

K a n d i n s k y  
M a l e w i t s c h  
M o n d r i a n

D e r  
w e i ß e  
A b g r u n d  
U n e n d l i c h k e i t

T h e  
l n f i n i t e  
W h i t e  
A b y s s

Herausgegeben von  
der Kunstsammlung  
Nordrhein-Westfalen,  
Düsseldorf

Kuratiert von  
Marion Ackermann  
Isabelle Malz

**KUNST  
SAMMLUNG  
NORDRHEIN  
WESTFALEN**

# Abstraction, the Ether, and the Fourth Dimension: Kandinsky, Mondrian, and Malevich in context

Linda Dalrymple Henderson

*Note: Illustrations appear on pages of German version of essay following*

“Matter is not, in reality, what it appears to be to our vulgar senses – to our sense of touch, to our vision [...] it is identical with energy and is only a manifestation of the movement of invisible and imponderable elements.”

Camille Flammarion,  
Les Forces naturelles inconnues,  
1907

How can we possibly understand the birth of abstract painting without knowledge of the period's conceptions of terms such as matter and space, so central to the work of any artist? A key notion, long missing from cultural histories of this era, is that of the ether of space, which was understood to bridge these two seemingly separate concepts – matter and space – and which was at the heart of both scientific and occult understandings of the nature of reality in the early twentieth century. By the time histories of abstract art were first being written in the 1930s and 1940s, however, the world of ether physics had been eclipsed by the popularization of Einstein and Relativity Theory, which had begun in 1919. Restoring Wassily Kandinsky, Piet Mondrian, and Kazimir Malevich to their early twentieth-century contexts is vital to the history of the development of each of their styles. The ether of space and/or the related idea of a spatial fourth dimension – both concepts that were rejected by Einstein and thus largely lost in subsequent histories of the early twentieth century – prove to be central to their art.<sup>1</sup>

The transformation of conventional notions of space and matter in the late nineteenth and early twentieth century was rooted in a series of scientific discoveries in the 1890s and the early years of the new century.<sup>2</sup> Of these scientific developments, X-rays, discovered by Wilhelm Röntgen in 1895, had the most dramatic public impact: they made solid matter transparent, revealing previously invisible forms, and also raised fundamental questions about the adequacy of the human eye as a perceiving instrument. Along with the X-ray, the development of practicable wireless telegraphy in the later

1890s, based on Heinrich Hertz's confirmation of the existence of electromagnetic waves in 1888, suggested a new image of space as filled with vibrating waves. Diagrams and charts widely reproduced in this period charted the vast ranges of invisible vibrations that surround the narrow band of visible light perceptible to the human eye.

In the early twentieth century the widespread popular coverage of wireless telegraphy, in particular, focused popular attention on the mysterious substance termed the "ether of space". Posited by scientists as the necessary vehicle for the transmission of wave vibrations, the impalpable ether was understood to suffuse all space and to interpenetrate all matter. Beyond the X-ray's actual breaching of material surfaces, confidence in the solidity of matter had been further challenged by J. J. Thomson's detection of the electron in 1897 and by Henri Becquerel's discovery of radioactivity as well as the Curies' identification of the first radioactive elements in 1898. It was often suggested, in fact, that all matter might be radioactive, offering the startling image of objects endlessly emitting particles into the surrounding ether, a view widely popularized in the best-selling books of Gustave Le Bon, such as *L'évolution de la matière* of 1905. At the same time, physicists such as Sir Oliver Lodge, building on Lord Kelvin's concept of the "vortex atom," proposed the ether as the source of matter itself. Grounded in the electron and its interaction with the ether, the "electric theory of matter," as it was termed, appears in the Kandinsky's 1911 treatise *On the Spiritual in Art*.<sup>3</sup> Flammarion's reference to "the motion of invisible and imponderable elements" in the epigram reflects this view as well.<sup>4</sup>

A space-filling "luminiferous ether" had been a part of physics since the 1820s in conjunction with Fresnel's wave theory of light; what was novel about the ether in the later nineteenth century were the many new functions being attributed to it.<sup>5</sup> Contrary to standard narratives of the ether's demise in 1905 at the hands of Einstein, the concept remained central to the thinking of many scientists in the pre-World War I

and wartime period. Thus, J. J. Thomson asserted in his 1909 Presidential Address before the British Association for the Advancement of Science, "The ether is not a fantastic creation of the speculative philosopher; it is as essential to us as the air we breathe [...]. The study of this all-pervading substance is perhaps the most fascinating duty of the physicist."<sup>6</sup> The sense of possibility offered by the ether is clear in Sir William Crookes's declaration in his own British Association Presidential Address of 1898 that "ether vibrations have powers and attributes equal to any demand - even to the transmission of thought."<sup>7</sup>

In order to transmit vibrating electromagnetic waves, including light, the ether required the rigidity of an elastic solid; at the same time, it must allow the free motion of bodies through it and be rarefied enough to flow through the interstices of even the densest matter. Writers on the ether - from scientists and popular science writers to occultists - regularly relied on metaphor to convey something of the nature of the mysterious substance and its behavior, including an elastic jelly or whirling fluid as well as smoke, the passage of water through a sieve, and even steam. Science writer Robert Kennedy Duncan, for example, talked in his 1905 book *The New Knowledge of our bodies* "soaking in [the ether] like a sponge lies soaking in water," and concluded: "How much we ourselves are matter and how much ether is, in these days, a very moot question."<sup>8</sup> For occultists, including Theosophists as well as Anthroposophy's founder Rudolf Steiner, the ether offered a powerful model both for vibratory thought transfer and for the interpenetration of spirit and matter on the model of the continuum formed by ether/matter interactions.<sup>9</sup> Steiner was particularly attuned to contemporary science, and in 1904 he included in his journal *Lucifer Gnosis*, which Kandinsky owned, excerpts from Lord Balfour's Presidential Address before the British Association of that year, in which he asserted, "It seems now that [the ether] may be the stuff out of which [the] universe is wholly built."<sup>10</sup>

A second sign of an invisible “meta-reality” in this period was the idea of a possible fourth dimension of space, which was rooted in the development of n-dimensional geometries in the mid-nineteenth century. If space actually possessed an additional dimension, our familiar three-dimensional world would then be a section or shadow of a higher, imperceptible reality – an idea supported from its earliest days by invocations of Plato’s allegory of the cave.<sup>11</sup> The British “hyperspace philosopher” Charles Howard Hinton presented the first systematic discussion of the fourth dimension and its idealist philosophical implications in his A New Era of Thought of 1888. In this text and in his 1904 book The Fourth Dimension (cat. no. 23) Hinton argued that the Kantian “space sense” could be educated and enlarged to perceive a fourth spatial dimension through careful study of the spatial arrangement of forms – in this case a system of multi-colored cubes representing sections of the four-dimensional hypercube or tesseract. Hinton also developed the analogy of a two-dimensional world as a tool for understanding the relation of the third to the fourth dimension, in which time would serve as a means for conceptualizing higher space.<sup>12</sup> American architect Claude Bragdon’s A Primer of Higher Space. The Fourth Dimension... of 1913 gave visual form to this and other ways of speculating on the relationship of dimensions (cat. no. 22; fig. 1, p. 40).<sup>13</sup> Hinton’s writings were likewise central for the Russian mystic philosopher P. D. Ouspensky, who recounted the Englishman’s ideas in his 1911 treatise Tertium Organum. The Third Canon of Thought – A Key to the Enigmas of the World (cat. no. 20) and translated his books into Russian in 1915, providing direct access to his ideas for the Russian avant-garde.<sup>14</sup>

The first connection between the fourth dimension and the ether was made by British physicists Balfour Stewart and P. G. Tait in the 1876 revised edition of their remarkable book The Unseen Universe, or Physical Speculations on a Future State (1875). In the original edition the authors had suggested that the “ether may be not a mere medium, but a medium plus the in-

visible order of things, so that when the motions of the visible universe are transferred into ether, part of them are conveyed as by a bridge into the invisible universe, and are there made use of or stored up.” The following year they proposed that the invisible universe might be four-dimensional: “our (essentially three-dimensional) matter [may] be merely the skin or boundary of an Unseen whose matter has four dimensions.”<sup>15</sup> Hinton would pursue the idea of the three-dimensional universe as a boundary of a higher dimensional world, with important implications for Malevich, as we shall see. He also argued that electrical current might well be created by particles of ether in four-dimensional rotation and that gravity might be transmitted via a minute extension of the ether into the fourth dimension.<sup>16</sup> As in this instance, by the early twentieth century the fourth dimension had acquired a variety of associations beyond its basic geometrical and philosophical significations, including theology, mystical “cosmic consciousness,” freedom from gravity or specific orientation, and infinity and spatial vastness, becoming a kind of twentieth-century sublime in the latter case.<sup>17</sup> Hinton’s books were the single most influential source of information on the fourth dimension for its subsequent advocates, and their impact is clear in the writings of British Theosophist C. W. Leadbeater, in Rudolf Steiner’s lectures given in Germany and Holland between 1905 and 1913, in Ouspensky’s 1909 The Fourth Dimension as well as his 1911 Tertium Organum, and in Bragdon’s A Primer of Higher Space.<sup>18</sup>

Although Kandinsky and Mondrian, who both attended lectures by Steiner, undoubtedly heard him touting Hinton and his fourth dimension theories and system, the fourth dimension would not be a central issue for either artist’s development of their mature styles, as we shall see.<sup>19</sup> While Mondrian would still be corresponding with fellow De Stijl artist Theo van Doesburg as late as 1917–1918 on the possible relevance of the fourth dimension to the new painting, as discussed below, Kandinsky’s initial antipathy toward a geometrical approach and Cubism (where the fourth dimension was a

major theme) kept him from ever engaging the idea as he developed his abstract style. For both Kandinsky and Mondrian, the ether played a much more important role. By contrast, Malevich's highly geometric style of Suprematism, with painting titles often including specific references to "the fourth dimension," owed a direct debt to Ouspensky's (and Hinton's) writings on the fourth dimension. Of the three artists, Malevich was the most clearly dedicated to representing the "white abyss" of space, and it was linked for him to both the fourth dimension and to the ether.

