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László Moholy-Nagy:

A BIOCENTRIC ARTIST?

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Out there—war. Here its thunder dully thuds.
A bird chirps and the myriad sounds and
Fleeting hues of gossamer life rise.
The swallow flies, the fork-tailed swallow!
The shadow's violet silk spreads out.
A thrush's whistling like gurgling gold
Honey flows from the rotten rind
And the delicate seed bursts
Fruitful and happy.

Clouds, those marvellous plants of my life,
Float in blue froth and flower
Their wispy petals on high,
As if on a velvet gown of some maiden's dream.[1]

You have heard an excerpt from my translation of László Moholy-Nagy's poem "Forest. May. War," published in 1918. Andreas Haus and János Brendel have written of the effect that Monist scientists such as Wilhelm Ostwald, Ernst Mach and Raoul Francé had on Moholy's thinking.

Monism is the Vitalist philosophy revived by Ernst Haeckel in the late 19th century which held that matter and spirit, life and non-life are one. Building on their work, today I argue against the common view that Moholy rejected nature early in his career. I maintain rather that his oeuvre is informed by an affinity to nature rooted, as we just heard, in *Naturromantik* [Nature Romanticism] and expressed in Germany through the discourse of *Biozentrik* [Biocentrism]. This is the German term for the early 20th century worldview which, based on scientific trends such as Darwinism and biological determinism, and on a kind of materialist Nature Romanticism, rejected the anthropocentric view of the world, and espoused an ecological and environmental view of the world instead. And I have to emphasize here that Moholy would have rejected the use of the term "spiritual" to refer to his thinking, as would have most biocentrically inclined individuals. For the sake of simplicity, organicism, vitalism and Haeckelian Monism can all be subsumed under the rubric of "biocentrism." I begin by invoking British environmental historian Anna Bramwell's conceptual framework for the discussion of biocentrism or "ecologism," as she terms it. I then place Moholy's German debut into its proper context of the German *Jugendbewegung* [Youth Movement], specifically the *Freideutsche Jugend* [Free German Youth], an outgrowth of the *Wandervögel*. After an exposition of Moholy's interest in the work of the Austro-Hungarian populariser of biocentrism in Germany, Raoul Heinrich Francé, I offer an alternative, biocentric reading of Moholy's theory of New Vision. I conclude with suggestions for new readings of his art.

In her 1989 book *Ecology in the 20th Century: A History* Anna Bramwell notes the inability of current political taxonomies to deal with biocentric thinkers given the variability of their attachments to the political Left and Right. Neo-Marxists tend to judge such views as "totalizing," "a-historical" or "anti-dialectic;" as antithetical to a "progressive" social consciousness. Conservative historians identify *Biozentrik* with the vitalist camp of the vitalist /mechanist debate, the side discredited by mainstream biology since World War II. Because a few National Socialists were biocentric, both camps tend to associate biocentrism with Fascism even though there were traditions of Leftist and Anarchist biocentrism. Despite misgivings about aspects of her book, I think it crucial that Bramwell addresses this historical conundrum. She writes: "The apparent contradictions of the ecological movement can be resolved by seeing it as forming a political category in its own right, with

a history, right wings and left wings, with leaders, followers and an epistemological niche all to itself."[2] In 1932 Moholy's friend, the critic Ernő Kállai proposed the term *Bioromantik* [Bioromanticism] to refer to biocentric Modernist art. I see *Bioromantik* as the art-historical equivalent of ecologism, my work as the writing of its history, and Moholy's late biomorphic abstract style as itself bioromantic.

Moholy's poem gives evidence of both his Pacifism and his keen observation of nature by 1918. Apart from the intensity of his colour awareness and his onomatopoeia, one notes in the passage I read the richness of his nature imagery and organic metaphors. This, as well as his review of the Hungarian poet Árpád Garami's poems on a boy's sexual awakening, demonstrates that Moholy—due to his education in the German classics and his participation in the Budapest Galileo Circle—was familiar with the discourses of *Naturromantik* and Bergsonian Vitalism by 1918. He writes: "Employing a cosmic vision [Garami] transforms the sterile lover into the purposive, creative Earth, that the curse might finally be lifted. This self-redemptive and self-consoling feeling is manifest little by little in the desire for a mythic union with nature."[3] By 1918-19 Moholy was involved in Lajos Kassák's circle, inspired by the Leftist and Anarchist politics, Pacifism, and Expressionism of German Activism.

