxford, 1972, pp. 322–403, and R. Krauss, ‘The originality of the avant-garde’, *The Originality of the Avant-Garde and Other Modernist Myths*, Cambridge, MA, 1985, pp. 151–72.

25 Krauss, as at note 1, pp. 31–33, is sceptical about how much Rodin really did owe to Rosso’s example, seeing the latter as essentially remaining ‘within the traditional vein of sculptural relief’. More recent evaluations of Rosso’s work can be found in G. Moure (ed.), *Medardo Rosso* (exh. cat.), Centro de Arte Contemporânea, Santiago de Compostela, 1996; G. Stix-Marget, *Maler ohne Pinsel: Der Bildhauer und Fotograf seiner Werke Medardo Rosso, 1858–1928*, Munich, 1998; J. R. Becker, ‘Medardo Rosso: photographing sculpture and sculpting photography’, in Kosinski, as at note 4, pp. 159–75; J. R. Becker, ‘“Only one art”: The interactions of painting and sculpture in the work of Medardo Rosso, Auguste Rodin and Eugène Carrière, 1884–1906’, unpub. PhD, New York University, 1998; H. Cooper and S. Hecker (eds), *Medardo Rosso: Second Impressions* (exh. cat.), Harvard University Art Museums, Cambridge, MA, 2003; D. Melcher and F. Bacci, ‘“A moment’s monument”: the central vision of Italian sculptor Medardo Rosso (1858–1929)’, *Perception*, 32, 2003, pp. 1051–58; L. Caramel (ed.), *Medardo Rosso: Le origini della scultura moderna*, Milan, 2004; and F. Bacci-Melcher,

'Impressions in light: photographs of sculptures by Medardo Rosso (1858–1928)', unpub. PhD, Rutgers, The State University of New Jersey, 2004.

26 See S. Hecker, 'Reflections on repetition in Rosso's art', in Cooper and Hecker, as at note 25, p. 46.

27 See R. M. Mason, H. Pinet and H. Wölfflin, *Pygmalion photographie: La sculpture devant la caméra, 1844–1936*, Geneva, 1985, p. 100, and note 14 above.

28 For the photographs of this installation and Rosso's relations with Rodin, see Hecker, as at note 26, pp. 46–48, 64–67, fig. 42; Becker, as at note 25, pp. 167–68, figs 95–96; and Bacci-Melcher, as at note 25, ch. 4. The latter confirms that Rosso probably did not actually take the photograph he later annotated, nor personally installed his works next to Rodin's photographs. Rather, Rosso apparently simply requested that the exhibition committee place his installation near his rival's. See also the somewhat conflicting accounts in Ardenigo Soffici, 'Il caso Medardo Rosso', *Opere*, Florence, 1959, v. I, pp. 51 and 52.

29 See Becker, pp. 168–69, and Bacci-Melcher, ch. 4, both as at note 25.

30 Soffici, as at note 28, pp. 46 and 52. See also Rosso's 1902 essay, 'Impressionism in sculpture', in Moure, as at note 25, pp. 129–31.

31 Trans. in *ibid.*, p. 130.

32 See H. Lie, 'Technical features in Rosso's work', pp. 69–93, and D. Pullen, 'Gelatin molds: Rosso's open secret', pp. 95–102, both in Cooper and Hecker, as at note 25.

33 On whether Rosso actually took all the photographs attributed to him, see L. Caramel, 'Identity and current relevance of Medardo Rosso', in Moure, p. 106; Becker, p. 159; and esp. Bacci-Melcher, ch. 1, all as at note 25. In light of Bacci-Melcher's recent research, it seems very likely that Rosso probably did produce (or at least stage-manage or significantly modify) the vast majority of the photographs and negatives now in the Museo Medardo Rosso archive in Barzio. On Rosso's physical handling of these images, see *ibid.*, ch. 2.

34 Fourteen photographs (presumably all taken or at least overseen by Rosso) of the *Ecce Puer* are reproduced in Moure, as at note 25, pp. 256–63, while Bacci-Melcher, as at note 25, Appendix Part A, lists twenty negatives associated with this composition.

35 See Caramel, as at note 33, pp. 106–12; Bacci-Melcher, as at note 25, esp. ch. 2; and Hecker, as at note 26.

36 See *ibid.*, p. 51.

37 On Rodin's oversight of his studio photographers, see Elsen (1980), as at note 6, p. 14.

38 From a 1926 letter trans. in Moure, as at note 25, p. 299.

39 On visits to and photographs of Rosso's studio, see Becker,

pp. 166–67; Melcher and Bacci, p. 1053; and Bacci-Melcher, ch. 7, all as at note 25.

40 Rosso made these types of declarations throughout his career. The one quoted here, from a 1919 interview, is trans. in Moure, as at note 25, p. 171.