### Wassily Kandinsky

In one of the most effective close formal readings of Kandinsky's paintings to date, Reinhard Zimmermann has discussed the artist's "breakthrough to abstraction" during 1911 to 1913 in an analysis equally applicable to works such as the Composition VI (fig. 2, p. 43) and Painting with White Border (1913, cat. no. 4). Acknowledging Kandinsky's and Gabriele Münter's interest in "theosophical and occult notions" of an invisible "second level" of reality that [...] is by nature ethereal and manifests itself above all in auras and thought forms," he writes in view of Landscape with Red Spots I perceptively,

"The various colour zones have the appearance of free-floating mists or coloured billows of steam; sometimes they look like swathes of clouds [...]. In this composition matter seems to have shifted into a different physical condition; it is as though it has liquefied, dematerialized. [...] [T]he colour planes [...] are organized independently of the lineature; [...] An ethereal colour substance seems to fill the pictorial space. [...] [The] objects have been dematerialized; they have lost their physical presence."

For Zimmermann, the result is an "indefinable, ethereal space [...] in keeping with the artist's occult, theosophical concept of bodies and space."<sup>20</sup>

While Zimmermann is completely correct in evoking an "ethereal" realm he associates with Theosophy, Kandinsky would have derived support for such a view of matter and space from a much broader range of sources than the "thought-forms" and auras of Annie Besant and C. W. Leadbeater that have generally dominated discussions of this topic in the literature on the artist.<sup>21</sup> For Kandinsky and other early twentieth-century artists, the ether was much more than simply a metaphorical concept ("ethereal" as an adjective) or one identified solely with Theosophical "thought-forms." As discussed above, the ether of space was a major theme in contemporary scientific theorizing, and Kandinsky was, in fact, responding not only to Theosophical sources, including Steiner's ideas on the subject, but also to popular scientific writing and the work of other occultists or occult-oriented scientists interested in the ether, including the Parisians Hippolyte Baraduc and Albert de Rochas. Kandinsky's belief that his paintings could cause a "vibration in the soul of the viewer" found support in a variety of places – from Crookes's widely cited declaration about the vibratory "transfer of thought" through the ether to figures like Baraduc, who was photographing patterns of vibrating ether he believed embodied thought, and Rochas's 1895 L'extériorisation de la sensibilité.<sup>22</sup> Indeed, in their 1901 Thought-Forms (cat. no. 10), Besant and Leadbeater themselves cited Baraduc as their "scientific counterpart." The latter book was just one manifestation of a much larger fascination with vibratory thought communication in this period, which included not only Crookes, but also other scientist advocates of telepathy such as the physicist Lodge and astronomer Camille Flammarion.<sup>23</sup>

If the ether was central to Kandinsky's conception of the artist as a "sender" and the viewer as a "receiver," it is also a key to the dematerialized imagery of his mature abstractions, such as Composition VI (fig. 2, p. 43).<sup>24</sup> In his first steps toward abstraction, Kandinsky had utilized veiled or hidden imagery, often based on Steiner's focus on the Book of Revelation or, as in the case of Painting with White Border (1913, cat. no. 4), motifs such as St. George and the dragon, in a

gradualist approach he hoped would help prepare viewers for the coming of the “epoch of the great spiritual.”<sup>25</sup> However, his ultimate goal was to communicate with viewers via pure color and form, and recovering the early twentieth-century focus on the ether sheds critical new light on Kandinsky’s understanding of the “matter” he was dematerializing.

In On the Spiritual in Art Kandinsky writes of “professional men of learning who test matter again and again, who tremble before no problem, and who finally cast doubt on the very matter which was yesterday the foundation of everything, so that the whole universe rocks. The electron theory – i.e. the theory of moving electricity, which is supposed completely to replace matter has found lately many keen proponents [...]”<sup>26</sup> Similarly, the artist’s well-known reference to the “collapse” or “further division of the atom” in his 1913 Reminiscences, which has sometimes been read negatively, was clearly a positive response to the turn-of-the century ferment in the wake of the discoveries of the electron and radioactivity and ideas of the ether as the possible source of matter.<sup>27</sup> As he writes in “On the Question of Form” in On the Spiritual in Art, “[T] day the whole storeroom is at the spirit’s disposal; that is every material substance from the most ‘solid’ to the simply two-dimensionally living (abstract) is used as an element of form.”<sup>28</sup>

Kandinsky would have encountered the ether in Theosophical doctrine primarily in discussions of the “ether body” or “etheric body,” although Theosophists usually made certain to distinguish their usage of “ether” from that of contemporary science. William Kingsland, for example, termed it a “hyper-meta-physical Aether” in his The Physics of the Secret Doctrine of 1909. Nonetheless, Leadbeater in Man Visible and Invisible of 1902 (cat. no. 11) relied on the public’s familiarity with the scientific ether to explain the interpenetration of the various bodies and planes posited in Theosophy: “It is universally recognized that ether penetrates all known substances, the densest solid as well as the most rarefied gas; and just as it moves with perfect freedom between the particles of the denser

matter, so does astral matter interpenetrate it, in turn, and move with perfect freedom among its particles.”<sup>29</sup> While Leadbeater associated the etheric body with the physical plane, Steiner differentiated the “ether-body” more specifically from the physical body as the “life-body” or “the life within the physical body” in his book Theosophie (1908, cat. no. 12), which Kandinsky owned.<sup>30</sup> For Steiner, it was the ether body/life body that formed the transition to the “sentient soul” of an individual: “a portion of the ether-body is finer than the rest, and this finer part forms a unity with the sentient-soul, whereas the coarser part forms a kind of unity with the physical body.”<sup>31</sup>

Kandinsky would have found a similar discussion of degrees of rarefaction of matter in another book in his library, Yogi Ramacharaka’s Fourteen Lessons in Yogi Philosophy and Oriental Occultism (1911 edition). “Yogi Ramacharaka,” the pen name of William Walker Atkinson (founder of the American New Thought movement), explained ethereal phenomena like the astral body or the thought projections central to his book by using the model of steam.<sup>32</sup> Just as ice, water, and steam are all the same chemical substance, they exist in radically different forms, according to the rates of vibration of their molecules; steam thus served as a counterpart to ether on a scale from condensation to dissolution. According to Yogi Ramacharaka, thought “is like a thin vapor [...] and is just as real as the air around us or the vapor of steam or the numerous gases with which we are acquainted.”<sup>33</sup> And he connected this vaporous thought back to the ether: “When one ‘thinks’ he sets up vibrations of greater or lesser intensity in the surrounding ether, which radiate from him in all directions.”<sup>34</sup>

Kandinsky himself utilized a comparison to steam in discussing his painting Composition VI, and ether as dematerialized matter might well be what we are looking at in his mature paintings. In 1913 he wrote of the center section of Composition VI, “Here the pink and the white [...] appear as if hovering in the air, as if surrounded by steam.” Citing the effects of a Russian steam bath, he continues, “A man standing in the steam is neither close nor far away, he is just some-

where. The feeling of 'somewhere' about the principal center determines the inner sound of the whole picture." <sup>35</sup> Here Kandinsky's reference to steam, like the smoke and fog that served as metaphors for the elusive ether, carries additional resonances when his paintings are read in context. It is truly an indefinable, ether-like space the artist creates – "neither close nor far away." Steam, moreover, is white, and Kandinsky speaks in On the Spiritual in Art of the "noncolor" white as being "like a symbol of a world where all colors, as material qualities and substances, have disappeared" – a notion highly suggestive of the ether itself. <sup>36</sup>

While Kandinsky also associated white with "a great silence," color and its attendant ether vibrations as well as synaesthetic sound waves were central to his approach to painting. <sup>37</sup> With their visual and aural Klang, his dynamic, non-material forms create the effects of "dissonance" both he and his composer friend Arnold Schoenberg believed could lead to the "consonance of 'tomorrow'" – i.e., the harmonious, spiritual future in which he believed. <sup>38</sup> Kandinsky's art and theory were clearly nourished by the early twentieth-century milieu of ether physics that resonated so closely with his readings in Theosophy and other occult sources. He was not operating on the fringe in this period; he was in the mainstream in engaging the popular scientific and occult cultures of his time.