Thus when he landed in Berlin in 1920 and came into contact with members of the Youth Movement such as Reinhold Schairer, Friedrich Vorwerk, and Lucia Schulz, he was receptive to the Anarcho-Pacifism and biocentrism he encountered. (fig. 8) An environmental consciousness was central to the German Youth Movement as illustrated by the fact that at the 1913 founding gathering of the Freideutsche Jugend, the philosopher of biocentrism Ludwig Klages, delivered a rousing ecological manifesto entitled "Man and Earth." But as German social historian Joachim Wolschke-Bulmahn has documented in his 1990 book *Auf der Suche nach Arkadien*, most influential in this regard was Raoul Heinrich Francé (Francé Henrik Rezső), who preached that "harmony" within ecosystems is the "biological goal." (fig. 25) The idealism and environmentalism of the Youth Movement was expressed through hiking, the various "new age" practices referred to as *Lebensreform* [the reform of life], and through the founding of agricultural communes.

Moholy's contacts Vorwerk, Schairer and Schulz, had links to what German historian Ulrich Linse has referred to in his 1983 book *Zurück o Mensch zur Mutter Erde*, as the second, i.e. post-war wave of the German

communard movement, that dominated by the Freideutsche Jugend. Schairer, Moholy's mentor, and organizer of student relief in Berlin, was close to the "Neuwerk" group, which established a commune in the Rhön mountains southeast of the city of Fulda, a remote area favoured by communes related to the Youth Movement. Schairer passed Moholy onto Vorwerk, who secured Moholy's lodgings in his own rooming house. Vorwerk was in the left wing of the Freideutsche Jugend. This wing was inspired by pacifist Anarchists such as Gustav Landauer, Leo Tolstoy, the artist Heinrich Vogeler, and the biocentric Anarchist philosopher Prince Kropotkin. It was through Vorwerk that Moholy met Lucia Schulz. (fig. 8)

As art historian Rolf Sachsse has shown, Schulz had been involved with the Bohemian *Wandervögel* from an early age, and she gravitated towards the equivalent milieu in Germany. Schulz and Vorwerk met at Barkenhoff, Worpswede, Vogeler's biocentric Anarchist commune where they spent time in 1918-19. Like Vorwerk, known for radical pronouncements made at a 1919 Freideutsche Jugend meeting, Schulz took an active part in the movement's intellectual life. Not only did she work for the Freideutsche Jugend co-founder and publisher Adolf Saal, she wrote an article entitled "Symbole" for the movement's journal in which she displayed a Monist world view, and under the pseudonym "Ulrich Steffen," she contributed to the Barkenhoff commune's newsletter *Neubau*. Besides Schulz and Vogeler, Ernst Fuhrmann the self-described "Biosoph" and a theorist of German biocentrism, wrote for *Neubau*. Fuhrmann also spent time at Barkenhoff in 1919 and Vogeler came to value Fuhrmann's ideas highly. Thus at Barkenhoff and in the Freideutsche Jugend, Schulz and Vorwerk were exposed to the ideas of Kropotkin, Klages, Francé and Fuhrmann, who were, besides the pervasive Goethe, Fichte, Haeckel, Bergson, and Nietzsche, those most influential on the development of *Biozentrik*. Moholy, living with Vorwerk and then Schulz, had ample opportunity to absorb their knowledge.