41 From an article published in the *Daily Mail* in 1907, quoted in *ibid.*, p. 141. See also Hecker, as at note 26, p. 27. Rosso's distinction between close-up tactile or 'haptic' encounters with sculpture, which he criticizes, and a purely 'optical' reception of works in this medium echoes the writings of contemporaries such as Alois Riegl and Adolf von Hildebrand.

42 See Hecker, as at note 26, p. 40, and Becker, as at note 25, p. 167.

43 Krauss, as at note 1, p. 290, n. 7.

44 Trans. in Moure, as at note 25, p. 183.

45 On Moholy-Nagy's 'transnational' (to use his daughter Hattula's term) career, see the essays in A. Borchardt-Hume (ed.), *Albers and Moholy-Nagy: From the Bauhaus to the New World* (exh. cat.), Tate Modern, London, 2006. On Moholy-Nagy, esp. as a photographer, see also S. Moholy-Nagy, *Moholy-Nagy. Experiment in Totality*, Cambridge, MA, 1969, 2nd edn; R. Kostelanetz (ed.), *Moholy-Nagy*, London, 1971, esp. pp. 47–71 and 97–160; C. Fawkes, 'Photography and Moholy-Nagy's do-it-yourself aesthetic', *Studio International*, 190, no. 976, 1975, pp. 18–26; G. Rondolino, *László Moholy-Nagy: Pittura, fotografia, film*, Turin, 1975; A. Haus, *Moholy-Nagy: Photographs and Photograms*, trans. F. Samson, London, 1980; *idem*, 'Moholy-Nagy', in J. Fiedler (ed.), *Photography at the Bauhaus*, London, 1990, pp. 14–23; A. Haus, 'Matériau, lumière et espace: Les idées photographiques de László Moholy-Nagy', in M. Frizot and D. Paimi (eds), *Sculpteur-Photographe, Photographie-Sculpture*, Paris, 1993, pp. 56–65; K. Passuth, *Moholy-Nagy*, trans. É. Grusz et al., London, 1985; and E. M. Hight, *Picturing Modernism: Moholy-Nagy and Photography in Weimar Germany*, Cambridge, MA, 1995.

46 For examples of Moholy-Nagy's highly 'sculptural' paintings, see Borchardt-Hume, as at note 45, pp. 59 (pl. 73), 63 (pl. 79), 89 (fig. 38), and 143 (pl. 109). All these examples were painted in the 1930s, except the last work, which was produced in 1946.

47 See T. A. Senter, 'Moholy-Nagy: the transitional years', p. 89, in Borchardt-Hume, as at note 45. On Moholy-Nagy's self-identification as a painter, see Haus (1993), as at note 45, p. 57, and A. Borchardt-Hume, 'Two Bauhaus histories', in Borchardt-Hume, as at note 45, p. 70.

48 L. Moholy-Nagy, 'Unprecedented photography' (1927), trans. in C. Phillips (ed.), *Photography in the Modern Era: European*

*Documents and Critical Writings, 1913–1940*, New York, 1989, p. 85.

49 Trans. in S. Moholy-Nagy, as at note 45, p. 27, from a 1923 catalogue essay.

50 L. Moholy-Nagy, 'Photogram and frontier zones' (1929), trans. in Passuth, as at note 45, pp. 305–06.

51 Quoted in *ibid.*, p. 326.

52 Trans. in S. Moholy-Nagy, as at note 45, p. 27.

53 See *ibid.*, as well as Haus (1980), p. 19, and Hight, pp. 60–72, both as at note 45.

54 Trans. in *ibid.*, p. 70.

55 Trans. in *In Focus: László Moholy-Nagy: Photographs from the J. Paul Getty Museum*, Malibu, 1995, p. 12.

56 See, for instance, the intaglio prints illustrated in *Immaterial*, as at note 23, p. 30, cat. nos. 38 and 41, and Haus (1980), as at note 45, p. 18, fig. 8, as well as the paintings reproduced in Borchardt-Hume, as at note 45, pp. 17 (pl. 11), 18 (pl. 12), and 19 (pl. 14). For Moholy-Nagy's photographs, which include many with disorienting diagonals, shadows and negative-positive image combinations, see the references in note 45 above.

57 Trans. in S. Moholy-Nagy, as at note 45, p. 24.

58 Trans. in Haus (1980), as at note 45, p. 21.

59 L. Moholy-Nagy, *Painting, Photography, Film*, trans. J. Seligman, London, 1969, p. 77. First published as *Malerei, Photographie, Film* (*Bauhausbücher*, 8, 1925), then again in a revised edn (used for the 1969 English trans.) as *Malerei, Fotografie, Film*, Munich, 1927.

60 Quoted in Passuth, as at note 45, pp. 292 and 383.

61 See the caption in L. Moholy-Nagy, *Vision in Motion*, Chicago, 1947, p. 242, although Moholy-Nagy probably did not actually take this photograph himself.