The coming of Relativity Theory, of course, changed that, and it was a different world Kandinsky found when he returned to Germany from Russia to join the Bauhaus faculty in 1921. The fourth dimension was now redefined as time by Einstein, and its utopian, visionary qualities (and association with the ether) were obscured by the new enthusiasm for kinetic art as explored by artists such as László Moholy-Nagy, Kandinsky's younger colleague at the Bauhaus. <sup>39</sup> We now know that Johannes Itten, whom Moholy-Nagy replaced at the Bauhaus in 1923, possessed a copy of Bragdon's A Primer of Higher Space in Weimar in 1920 and that Kandinsky may well have seen it there, discovering the concept's philosophical dimensions – so sympathetic to his own views. <sup>40</sup> By this time Kandinsky's style had changed to a geometrically oriented one,

represented by works such as Circles in a Circle (1923, cat. no. 35)) in the exhibition. This new context may help explain the latter-day appeal to the fourth dimension made by Kandinsky in a letter to Will Grohmann in 1930: "The circle [...] is the synthesis of the greatest oppositions. It combines the concentric and the excentric in a single form, and in equilibrium. Of the three primary forms [triangle, square, circle], it points most clearly to the fourth dimension." <sup>41</sup>

#### Piet Mondrian

When Mondrian arrived in Paris in 1912, he already had encountered the international cultures of science and occultism/Theosophy, including the ether and the fourth dimension, in his native Holland. The Cubist style of Pablo Picasso and others, which drew Mondrian to Paris, was itself grounded in the new conceptions of matter and space being propounded in sources such as Le Bon's L'évolution de la matière, including the impact of the X-ray, radioactivity, and the ether as well as interest in higher spatial dimensions. As a member of the Dutch Theosophical Society since 1909, Mondrian was well aware of the geometrical symbolism of verticals and horizontals in Theosophy; thus, it is not surprising that he saw such potential in the Cubist grid and drew his well-known conclusion that "Cubism did not accept the logical consequences of its own discoveries." <sup>42</sup>

Mondrian's sketchbooks of 1912–1914 provide a telling look into the evolution of his philosophy concerning the nature of matter, space, and spirit during his initial period in Paris. <sup>43</sup> The drawings in the sketchbooks are largely those of dunes, churches, and piers in Holland and then building facades and trees in Paris, the types of images that served as precursors to works such as Composition No. II (1913, fig. 3, p. 45) and the Pier and Ocean drawings (cat. no. 71, 72). Mondrian also made numerous drawings he labeled "demolished building," which show architectural structures whose floors and walls remain behind their torn-down facades, creating linear patterns on the surface of the page. <sup>44</sup> Here Mondrian found a kind of "X-ray view" of a building, a suggestion of something supersensory, beyond



human vision. This attitude would remain central for him: "We must see through nature. We must see deeper, see abstractly and above all universally," Mondrian would declare in his major essay "Natural and Abstract Reality: A Dialogue," published in De Stijl in 1919/20.<sup>45</sup>

Mondrian's rejection of surfaces was symptomatic of culture at that moment, when the X-ray had breached surfaces and ether physics suggested a new relationship of matter and space and, for occultists, a new model for the interpenetration of matter and spirit. As he writes in Sketchbook II, "Since modern science has confirmed the doctrine of Theosophy that matter and force [spirit] are one, there is therefore no reason to separate them. Since matter and spirit bring forth life, both must be taken into account – not one of the two."<sup>46</sup> He continues a few pages later, "By turning from the surface, one comes closer to the inner laws of matter, which are also the laws of the spirit. Hence the two things (finally) converge."<sup>47</sup> Several pages before this Mondrian had written a brief commentary headed "Art and Reality," in which he discussed the ether specifically:

"Art transcends reality – it has no direct rapport with reality. Between the physical and the ethereal spheres, there is a boundary, clearly delimited for our senses; yet the ether penetrates the physical sphere and acts upon it. In this manner the artistic sphere pervades reality; but for our senses they are two separate entities, the spiritual and the material. In order to approach the spiritual in art, one employs reality as little as possible because reality is the polar opposite of the spiritual. This explains why primary forms are employed."<sup>48</sup>

Mondrian would continue to weigh the problem of the relationship of "the spiritual [the supersensory]" and the world of the senses for an artist, but during the period 1912–1916 he strongly suggested a blending of spirit/matter in the remarkably fluid effects of works such as Composition No. II (1913, fig. 3, p. 45).<sup>49</sup> Here it is as if the pattern of grid lines is emerging from the surrounding ether, materializing before our eyes – or, alternatively, dematerializing. Close

viewing of such paintings makes clear Mondrian's deliberate scumbling of the lines to produce an etherial surround. This effect occurs even in oval compositions, continuing into 1916 and including certain of the "Pier and Ocean" drawings and paintings (cat. no. 70–72).

Mondrian had referred to Steiner's "spiritual science" in a letter to Ludwig Schelfhout of June 1914, and he would have been well aware of the German Theosophist's /Anthroposophist's ideas on the relationship of spirit to matter as well as the fourth dimension since hearing him lecture in Amsterdam in 1908.<sup>50</sup> In his lectures in this period Steiner introduced Hinton's hypercube system as a means of practical preparation for "the very different nature of the objects and beings that we encounter in the so-called astral world" and discussed the fourth dimension extensively.<sup>51</sup> Thus, the spatial fourth dimension, so widely discussed in Paris, would have been a backdrop for Mondrian's speculations in his sketchbooks, although he does not use the term specifically. Yet, just as during 1916, the artist would begin to move away from the suggestion of the ether in his paintings, he would also reject attempts to evoke higher dimensional space in art by 1918. As he wrote to Van Doesburg in June 1918, "I am very much interested in your effort for a four-dimensional view, but it is my opinion that we cannot visualize much of four-dimensionality, since one needs another (new) sense for it, as I think I know from occultism. Nevertheless a clear understanding may stimulate our consciousness of it [...]"<sup>52</sup> And he would return to the topic in his 1919/20 "Natural and Abstract Reality" text, now citing the concept only as a parallel to his own denial of three-dimensional space in his style of "Neo-Plasticism":

"This aspiration has been ascribed to our stronger awareness of the fourth dimension, a conception that actually does come to the fore in recent art as partial or complete destruction of three-dimensional naturalistic expression and reconstruction of a new plastic expression, less limited in its vision."<sup>53</sup>



With his new commitment to pure primary colors and non-colors, including white, and clearly defined linear configurations of verticals and horizontals, Mondrian in the same text also distanced himself from the ether, which had been so central for him earlier. That the ether was still a prominent topic in 1919 is clear from the comment of "X," a "naturalistic painter," to whom Mondrian as "abstract-real painter Z" then responds. Painter "Y" queries, "May it not be the case that the visible affects us in ways that are not visible? What I have in mind is the scientific hypothesis of the ether, according to which matter, through human touch undergoes a permanent change, depending on the inner state of the agent." Mondrian as "Z" answers, "Wouldn't it be better to confine ourselves to what is certain? Our senses are made for the physical world. Not for the ether or the astral sphere [...]. Our knowledge of higher things can only be relative."<sup>54</sup>

While Mondrian ultimately left behind the indeterminate suggestion of interpenetrating ether and matter (or spirit and matter) in favor of absolute clarity, his mature style – exemplified by many of the works in the exhibition – was nonetheless rooted in the vibratory cultures of the early twentieth century. As he wrote in his 1917 essay "The New Plastic in Painting," "Life and art must therefore be radiation. The ray is the symbol of radiation (the inward). Although we cannot see the inner radiation or the ray, it is imaged in pure abstract thought. It is represented visually as the vertical in opposition to the horizontal [...]. The new plastic expresses inward-outward unity by the perpendicular relationship of position."<sup>55</sup> That balance of verticals and horizontals, grounded in his works of the prewar period would remain central for Mondrian, representing cosmic dualities as well as the universal harmony he believed underlay nature's surfaces.

Although Mondrian rejected the fourth dimension for its possible suggestion of space within a painting, the idea of vastness, long associated with the fourth dimension – and central for Malevich – remained an important theme for him in his new painting style dedicated to a "plastic expression" that was "determinate" and

universal.<sup>56</sup> In his "Dialogue on the New Plastic," also published in De Stijl in 1919, Mondrian explained, "The search for the expression of vastness led to the search for the greatest tension: the straight line;" for him, "the most tensed line most purely expresses immutability, strength, and vastness."<sup>57</sup> As in Tableau 3, with Orange-Red, Yellow, Black, Blue and Gray (cat. no. 74) and other mature paintings this was a white vastness of lateral extension in marked contrast to Malevich's pursuit of a vast, four-dimensional space within the painting itself.