As Sachsse, and as Veit Loers, in his 1991 catalogue on Moholy-Nagy published in conjunction with the Moholy-Nagy exhibition in Kassel that year, have shown, Lucia did not give up these contacts or her practice of spending vacations hiking and staying at communes after she teamed up with Moholy. She continued to heed Vogeler's directive: "We abandoned the grey cities and stepped into the forest. The living unity of the desire for community unnerved and moved us. We lay on the beach of the sea; an intangible longing awoke in us to be at one with the eternal natural rhythms which signify the shift toward unity."[4]

During the 20s the Moholy-Nagys regularly vacationed in the Rhön. Of this time Lucia wrote: "It almost went without saying that we then spent our vacations several times in the Rhön, living in one of the many little granny-flat cottages with views of fields and mountains. We soon met numerous other people who, in this, at the time little-frequented area, had also found there the rhythm of their lives."[5] Colour rhythms were at the centre of László's interest when he painted his *Ackerfelderbilder* [farm field pictures] on an as yet undocumented vacation, which took place in the Rhön, during the summer of 1921, I suspect. These pictures also reflect his fascination with the presence of trains and tractors in the rural landscape, an inscription of the technical onto the natural characteristic of Francé's Monist biocentrism. Monism served to legitimize László's enthusiasm for technology within an ecological world view.

The Moholys certainly spent their vacation of July 1922 in the Rhön, at the Schule für Körperbildung Loheland, an anthroposophically inspired women's commune and gymnastics school founded in 1919. This is indicated by the fact that Weyhers, the village in which they roomed, is a mere three-kilometre walk southeast of the school. According to Lucia it is here that they developed their photogram practice and that they formulated ideas published as "Production-Reproduction" in the September 1922 issue of *De Stijl*. Loers points out that in 1926 László acknowledged his adaptation of the photogram from a woman at Loheland who was making them using translucent plants. (fig. 47)

The core idea of "Production-Reproduction"—and, as Alain Findeli argues, of Moholy's entire oeuvre—is both holistic and pedagogical. It concerns the education of the senses through art and reflects biologically-based educational theories of the early 20th century German *Schulreformbewegung* [school reform movement] played out in the Youth Movement. Moholy writes: "The human construct is the synthesis of all its functional apparatuses, i.e. man will be most perfect in his own time if the functional apparatuses of which he is composed—his cells as well as the most sophisticated organs—are conscious and trained to the limit of their capacity. Art effects such a training…."[6] In his 1929 pedagogical treatise *Von Material zu Architektur* [From material to architecture] (fig. 19) Moholy indicates his debt to the pedagogy of the Youth Movement, to Vogeler and the commune schools, which instead of just inculcating knowledge, attempted to teach awareness of each student's place in the cosmos. As the Freideutsche pedagogical reformer Marie Buchold wrote: "By physical education,

we mean the awareness of the human organism within the world organism." [7] The ideas in "Production-Reproduction" reflect concepts encountered through Buchold and her partner Elisabeth Vogler (no relation to Heinrich) whom the Moholys met in the Rhön, perhaps in 1922, and whom they befriended. In the fall of 1923 Buchold and Vogler founded a women's commune and school at Schwarzerden 10.5 km east of Loheland. The Moholys spent the following summer, and that of 1926 there, rooming at Neuwart, two kilometres west of the commune. Lucia participated in the summer program at Schwarzerden, which involved lectures and workshops in pedagogy, literature, music, massage, gymnastics, psychology, holistic health, breathing, *reformkost* [health food]; in other words, in *Lebensreform*, and Vogler remembers that László joined them.

Reflecting upon this experience in 1929 László wrote: "The various pedagogical and youth movements have certainly achieved results of importance, just as the body and breathing gymnastics and naturopaths have."[8] László's participation in the life of the commune is documented by his design, probably in 1926, for the colour scheme of the Gymnastics Hall. Indeed he is the only artist mentioned by Elizabeth Vogler in her account of Schwarzerden. In July 1926 Moholy wrote to Theo van Doesburg how much he loved being "in the Rhön again, among our truly beautiful mountains."[9] The effect Buchold's pedagogy had on him is suggested by a text of that same year: "Man is the microcosm. Over him and in him universal laws hold sway. His whole being and accomplishment is a singular attempt to give form to these laws."[10] With the Moholys' holiday habits in mind, their last vacation together, a 1927 stay at Ascona near Monte Verità in Switzerland, the original counter-culture commune, takes on added resonance. As late as 1931 László was still a regular visitor to the Wannsee nudist colony near Berlin.