62 This work, designed by Moholy-Nagy and dated by him 1922–30, was executed under his supervision by Stefan Sebkö and actually built only in 1930; a replica was also produced in 1970. See M. White, 'Mechano-Facture: Dada/Constructivism and the Bauhaus', p. 171, n. 13, in Borchardt-Hume, as at note 45, and Senter, as at note 47, p. 85. On this piece, see also Moholy-Nagy, as at note 61, pp. 288–89; Krauss, as at note 1, pp. 206–13; Haus (1980), as at note 45, p. 73; Passuth, as at note 45, pp. 53–56; *In Focus*, as at note 55, pp. 80–83; and Barassi, as at note 23, pp. 34–42.

63 L. Moholy-Nagy, 'Abstract of an artist' (1944), quoted in Passuth, as at note 45, p. 381.

64 Krauss, as at note 1, p. 207.

65 'All concrete shapes dissolve in light' is the final sentence of Moholy-Nagy's synopsis of *Lichtspiel*, filmed in 1930. See L. Moholy-Nagy, as at note 61, p. 289. For the other quotations, see Passuth, as at note 45, p. 381, and

D. Irwin, 'Motion and the Sorcerer's Apprentice', *Apollo*, 84, n. 53, July 1966, p. 54. As in the construction of the *Light-Space Modulator*, discussed in note 62 above, Moholy-Nagy relied on the technical expertise of an assistant, in this case György Kepes, to make this film. See Senter, as at note 47, p. 85. For a selection of stills from the film, see Borchardt-Hume, as at note 45 above, pp. 54–55.

66 The first phrase is quoted in Passuth, as at note 45, p. 383, and the latter in A. Findeli, 'Laszlo Moholy-Nagy, Alchemist of Transparency', *The Structurist*, nos. 27–28, 1987–88, p. 10. Several of these paintings are illustrated in colour in Borchardt-Hume, as at note 45. See also Barassi, as at note 23, p. 28.

67 On Gabo, see esp. S. A. Nash and J. Merkert (eds), *Naum Gabo: Sixty Years of Constructivism*, Munich, 1985; John E. Bowlt, 'The presence of absence: the aesthetic of transparency in Russian Modernism', *The Structurist*, nos. 27–28, 1987–88, pp. 15–22; M. Hammer and C. Lodder, *Constructing Modernity: The Art & Career of Naum Gabo*, New Haven, 2000; *idem*, 'Dematerialising sculpture: methods and motives', pp. 51–69, in *Immaterial*, as at note 23; and P. Paret, 'The crisis of sculpture in Weimar Germany: Rudolph Belling, the Bauhaus, Naum Gabo', unpub. PhD, Princeton University, 2001.

68 On Gabo and Moholy-Nagy, see Senter, as at note 47, pp. 87 and 89.

69 On this work, see esp. Nash and Merkert, pp. 205–06, and Hammer and Lodder (2000), pp. 69–71, both as at note 67.

70 [L.] Moholy-Nagy, *The New Vision: From Material to Architecture*, trans. D. M. Hoffmann, New York, 1932, p. 127; first published as *Von Material zu Architektur* (*Bauhausbücher*, 14, 1929).

71 Krauss, as at note 1, p. 216.

72 N. Gabo, with A. Pevsner, 'The Realistic Manifesto' (1920), trans. in J. E. Bowlt (ed.), *Russian Art and the Avant-Garde: Theory and Criticism, 1902–1934*, London, 1988, pp. 212–13.

73 Trans. in Nash and Merkert, as at note 67, p. 205.

74 See *ibid.*, pp. 38 and 235–38, and Hammer and Lodder (2000), as at note 67, pp. 325–26.

75 See Nash and Merkert, pp. 29–31, and Bowlt, p. 17, both as at note 67.

76 See Hammer and Lodder (2000), pp. 328–30, and *idem*, 'Dematerialising Sculpture', pp. 64–67, both as at note 67.

77 The photographs illustrated here are stored in the Tate Archive in a Boots' photograph processing envelope date-stamped 16 Oct. 1941. See Hammer and Lodder (2000), pp. 281 and 497, n. 89, as at note 67. The artist's daughter, Nina (Gabo) Williams, has described similar photographs being taken by Gabo in the 1950s of reflections on a chromium-

plated toaster in the dining room of the family home in Middlebury, Connecticut, and believes the Tate photographs may actually date from this period, despite how they are currently stored. (Letters to the author of 10 May and 5 June, 2006.)