#### Kazimir Malevich

I first discussed Malevich's Suprematist paintings in relation to literature on the fourth dimension in a 1975 dissertation, which was subsequently published in book form in 1983. There I proposed the importance of the ideas of P. D. Ouspensky theories on the fourth dimension for the Russian avant-garde and the possible significance of Bragdon's 1912 Man the Square, a copy of which Ouspensky had received in St. Petersburg.<sup>58</sup> The catalog of the Last Futurist Exhibition 0,10 made clear Malevich's commitment to questions of dimensionality, since he gave works titles such as Painterly Realism of a Boy with a Knapsack: Color Masses in the Fourth Dimension (cat. no. 41) and Painterly Masses of a Peasant Woman: Color Masses in the Second Dimension.<sup>59</sup> In terms of his interest in two-dimensionality, monochromatic works, such as Peasant Woman and the painting known as Eight Red Rectangles (Stedelijk Museum Amsterdam), suggest a comparison to plates from Bragdon's Man the Square and A Primer of Higher Space (cat. no. 22) illustrating the two-dimensional sections or traces created when three-dimensional objects pass through a plane (fig. 1, p. 40).<sup>60</sup> With the relevance of Ouspensky for Malevich and his colleagues Alexei Kruchenykh and Mikhail Matyushin clear from the time of their collaboration on Victory over the Sun in 1913 and Malevich's Alogist painting style, they were also surely aware of Hinton's use of the two-dimensional analogy as recounted in Ouspensky's books.<sup>61</sup> Thus, such traces could readily have stood as "color masses in the second dimension," whether Malevich ever saw Bragdon's book or not.

However, Malevich associated many of his Suprematist paintings with the fourth dimension, and these are generally multicolored and most often include overlapping planes, as in the 1915 Suprematistic Composition (cat. no. 43) and Suprematism (cat. no. 44) as well as more complex works, such as Dynamic Suprematism No. 38 (1916, cat. no. 47). Here Malevich used long-standing associations of the fourth dimension – infinite vastness and freedom from specific orientation and gravity – to differentiate his white Suprematist space from the familiar, three-dimensional world with its blue sky.<sup>62</sup> Ouspensky himself suggested that the first moments of the transition to four-dimensional cosmic consciousness would be characterized by a “sensation of infinity” and vastness, just as Malevich would refer to the space of his Suprematist paintings as “the white, free, chasm-infinity.”<sup>63</sup> In these multicolored works Malevich also set his planar elements in dynamic motion, employing the element of time both Hinton and Ouspensky emphasized as a provisional means of gaining higher spatial understanding. As Matyushin recorded in his diary in May 1915, “Only in motion does vastness reside [...]. When at last we shall rush rapidly past objectness we shall probably see the totality of the whole world.”<sup>64</sup>

Matyushin’s quote had also included the comment, “The faster you move near a thick garden lattice, the more clearly you see the general mass behind it,” and Malevich had demonstrated his own interest in the idea of “flickering” in the subtitle of his 1912 painting The Knife Grinder (Principle of Flickering) (1912, Yale University Art Gallery, New Haven). A similar kind of flicker or pulsing had actually figured in Hinton’s and Ouspensky’s writings. Following Hinton, Ouspensky had argued that a two-dimensional being would perceive a multicolored three-dimensional form passing through its space as a succession of colors, possibly in motion, if the object’s size changed. For Ouspensky, our conventional spatial perception, limited as it is to three dimensions, means that, like a two-dimensional being, “we see the world as through a narrow slit,” misinterpreting spatial phenomena as temporal ones.<sup>65</sup> Yet Hinton had found in the

model of a higher dimensional form passing through our space the positive potential of gaining knowledge about four-dimensional reality. This was the rationale for his system of variously colored cubes that had so impressed Steiner.<sup>66</sup>

In my 1983 book, without knowledge of the ether’s centrality a hundred years ago, it was difficult to connect Malevich’s floating Suprematist planes to Hinton’s volumetric cubes. However, a vital clue exists in chapter 4 of Ouspensky’s Tertium Organum, in which his comments about the “slit” occur. In A New Era of Thought Hinton had discussed the ether as a three-dimensional analog to a two-dimensional fluid film or surface of contact. Ouspensky reproduced that very discussion at the end of this chapter, after a highly suggestive description of what we see through our three-dimensional slit:

“Th[e] conception of the world which we deduce from our usual view of time makes the world appear like a continuously gushing out igneous fountain of fireworks, each spark of which flashes for a moment and disappears, never to appear any more. Flashes are going on continuously, following one after another, there are an infinite number of sparks, and everything together produces the impression of a flame, though it does not exist in reality.”<sup>67</sup>

For Ouspensky, this “fountain of fireworks” was an impermanent illusion of true, timeless four-dimensional reality. Yet, as in the case of Hinton’s cubes, such sparks flashing – or flickering – could be viewed positively as the first signs or sections of higher dimensional forms. And the ether, as a three-dimensional “fluid film,” would be the context in which the flashes occurred, as four-dimensional forms penetrated it. According to Hinton, “[W]hen we study a higher solid, we must suppose that it passes through the aether, and that we only see that thin three-dimensional section of it which is just about to pass from one side to the other of the aether” – or, in Malevich’s case, the first planar face of a solid breaking through.<sup>68</sup> The artist actually painted his canvases in a manner that echoes Hinton’s

description: each colored plane is surrounded by the white field, not painted over it, so they literally do break through the surface in the kind of “cut” the Englishman described. As Hinton explained, “[W]e have to suppose the aether broken through, only we must suppose that it runs up to the edge of the body which is penetrating it, so that we are aware of no breach of continuity.”<sup>69</sup> Malevich’s “semaphores” of color, as he termed his planes, break through in just this way – like Ouspensky’s “fireworks” flickering forth before our eyes.<sup>70</sup>

Before the invention of Suprematism Malevich had also achieved an effect of flashing or flickering in his 1913 collaboration with Matyushin and the poet Kruchenykh on the Futurist opera Victory over the Sun, in which spotlights played across the actors and high-lighted parts of forms.<sup>71</sup> A little-known sketch for one of Malevich’s Victory over the Sun set designs, now dated 1915, provides evidence of his interest in the ether (fig. 4, p. 50). The drawing bears notations such as “helium,” “gas is gathered,” “blue gas,” and “putting ether inside” (the latter halfway down right side).<sup>72</sup> Utilizing a form language Malevich derived from planes of Synthetic Cubism, the design embodies the Russians Futurists’ response to Ouspensky’s call to overthrow the false logic of the three-dimensional world: here Malevich’s visual Alogism parallels the “transrational” zäum language of Kruchenykh’s libretto. In one of his 1913 designs for Victory over the Sun Malevich had also adopted Hinton’s four-dimensional tesseract or hypercube to create an illogical structure with interior and exterior visible simultaneously, just as Hinton had described four-dimensional vision, a suitable accompaniment for the ether reference in his 1915 sketch.<sup>73</sup>

Malevich was certainly attuned to the popular science and technology that introduced the public to the ether and electromagnetism in the early twentieth century, including wireless telegraphy. Among the titles of his Suprematist drawings are Suprematist Composition Expressing the Sensation of Wireless Telegraphy and Suprematist Composition Expressing the

Sensation of Magnetic Attraction (Öffentliche Kunstsammlung Basel). Indeed, in 1917 and 1918 Malevich may have embraced the phenomenon of dematerialization or dissolution, so closely tied to the ether, as a subject for painting.<sup>74</sup> His Suprematism (Yellow Plane in Dissolution) of 1917–18 and Suprematism (White Planes in Dissolution) (cat. no. 67, 68) suggest a process involving the ether, akin to the suggestive scumbling Mondrian had employed in works of 1913 and 1914, in particular, to suggest materialization or dematerialization.

As different as their mature styles are, Kandinsky, Mondrian, and Malevich shared what we might call a modernist “culture of vibrations,” grounded in contemporary science and occultism. Although they were operating in three different locales, Russia, Germany, and Paris (briefly in 1906) for Kandinsky, Holland and Paris for Mondrian, and Russia for Malevich, the information available to them on science and occultism, including Theosophy, was remarkably international. Hence, apart from Ouspensky’s solely Russian audience before Bragdon translated his work in 1920, most occult texts circulated widely (the Theosophical network was particularly effective), and popular scientific knowledge traveled readily in journals and translations of books. The ether and the fourth dimension as signs of an invisible reality beyond the reach of human perception were thus leitmotifs in the context of international modernism. And to grasp both artistic and literary modernism – and the development of abstract painting – we need to know something about them.