It is in the early 20s that the Moholys encountered the writings of the Dresden music teacher Heinrich Jacoby, the most important influence on László's pedagogy. (fig. 26) In 1927 László praised Jacoby's idea of "the common biological basis of all formation" as "one of the most important intellectual achievements of our time."[11] While they might have encountered Jacoby's ideas at Loheland, Lucia had been exposed to Youth Movement pedagogy through her employer Adolf Saal, who published its writings, and through her experience with Heinrich Vogeler. Given their interest in Reformpädagogie it is possible that the Moholys attended talks given in Berlin in the early 20s by Vogeler, Jacoby and

others organized by the Bund Entschiedene Schulreformer [League of Determined School Reformers], an outgrowth of the Freideutsche Jugend. Not only did Moholy derive his idea of the biological bases of expression from Jacoby, he adopted Jacoby's insight that everyone is talented, that rather than inculcating knowledge, the teacher's job is to actualize the abilities inherent in every healthy person. The clearest statement of Moholy's normative biocentric pedagogy is in the introduction to *The New Vision*, the English edition of *Von Material zu Architektur*, into which he inserted a section entitled "Biological needs" to define his terminology for the American readership: "In this book the word 'biological' stands generally for laws of life which guarantee an organic development. If the meaning of 'biological' were a conscious possession it would prevent many people from activities of damaging influence."[12] In light of all this, Moholy's interest at Chicago in John Dewey's biologically-based pedagogy seems inevitable, and given the pedagogical origins of his New Vision, it is less surprising that I should identify its origins partially in the discourse of biocentrism.

Since Moholy's New Vision was at base pedagogical, it is less surprising that I would attempt a biocentric reading of it. It took form as part of what I term "Biocentric Constructivism," which emerged in 1923 among participants in the "Constructivist International" such as Moholy, Ludwig Mies van der Rohe, Ernő Kállai, Lazar El Lissitzky, Raoul Hausmann and Kurt Schwitters. The emergence of Biocentric Constructivism was marked by a shift in normative thinking from what Peter Collins, in his book *Changing Ideals in Modern Architecture 1750-1950*, has termed the "machine analogy," the idea that art and architecture should emulate machinery, towards a "biological analogy," that nature's structures and processes should act as models instead. It served to ground Constructivist artistic practices within an ideology of the natural, and to legitimize its geometric forms with respect to those who would see Constructivism as "anti-nature." Because he was the best-known theorist of a biological basis for technology, Francé was a principal inspiration for Biocentric Constructivism, the shift towards which was stimulated in January 1923 by the publication of a chapter of his 1920 book *Die Pflanze als Erfinder* [Plants as inventors] in the art journal *Das Kunstblatt*. In this chapter Francé discussed *Biotechnik* [biotechnics] (what we would now refer to as "bionics"), his explication of the biological analogy. He held that both natural and human technologies are rooted in the Bios or universal natural system; that the

prototypes of human technologies, e.g. the turbine, are to be found in nature. (fig. 27) "As Francé rightly said" wrote Fuhrmann in 1923 "there is no process, even in the most complex industry that has not been in continuous use by people, animals and plants."[13] Moholy's interest in technology and its creative possibilities has typically been seen as an anti-natural, technocentric drive towards dehumanized automatism. Yet, like Francé, Moholy saw technology itself as organic. He writes: "Technical progress is a factor of life which develops organically. It stands in reciprocal relation to the increase in the number of human beings. That is its justification."[14]