78 See Haus (1980), as at note 45, pp. 16–17.

79 See Kostelanez, as at note 45, fig. 52.

80 See Hammer and Lodder (2000), as at note 67, p. 281, and H. Read, *The Art of Sculpture*, New York, 1956, p. 112.

81 Ironically, many of Gabo's transparent and translucent plastic sculptures are now literally disintegrating due to their chemical instability. See E. Rankin, 'A betrayal of material: problems of conservation in the Constructivist sculpture of Naum Gabo and Antoine Pevsner', *Leonardo*, 21, no. 3, 1988, pp. 285–90.

82 The Brancusi archive has approximately 700 original negatives and 2,000 of the artist's own prints. See P. Paret, 'Sculpture and its negative: the photographs of Constantin Brancusi', in Johnson, as at note 4, p. 101. On Brancusi as a photographer, see also M. Tabart and I. Monod-Fontaine, *Brancusi Photographe* (exh.

cat.), Musée Nationale d'Art Moderne, Paris, 1977; H. Kramer, *Brancusi: The Sculptor as Photographer*, London, 1979; S. Miller, 'Constantin Brancusi's photographs', *Artforum*, 19, no. 7, 1981, pp. 38–44; M. Frizot, 'Les photographies de Brancusi, une sculpture de la surface', *Cahiers du Musée national d'art moderne*, no. 54, Winter 1995, pp. 34–49; F. Teja Bach, 'Brancusi and Photography', in F. Teja Bach, M. Rowell, and A. Temkin (eds), *Constantin Brancusi: 1876–1957*, Cambridge, MA, 1995, pp. 312–19; E. A. Brown, *Brancusi photographs Brancusi*, London, 1995; and idem, 'Brancusi's photographic in-sights', in Kosinski, as at note 4, pp. 266–85.

83 Brancusi worked briefly in Rodin's studio in 1907 and exhibited at the 1904 *Salon d'Automne* in Paris with Rosso. See S. Geist, *Brancusi*, New York, 1967, pp. 22–23; idem, 'Rodin/Brancusi', pp. 270–73, in Elsen (1981), as at note 6; and L. Tilanus, 'Rodin and Brancusi', *Burlington Magazine*, 135, 1993, pp. 484–85.

84 See A. C. Chave, *Constantin Brancusi: Shifting the Bases of Art*, New Haven, CT, 1993, pp. 275–84; E. A. Brown, 'L'atelier métaphorique', pp. 40–55, in Frizot and Païni, as at note 45; Brown (1995), as at note 82,

pp. 4–5; and J. M. Wood, 'The materials and metaphors of the sculptor's studio: Brancusi, Picasso and Giacometti in the 1920s and 1930s', unpub. PhD, Courtauld Institute of Art, University of London, 1999.

85 Quoted in Bach, as at note 82, p. 319, n. 19.

86 On the narcissistic implications of Brancusi's reflective surfaces, see Chave, as at note 84, pp. 66–92.

87 See *ibid.*, pp. 198–249.

88 See S. Moholy-Nagy, as at note 45, p. 67.

89 See L. Moholy-Nagy, as at note 70, p. 89.

90 See Krauss, as at note 1, pp. 99–100, and Paret, as at note 82, pp. 101–15.

91 To compare Rosso's own photographs with those taken posthumously, see Melcher and Bacci, as at note 25.

92 See Bach, as at note 82, p. 316.

93 H.-P. Roché, quoted in *ibid.*, p. 318, n. 5. See also Krauss, as at note 1, p. 99.

94 See Paret, as at note 82, p. 106.

95 See *ibid.*, pp. 105–06. For Moholy-Nagy's negative prints, see Haus (1980), as at note 45, pls. 64–65, 73–74, 133–36, 149–50. H. Foster, 'The Bauhaus idea in America', in

Borchardt-Hume, as at note 45, p. 174, n. 13, has suggested that Moholy-Nagy may have been directly influenced by Brancusi's photographic practices.

96 See Bach, as at note 82, pp. 314–15 and 355, cat. ill. 191.

97 See Barassi, as at note 23, pp. 40–42.

98 L. Moholy-Nagy, as at note 61, p. 240.

99 Quoted in Bach, as at note 82, p. 312. On photographic images eclipsing words, see also R. Krauss, 'When words fail', *October*, 22, 1982, pp. 91–103.

100 W. Benjamin, *Selected Writings, Volume 2, 1927–1934*, ed. M. W. Jennings et al., Cambridge, MA, 1999, p. 156. In a later article, Moholy-Nagy put this point slightly differently: 'The illiterates of the future will be ignorant of the use of camera and pen alike'. L. Moholy-Nagy, 'How photography revolutionises vision', trans. M. Shand, *The Listener*, 10, no. 252, 8 Nov. 1933, p. 690.

101 For examples of Moholy-Nagy's use of this phrase, see *ibid.*, p. 688, and note 70 above.

102 L. Moholy-Nagy, as at note 50, p. 306. On sculpture's 'objecthood', see also note 3 above.