1 While my book The Fourth Dimension and Non-Euclidean Geometry in Modern Art (Princeton, 1983; rev. ed., Cambridge, MA 2013) remains the one book-length study focused on the spatial fourth dimension across modernism, that topic has emerged increasingly in scholarly work on various artists during the last thirty years. Scholarship on the ether, however, is just beginning to address this major lacuna in the literature on modernism. For my initial discussion of the ether's relevance, see Henderson, "Die moderne Kunst und das Unsichtbare: Die verborgenen Wellen und Dimensionen des Okkultismus und der Wissenschaften," in Okkultismus und Avantgarde: Von Munch bis Mondrian 1900–1915, exhib. cat. Schirn Kunsthalle, ed. Veit Loers (Frankfurt am Main, 1995), pp. 13–31; see also id., "Vibratory Modernism: Boccioni, Kupka, and the Ether of Space," in From Energy to Information: Representation in Science and Technology, Art, and Literature, ed. Linda Dalrymple Henderson and Bruce Clarke (Stanford, 2002), pp. 126–149. For contemporary German scholarship on the ether in twentieth-century culture, see, e.g., Albert Kümmerl-Schnur and Jens Schröter, eds., Äther: Ein Medium der Moderne (Bielefeld, 2008).

2 For an overview of the developments discussed here – as well as the delayed popularization of Relativity Theory, see, e.g., Henderson, "Editor's Introduction: I. Writing Modern Art and Science – An Overview; II. Cubism, Futurism, and Ether Physics in the Early Twentieth Century," Science in Context, 17 (Winter 2004), pp. 423–466.

3 See below for Kandinsky's reference; on the "electric theory of matter," see, e.g., Oliver Lodge, "Electric Theory of Matter," Harper's Monthly Magazine, 109 (Aug. 1904), pp. 383–389.

4 For this quotation, see Camille Flammarion, Mysterious Psychic Forces (Boston, 1907), p. 23. The book was first published in Paris in the same year as Les Forces naturelles inconnues.

5 For the history of the ether, see, e.g., P. N. Harman, Energy, Force, Matter: The Conceptual Development of Nineteenth-Century Physics (Cambridge, MA 1982).

6 Sir J. J. Thomson, "Address by the President, Sir J. J. Thomson," in Report of the Seventy-Ninth Meeting of the British Association for the Advancement of Science (1909) (London, 1910), p. 15. Sir Oliver Lodge was the ether's most vocal champion in this period, writing extensively on the subject in popular articles as well as books, such as The Ether of Space of 1909 and Continuity of 1913.

7 Sir William Crookes, "Address by Sir William Crookes, President," Report of the Sixty-Eighth Meeting of the British Association for the Advancement of Science (1898) (London, 1899), p. 31.

8 Robert Kennedy Duncan, The New Knowledge (New York, 1905), p. 5.

9 Madame Blavatsky wrote extensively on the ether in both Isis Unveiled (1877) and The Secret Doctrine (1888). Steiner was a major voice of international Theosophy before the founding of the German Anthroposophical Society in 1913 as a result of philosophical differences, including Steiner's focus on Christianity versus Hinduism and Buddhism.

10 A. J. Balfour, "Address by The Right Hon. A. J. Balfour," in Report of the Seventy-Fourth Meeting of the British Association for the Advancement of Science (1904) (London, 1905), p. 7. For Steiner's quoting from Lord Balfour, see Sixten Ringbom, The Sounding Cosmos: A Study in the Spiritualism of Karsinsky and the Genesis of Abstract Painting (Abo, 1970), p. 37.

11 The analogy of a two-dimensional world was the basis of the E. A. Abbott's Flatland: A Romance of Many Dimensions, By the Author A Square of 1884. For history that follows, including the works of Hinton and Bragdon, see Henderson 2013 (see note 1), chaps. 1, 4; see also id., "The Image and Imagination of Space: The Fourth Dimension in Twentieth-Century Art and Culture," Configurations, 17 (Winter 2009), pp. 131–160.

12 See Charles Howard Hinton, A New Era of Thought (London, 1888); see also id., The Fourth Dimension (London, 1904). The 1904 edition of The Fourth Dimension contained a color frontispiece with six of Hinton's multicolored cubes (faces, edges, vertices differently colored); the 1906 edition featured a foldout frontispiece with twelve cubes.

13 See Claude Bragdon, A Primer of Higher Space (The Fourth Dimension) (Rochester, NY, 1913).

14 See, for example, Peter D. Ouspensky, Tertium Organum, the Third Canon of Thought: A Key to the Enigmas of the World, trans. Claude Bragdon and Nicholas Bessaraboff, 2nd American ed. rev. (New York, 1922). For the two translations of Hinton's writings that appeared in St. Petersburg from two different publishers in 1915, see Henderson 2013 (see note 1), Bibliography, sec. I, B.

15 Balfour Stewart and Peter Guthrie Tait, The Unseen Universe, or Physical Speculations on a Future State, 4th ed. rev. (London, 1876), p. 221. For the 1875 comment, see Stewart and Tait, The Unseen Universe, or Speculations on a Future State (New York, 1875), pp. 158f.

16 See, e.g., Henderson 2013 (see note 1), pp. 131f.

17 On the fourth dimension and infinity, see Henderson, "Mysticism, Romanticism, and the Fourth Dimension," in The Spiritual in Art: Abstract Painting 1890–1985 (Los Angeles, 1986), pp. 212–37.

18 Ouspensky's 1909 Chetvertoe Izmerenie was never translated into English, but much of its content appears in chapter 2 of his 1934 book A New Model of the Universe. Unlike Ouspensky and Bragdon, Hinton was not a mystic, and this was part of his appeal for Steiner. For Steiner's lectures, see Rudolf Steiner, The Fourth Dimension – Sacred Geometry, Alchemy, and Mathematics, trans. Catherine E. Creeger (Great Barrington, 2001).

19 For Kandinsky's attending lectures by Steiner, see Sixten Ringbom, "Art in 'The Epoch of the Great Spiritual': Occult Elements in the Early Theory of Abstract Painting," Journal of the Warburg and Courtauld Institute, 29 (1966), pp. 392, 394; for Mondrian and Steiner's lectures, see note 42.

20 Here Zimmermann was writing specifically of Painting with Red Spots I (1913) and then Improvisation 19 (1911). For this discussion, see Reinhard Zimmermann, "Early Imprints and Influences," in Kandinsky: The Path to Abstraction (London, 2006), pp. 36, 39, 40, 42.

21 While Ringbom presented a much fuller view of Kandinsky's occult sources in the Sounding Cosmos, his 1966 "Occult Elements" article, cited above, commenced the focus on Besant and Leadbeater's Thought-Forms to the detriment of his other sources.

22 For the vibration theme, see the numerous references in Wassily Kandinsky, On the Spiritual in Art (1911), in Kandinsky: Complete Writings on Art, ed. Kenneth C. Lindsay and Peter Vergo (New York, 1994), pp. 87, 89, 129, 147, 157–58, 160, 169, 210f., 241. On Baraduc and Rochas, see, e.g., Henderson, "Vibratory Modernism" (see note 1); on these figures and Kandinsky, see Ringbom 1970 (see note 10), pp. 54f., 122f. For a fuller discussion of Kandinsky's French sources, including photographer Louis Darget, see Henderson "Bilder der Frequenz. Moderne Kunst, elektromagnetische Wellen und der Äther im frühen 20. Jahrhundert," in Archiv für Medien-geschichte 11 (Takt und Frequenz), ed. Friedrich Balke, Bernhard Siegert, and Joseph Vogl (Munich, 2011), pp. 51–65, as well as the essays on Kandinsky by Andreas Fischer and Veit Loers in Okkultismus und Avantgarde 1995 (see note 1).

23 See Annie Besant and C[harles] W[ebster] Leadbeater, Thought-Forms (London, 1905), p. 12, for the Baraduc citation (omitted from later editions) and pp. 11f. for evidence of their interest in X-rays, radioactivity, and the ether. Lodge and Flammarion were internationally known scientists who wrote extensively for popular audiences, including on thought transference; see Henderson, "Bilder der Frequenz" (see note 22), and "Vibratory Modernism" (see note 1).

24 See Kandinsky, Complete Writings (see note 22), pp. 87, 241.

25 For the "epoch of the great spiritual," see e.g., Kandinsky, On the Spiritual in Art 1911/1994 (see note 22), p. 219. On Painting with White Border and St. George and the dragon, see Kandinsky and the Harmony of Silence: Painting with White Border, ed. Elsa Smithgall (Washington, DC 2011). Rose-Carol Washton Long was the first scholar to examine Kandinsky's use of hidden apocalyptic imagery based on Steiner as well as the St. George and the dragon motif; see Long, Kandinsky: The Development of an Abstract Style (Oxford, 1980).

26 Kandinsky, On the Spiritual in Art 1911/1994 (see note 22), p. 142.

27 Kandinsky, "Reminiscences/Three Pictures" (1913), in Complete Writings (see note 22), p. 364.

28 Kandinsky, "On the Problem of Form" (1912), in Theories of Modern Art, ed. Herschel Chipp (Berkeley, 1968), p. 159; the translation as "solid" matter here is closer to Kandinsky's day than "hardest" matter in Complete Writings (see note 22), p. 240.

29 C. W. Leadbeater, Man Visible and Invisible (New York, 1903), p. 12.

Rudolf Steiner, *Theosophy: An Introduction to the Supersensible Knowledge of the World and the Destination of Man*, trans. E. D. S. (Chicago, 1910), p. 33.

31  
Ibid., p. 32.

32  
See Yogi Ramacharaka [William Ward Atkinson], *Fourteen Lessons in Yogi Philosophy and Oriental Occultism* (Chicago, 1903), p. 10. Leadbeater also invoked steam to explain varying states of matter – physical, astral, and mental – when “caused to vibrate with the proper degree of rapidity”; see Leadbeater, *An Outline of Theosophy* (Chicago, 1903), p. 38. Steiner likewise used the contrast of water and ice to suggest that “sense-perceptible things are of the same substance as the soul and spirit worlds around them” (Steiner 1910 [see note 30], pp. 162f.), borrowing from a Lord Balfour’s metaphor in his 1904 British Association address. Ringbom first noted this Lord Balfour connection (Ringbom 1970 [see note 10], pp. 37f.).

33  
Ramacharaka 1903 (see note 32), p. 78.

34  
Ibid., p. 94. Ramacharaka continues, “These vibrations striking upon the ‘telepathic’ organ in other brains cause a brain action which reproduces the thought in the brain of the recipient.”

35  
Kandinsky, “Reminiscences/Three Pictures” 1913/1994 (see note 27), p. 387; Kandinsky also discusses vibration in this section.

36  
Kandinsky, *On the Spiritual in Art* 1911/1994 (see note 22), p. 185.

37  
Ibid.

38  
Kandinsky letter to Arnold Schoenberg, January 18, 1911, in *Arnold Schoenberg/Wassily Kandinsky: Letters, Pictures, Documents*, ed. Jelena Hahl-Koch, trans. John C. Crawford (London, 1984), p. 21. Kandinsky also declares his belief in the “anti-geometric [...] way” in this letter.

39  
On Moholy-Nagy’s embrace of the new paradigm, see, e.g., “Reintroduction,” in Henderson 2013 (see note 1), pp. 35–38.

40  
See Henderson, “Claude Bragdon, the Fourth Dimension, and Modern Art in Cultural Context,” in *Claude Bragdon & the Beautiful Necessity*, ed. Eugene Victoria Ellis and Andrea G. Reithmayr (Rochester, N.Y., 2010), pp. 73–86.

41  
Kandinsky letter to Will Grohmann, October 12, 1930, quoted in Angelica Zander Rudenstine, *The Guggenheim Museum: Paintings 1880–1945*, vol. 1 (New York, 1976), p. 310.

42  
Piet Mondrian, “Toward the True Vision of Reality,” in *Plastic Art and Pure Plastic Art and Other Essays*, The Documents of Modern Art, ed. Robert Motherwell (New York, 1945), p. 10. Carel Blotkamp provides a carefully reasoned evaluation of the question Mondrian and Theosophy/Anthroposophy in Mondrian: The Art of Destruction (New York, 1994), pp. 13–16, 41f. Among his observations is that being engaged with Theosophical ideas was not just to paint auras and thought-forms, as it came to be caricatured to be – in the case of Kandinsky, as well, I would argue. Mondrian saved all his life a pamphlet published on the occasion of

one of Steiner’s lectures in Amsterdam in 1908 (ibid., p. 42). He also sent Steiner a copy of his text *Le Néo-Plasticisme* in February 1921, saying he believed that the style was “the art of the foreseeable future for all true anthroposophists and theosophists,” although he never received a reply (ibid., p. 182).

Robert Welsh first argued for Blavatsky’s relevance in terms of Theosophy’s geometry in “Mondrian and Theosophy,” in *Piet Mondrian 1872–1944: Centennial Exhibition*, exhib. cat. Solomon R. Guggenheim Museum (New York, 1971), pp. 35–50; he also pointed up Steiner’s importance, although his focus was on pre-1912 paintings and he was not considering Steiner in relation to contemporary science or the fourth dimension.

43  
See *Two Mondrian Sketchbooks 1912–1914*, ed. Robert P. Welsh and J. M. Joosten (Amsterdam, 1969).

44  
See ibid., pp. 63, 73–77, 89.

45  
Mondrian, “Natural Reality and Abstract Reality: A Trialogue (While Strolling from the Country to the City)” (1919–20), in *The New Art – The New Life: The Collected Writings of Piet Mondrian*, ed. Harry Holtzman and Martin S. James (New York, 1993), p. 88.

46  
Mondrian, Sketchbook II, in *Sketchbooks* 1969 (see note 43), p. 66.

47  
Ibid., p. 70.

48  
Ibid., pp. 52f.

49  
For Mondrian’s phrase, see ibid., p. 38.

50  
See again note 42 for the 1908 lecture. For the letter, see Robert P. Welsh, “Introduction,” in *Sketchbooks* 1969, p. 13, n. 49. Mondrian also cites Steiner specifically in a discussion of the evolution of consciousness in “The New Plastic in Painting” (1917), in *Collected Writings* 1993 (see note 45), p. 49.

51  
See Steiner 2001 (see note 18), p. 19.

52  
Mondrian letter to Theo van Doesburg, June 13, 1918, quoted in Joost Baljeu, “The Fourth Dimension in Neoplasticism,” *Form*, no. 9 (April 1969), p. 8.

53  
Mondrian, “Natural and Abstract Reality” (1919–20), in *Collected Writings* 1993 (see note 45), p. 99. For a fuller discussion of Mondrian, Van Doesburg, and the fourth dimension, see Henderson 2013 (see note 1), chap. 6.

54  
Mondrian, “Natural and Abstract Reality” (1919–20), as translated in Michel Seuphor, *Piet Mondrian: Life and Work* (New York, 1956), p. 344. This translation, closer in time to the ether’s prevalence in science, is preferable to the usage “ethereal, or astral, sphere” in *Collected Writings* 1993 (see note 45), p. 117.

55  
Mondrian, “The New Plastic in Painting” (1917), in *Collected Writings* 1993 (see note 45), p. 48.

56  
For Mondrian’s theory, see, e.g., ibid., pp. 28–81, especially chaps. 5 (pp. 47–64) and 7 (pp. 70–74). As the editors note, Mondrian wrote this text in Laren, Holland, living next to M. H. J.

Schoenmaekers, whose language and belief in an absolute order underlying nature affected Mondrian (ibid., p. 27). On Schoenmaekers’s possible impact, first discussed in detail by H. L. C. Jaffé, see, e.g., Blotkamp 1994 (see note 42), pp. 109–11.

57  
Mondrian, “Dialogue on the New Plastic” (1919), in *Collected Writings* 1993 (see note 45), p. 77.

58  
See Henderson 2013, chap. 5, which basically reproduces the 1975 dissertation chapter. This argument was first published in Henderson, “The Merging of Time and Space: The Fourth Dimension” in Russia from Ouspensky to Malevich,” *The Structurist*, no. 15/16 (1975/1976), pp. 97–108. Conservative in his artistic taste, Ouspensky himself would certainly not have been a source for the avant-garde’s awareness of the book.

59  
The list of titles is documented in Henderson 2013, chap. 5, n. 1. For the single best introduction to Malevich’s paintings and career, see Charlotte Douglas, *Kazimir Malevich* (New York, 1994). Aleksandra Shatskikh’s *Black Square: Malevich and the Origins of Suprematism*, trans. Marian Schwartz (New Haven, 2012) presents vital information on the formal evolution of Malevich’s geometric style, based on newly available archival sources. See also Aleksandra Shatskikh, “Kazimir Malevich: Artist Philosopher, Educator,” in *Kazimir Malevich and the Russian Avant-Garde*, exhib. cat. Stedelijk Museum (Amsterdam, 2013), pp. 217–229.

60  
Bragdon’s 1912 *Man the Square* contained the images in fig. 1 as two separate illustrations; in 1913 he combined them in Plate 30 of *A Primer of Higher Space*.

61  
On Ouspensky’s advocacy of illogical logic as a means to support the evolution of consciousness toward “cosmic consciousness” of the fourth dimension (and the avant-garde’s response to it), see Henderson 2013, chap. 5, sections on “Hyperspace Philosophy in Russia: Peter Demianovich Ouspensky” and “The Fourth Dimension in Russian Futurist Philosophy.”

62  
The Russian avant-garde’s interest in escaping gravity was being stimulated by wartime aviation as well as speculation on space flight; see, e.g., Douglas 1994, pp. 26f., and related discussions of Plates. Shatskikh has discussed Malevich’s emphasis on “non-weight” as a characteristic of Suprematism – as well as the fact that he hung paintings in varying orientations during his lifetime; see Aleksandra Shatskikh, “Kazimir Malevich: From Cubo-Futurism to Suprematism,” in *Malevich and the American Legacy*, exhib. cat. Gagolian Gallery, ed. Alison McDonald and Ealand Wingate (New York, 2011), pp. 177, 180.

63  
See Ouspensky 1922 (see note 14), p. 258; and Malevich, “Non-Objective Creation and Suprematism” (1919), in *K. S. Malevich: Essays on Art 1915–1933*, ed. Troels Andersen, trans. Xenia Glowacki-Prus and Arnold McMillin, 2 vols. (Copenhagen, 1971), vol. 1, p. 122.

64  
Matyushin diary entry, May 29, 1915, quoted in Charlotte Douglas, *Swans of Other Worlds: Kazimir Malevich and the Origins of Abstraction in Russia* (Ann Arbor, 1980), p. 61.

65  
Ouspensky 1922 (see note 14), p. 46. For Ouspensky's recounting of Hinton's discussion in A New Era of Thought, see Ouspensky, A New Model of the Universe (1934; New York, 1971), pp. 78f.; this chapter, titled "The Fourth Dimension," reproduces much of the content of his never-translated 1909 book Chevertoe Izmerenie, as noted above. See also Hinton 1904 (see note 12), chap. 2.

66  
For the availability of Hinton's texts, see again note 14.

67  
Ouspensky 1922 (see note 14), pp. 40f.

68  
Hinton 1888 (see note 12), p. 59.

69  
Ibid. p. 60.

70  
Malevich, "Non-Objective Creation and Suprematism," in Essays on Art (see note 63), vol. I, p. 122.

71  
See, e.g., Henderson 2013 (see note 1), chap. 5, n. 156.

72  
I am grateful to Aleksandra Shatskikh for bringing this image and its notations to my attention. Troels Andersen reproduced the drawing in Malevich, exhib. cat. Stedelijk Museum (Amsterdam, 1970), p. 24; his source was Benedikt Livshits's 1933 book Polutorglazy Strelets [The One and a Half-Eyed Archer]. Shatskikh dates such drawings to a second round of Victory over the Sun designs Malevich was making in spring 1915 (Shatskikh 2012 [see note 59], pp. 33–43). The drawing parallels a work in the Khardzhiev Collection without the multiple annotations; see exhib. cat. Amsterdam 2013 (see note 59), p. 59.

73  
Susan Compton first noted the presence of the hypercube in this design and a Malevich painting; see Compton, "Malevich and the Fourth Dimension," Studio International, 187 (April 1974), p. 193. See also Henderson 2013 (see note 1), chap. 5, n. 183, for Matyushin's discussion of Hinton's ideas on "visualizing objects from all sides," as expressed in his March 1913 Union of Youth article, which also quoted extensively from Ouspensky; for a translation of Matyushin's essay, see *ibid.*, Appendix C.

74  
Douglas, whose scholarship has long emphasized Malevich's awareness of aspects of science and technology, including in the undated drawings reproduced in his 1927 Bauhaus book noted here, has argued recently that works such as Suprematist Painting (Yellow Plane in Dissolution) and the similar painting Supremus: The Dissolution of Sensation represent the "dissolution of sensation" itself – a response by Malevich to the "sensation-based physics" of Ernst Mach. See Charlotte Douglas, "Supremus: The Dissolution of Sensation," in Zaha Hadid and Suprematism, exhib. cat. Galerie Gmurzynska, Zurich (Ostfildern, 2012), pp. 84–89.

sophischen Implikationen. In diesem Text und in seinem Buch The Fourth Dimension (Kat. Nr. 23) von 1904 vertrat Hinton die These, der Kant'sche »Raumsinn« ließe sich schulen und erweitern, so dass man durch das sorgfältige Studium der räumlichen Anordnung von Formen eine vierte räumliche Dimension wahrnehmen könne, in diesem Falle ein System mehrfarbiger Würfel, die Abschnitte des vierdimensionalen Hyperkubus oder Tesserakts repräsentierten. Hinton entwickelte auch die Analogie einer zweidimensionalen Welt als Werkzeug für das Verständnis der Beziehung zwischen dritter und vierter Dimension, bei dem die Zeit als ein Mittel fungiert, um den höheren Raum in Begriffe zu fassen.<sup>12</sup> Das 1913 erschienene Buch A Primer of Higher Space. The Fourth Dimension des amerikanischen Architekten Claude Bragdon verlieh dieser und anderen Arten der Spekulation über die Beziehung der Dimensionen visuellen Ausdruck (Abb. 1).<sup>13</sup> Hintons Schriften spielten auch für den russischen mystischen Philosophen P. D. Ouspensky eine zentrale Rolle, der die Ideen des Engländers in seinem Traktat Tertium Organum. The Third Canon of Thought – A Key to the Enigmas of the World (Kat. Nr. 20) nacherzählte und der russischen Avantgarde dadurch, dass er Hintons Bücher 1915 ins Russische übersetzte, einen unmittelbaren Zugang zu seinen Ideen ermöglichte.<sup>14</sup>

Die erste Verbindung zwischen der vierten Dimension und dem Äther wurde von den britischen Physikern Balfour Stewart und P. G. Tait in der überarbeiteten, 1876 erschienenen Ausgabe ihres bemerkenswerten Buches The Unseen Universe, or Physical Speculations on a Future State gemacht. In der ursprünglichen Ausgabe von 1875 hatten die Autoren die These vertreten, dass »Äther nicht einfach nur ein Medium ist, sondern ein Medium plus die unsichtbare Ordnung der Dinge, sodass bei einer Übertragung der Bewegungen des sichtbaren Universums auf den Äther ein Teil von ihnen wie durch eine Brücke an das unsichtbare Universum vermittelt und dort benutzt oder gespeichert wird.« Im darauffolgenden Jahr äußerten sie die Vermutung, dass das unsichtbare Universum vierdimensional sein könne: »Unsere (im Wesentlichen drei-

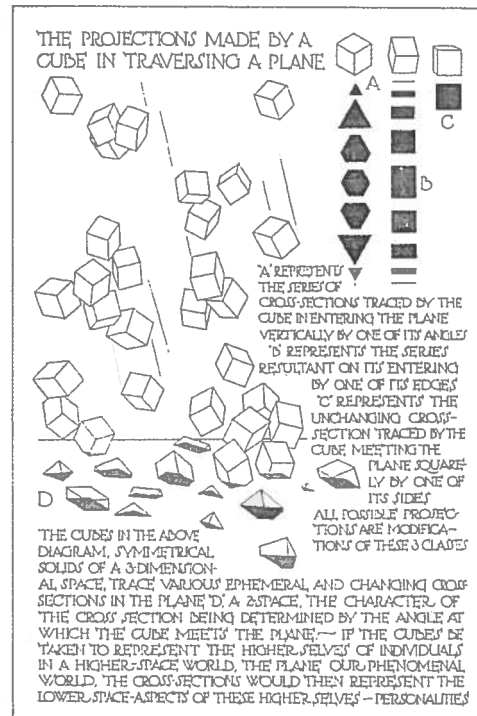


PLATE 30

1

1  
 Claude Bragdon  
A Primer of Higher Space,  
The Fourth Dimension, 1913  
 (Kat. Nr. 22)  
 Tafel 30: Die Projektion eines Würfels  
 beim Durchqueren einer Fläche



von der ›härtesten‹ bis zu der nur zweidimensional lebenden (abstrakten), als Formelement angewendet.«<sup>28</sup>

Kandinsky dürfte dem Äther in der theosophischen Lehre vor allem in Diskussionen des »Ätherleibs« oder »ätherischen Leibs« begegnet sein, obwohl die Theosophen normalerweise großen Wert darauf legten, ihre Verwendung des Begriffs »Äther« von derjenigen der zeitgenössischen Naturwissenschaft abzugrenzen. William Kingsland etwa bezeichnete ihn in seinem Buch The Physics of the Secret Doctrine von 1909 als »hyper-meta-physischen-Äther«. Dennoch verließ sich Charles Webster Leadbeater in seiner 1902 erschienenen Publikation Man Visible and Invisible (Kat. Nr. 11) auf das Vertrautsein der Öffentlichkeit mit dem naturwissenschaftlichen Äther, um die in der Theosophie postulierte wechselseitige Durchdringung der verschiedenen Körper und Ebenen zu erklären: »Es ist eine allgemein anerkannte Tatsache, dass der Äther alle bekannten Substanzen durchdringt, den dichtesten Festkörper ebenso wie das dünnste Gas; und so wie er sich völlig frei zwischen den Partikeln der dichteren Materie bewegt, so durchdringt ihn seinerseits die Astralmaterie völlig und bewegt sich absolut frei zwischen seinen Partikeln.«<sup>29</sup> Während Leadbeater den ätherischen Leib mit der physischen Ebene assoziierte, unterschied Steiner in seinem Buch Theosophie (1908, Kat. Nr. 12), das Kandinsky besaß, den »Ätherleib« spezifischer von dem physischen Körper als dem »Lebensleib« oder dem Leben innerhalb des physischen Leibs.<sup>30</sup> Für Steiner war der »Ätherleib/Lebensleib« das, was den Übergang zur »Empfindungsseele« formte. »Man kann auch sagen: ein Teil des Ätherleibes sei feiner als der übrige, und dieser feinere Teil des Ätherleibes bildet eine Einheit mit der Empfindungsseele, während der gröbere Teil eine Art Einheit mit dem physischen Leib bildet.«<sup>31</sup>

Eine ähnliche Diskussion verschiedener Grade der Verdünnung von Materie findet sich auch in einem anderen Buch in Kandinskys Bibliothek, nämlich Yogi Ramacharakas Fourteen Lessons in Yogi Philosophy and Oriental Occul-



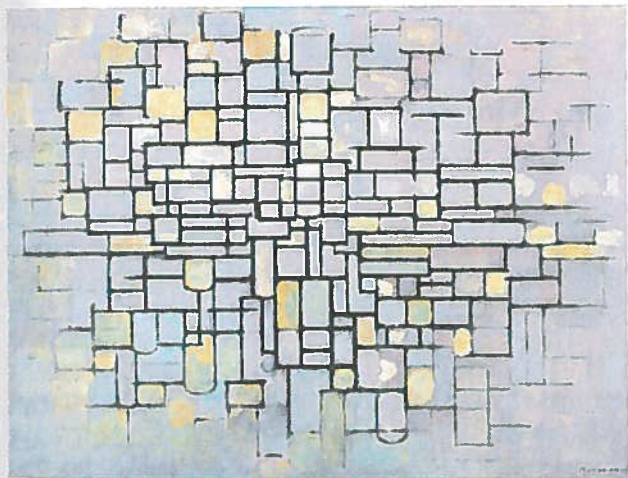
2

Space besaß. Auf diesen Band hätte Kandinsky dort durchaus stoßen und die philosophischen Dimensionen des Konzepts entdecken können, die seinen eigenen Ansichten so nahekamen.<sup>40</sup> Zu dieser Zeit hatte sich Kandinskys Stil zu einem geometrisch ausgerichteten gewandelt, der in der Ausstellung durch Werke wie Kreise in einem Kreis (1923, Kat. Nr. 35) vertreten ist. Dieser neue Kontext erklärt möglicherweise auch, dass Kandinsky später, nämlich 1930 in einem Brief an Will Grohmann, noch einmal auf die vierte Dimension zu sprechen kommt: »Der Kreis ist eine Synthese der größten Gegensätze. Er verbindet das Konzentrische mit dem Exzentrischen in einer Gestalt im Gleichgewicht. Unter den drei primären Formen [Dreieck, Quadrat, Kreis] ist er die klarste Wendung zur vierten Dimension.«<sup>41</sup>

### Piet Mondrian

Als Mondrian 1912 in Paris eintraf, war er den internationalen Kulturen der Naturwissenschaften und des Okkultismus bzw. der Theosophie – einschließlich der Themen Äther und vierte Dimension – bereits in seiner holländischen Heimat begegnet. Der kubistische Stil Pablo Picassos und anderer, der Mondrian nach Paris lockte, gründete selbst auf den neuen Konzepten von Materie und Raum, die in Quellen wie Le Bons L'évolution de la matière vertreten wurden, darunter die Wirkung der Röntgenstrahlen, der Radioaktivität und des Äthers sowie das Interesse an höheren räumlichen Dimensionen. Seit 1909 Mitglied der holländischen Theosophischen Gesellschaft, war Mondrian sich der geometrischen Symbolik der Vertikalen und Horizontalen in der Theosophie durchaus bewusst. Es überrascht daher nicht, dass er im kubistischen Raster ein solches Potenzial erkannte und zu seiner bekannten Schlussfolgerung gelangte, der »Kubismus habe die logischen Konsequenzen aus seinen eigenen Entdeckungen nicht akzeptiert«<sup>42</sup>.

Mondrians Skizzenbücher aus den Jahren 1912 bis 1914 bieten einen aufschlussreichen Einblick in die Entwicklung seiner Philosophie bezüglich der Natur von Materie, Raum und Geist

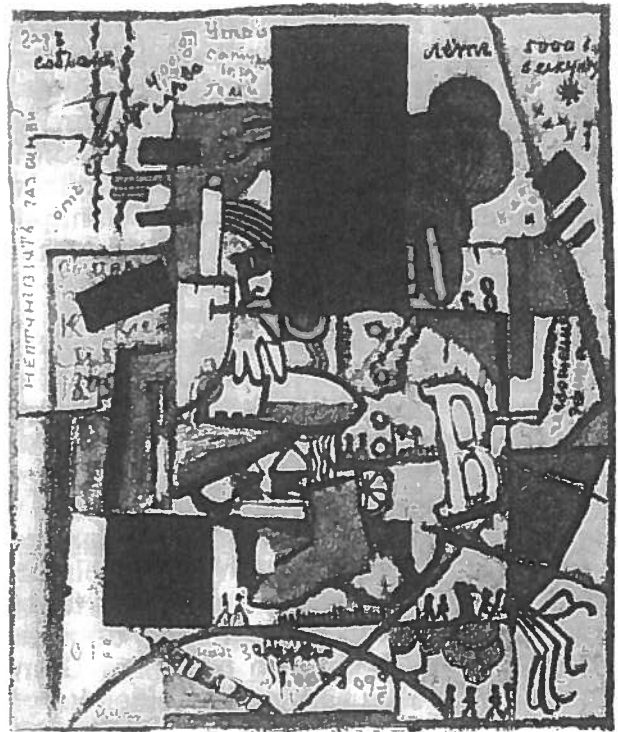


3

3  
Piet Mondrian  
Komposition Nr. II, 1913  
Öl auf Leinwand  
88 × 115 cm  
Sammlung Kröller-Müller,  
Otterlo, Niederlande  
© 2014 Mondrian/Holtzman Trust  
c/o HCR International USA

Matjuschins Notiz enthielt außerdem den Kommentar: »Je schneller man sich an einem Gartenzaun mit einem breiten Gatter entlangbewegt, desto deutlicher sieht man die allgemeine Masse dahinter« – Malewitsch hatte sein eigenes Interesse an der Idee des »Flackerns« im Untertitel seines Gemäldes Der Messerschleifer: Prinzip des Flackerns (1912, Yale University Art Gallery, New Haven) deutlich gemacht. Eine ähnliche Art des Flackerns oder Pulsierens wurde auch bereits in den Schriften Hinton und Ouspenskys erwähnt. In Anlehnung an Hinton hatte Ouspensky die These vertreten, ein zweidimensionales Wesen würde eine mehrfarbige dreidimensionale Form, die seinen Raum durchquert, als eine – sofern sich die Größe des Objekts änderte – sich möglicherweise bewegendes Farbenfolge wahrnehmen. Für Ouspensky bedeutet unsere konventionelle, auf drei Dimensionen beschränkte Raumwahrnehmung, dass »wir die Welt wie durch einen schmalen Schlitz sehen« und räumliche Phänomene als zeitliche missdeuten.<sup>65</sup> Doch Hinton hatte in dem Modell einer höherdimensionalen Form, die unseren Raum durchquert, das positive Potenzial entdeckt, Erkenntnis über die vierdimensionale Wirklichkeit zu erlangen. Das war die Grundüberlegung für sein System verschiedenfarbiger Würfel, das Steiner so beeindruckte.<sup>66</sup>

In Unkenntnis der zentralen Bedeutung, die dem Äther vor hundert Jahren zukam, war es mir in meinem Buch von 1983 schwer gefallen, Malewitschs umhergleitende suprematistische Flächen mit Hinton's volumetrischen Würfeln in Einklang zu bringen. Doch im vierten Kapitel von Ouspenskys Tertium Organum mit seinen Kommentaren über den »Schlitz« gibt es einen entscheidenden Hinweis. In A New Era of Thought hatte Hinton den Äther als dreidimensionales Analogon zu einem zweidimensionalen flüssigen Film oder entsprechenden Kontaktflächen beschrieben. Nach einer hoch suggestiven Beschreibung dessen, was wir durch einen dreidimensionalen Schlitz sehen, wiederholte Ouspensky eben diese Diskussion am Ende jenes Kapitels:



4

4  
Kasimir Malewitsch  
Skizze für »Sieg über die Sonne«, 1915  
Zeichnung  
Maße unbekannt  
Reproduziert nach: Benedikt Livshits,  
Polutoraglasy strelets,  
Leningrad 1933





47  
Dynamischer  
Suprematismus Nr. 38, 1916  
Öl auf Leinwand  
102,4 × 66,9 cm  
Museum Ludwig, Köln