Francé's Kropotkinian biological determinism appealed to Leftist intellectuals such as Fuhrmann, Lissitzky and Moholy because it held that all nature—including culture—is organized into nested hierarchies of ecosystems, the tendency of which is to attain optimal or harmonious states through symbiotic cooperation, more than through competition. Awareness of this led Francé to set guidelines for living in harmony with one's environment in his 1921 work *Bios: Die Gesetze der Welt* [Bios the laws of the world]. Francé's ideas concerning towns as organisms appealed to *völkisch* biocentrics however, and his views, though influenced by Kropotkin, implicitly argued against revolutionary social change. It was for these reasons that Hausmann attacked Francé from a biocentric Anarchist position, arguing against social biological determinism. Though he was an anti-racialist who described himself as the ethnic *Mischling* he was, Francé later joined the National Socialists, presumably because of Walter Darré's and Rudolf Hess' support for ecological causes, only to be expelled in 1938.[15] Francé's politics and the political range of his admirers is typical of the indeterminacy and slippage along the bipolar political scale of 20th century biocentric intellectuals as traced by Bramwell, and it speaks for the adoption of Bramwell's taxonomic system.

There is a possibility that Moholy met Francé, for Francé wrote his book *Plasmatik* in 1923 at Weimar, and he remembers visiting the Bauhaus at the time. Given that they were both from Budapest, it would not be surprising to me that he would have been introduced to Moholy at the time of his visit. In any case, after he was hired to the Bauhaus in April 1923, Moholy taught aspects of Francé's biocentrism, particularly biotechnics. In *Von Material zu Architektur*, the book based on his Bauhaus course, Moholy discussed Francé's *Grundformen*, the seven forms of which all natural structures are built up, and in the English edition published as *The New Vision* he depicted them. In his books

Moholy quoted from *Bios. Die Gesetze der Welt*, and he continued to teach Francé's concepts in Chicago.

Though it appeared in 1925, Moholy completed the manuscript of his first book, *Malerei, Photographie, Film* [Painting, photography, film] during the summer of 1924, effectively at the Schwarzerden commune, because he finished it at Neuwart, which is a couple of kilometres away. (fig. 20) While the standard reading of the New Vision as promoting the creative exploitation of formal possibilities inherent in mechanical imaging technologies is correct, it is incomplete. Just as Francé explains ecosystems to be the optimal expressions of biologically determined interacting elements, Moholy holds that, quote, "'Art' comes into being when expression is at its optimum, i.e. when at its highest intensity it is rooted in biological law, purposeful, unambiguous, pure."[16] As Francé promoted the integrated harmony of nature as a socio-cultural model, Moholy decried the overspecialization of knowledge, and called for the unity of culture. Employing Vitalist terminology he wrote: "What we need now is not the 'Gesamtkunstwerk' … separated from … life …, but a synthesis of all the vital impulses spontaneously forming itself into the all-embracing Gesamtwerk (life) which abolishes … isolation, in which all individual accomplishments proceed from a biological necessity and culminate in a universal necessity."[17] With Moholy's adoption of Francé's biotechnics and his Vitalist poetics in mind, one can, despite his formalist captions, no longer read his photo-juxtaposition of a flock of geese and an aircraft formation in *Malerei, Photographie, Film* as merely illustrating rhyming contrasts of light and shadow; it also functions as an illustration of biotechnic principles and of the Monist idea of the "unity of nature." (fig. 28) Knowing Francé's illustration in *Bios* of galaxies as instances of natural spiral form, Moholy had more in mind than examples of telescopic photography as an alternative image-making device, or as found images with instructive visual values, when he composed a similar layout in *Malerei, Photographie, Film*. (fig. 29) This is particularly apparent when Moholy juxtaposes his own photogram incorporating a spiral with a radiogram of a Triton shell first reproduced in the September 1923 "Schelpennummer" [Shell issue] issue of the Dutch periodical *Wendingen*. (fig. 30) In fact, Francé's biocentric functionalist explanation of the spiral's universality being due to it as the path of least resistance—illustrated in *Die Pflanze als Erfinder* by Francé—is in the paragraph immediately before the text on *Grundformen* that Moholy quoted. (fig. 31) With this in mind, one can better understand

the inclusion of no fewer than five photographs of spirals in *Malerei, Photographie, Film*.

While advocating the creative exploitation of imaging technologies such as the telescope, microscope and x-ray, Moholy's main creative suggestion in *Malerei, Photographie, Film* was to view found photographs as sources of visual inspiration: "The camera has furnished us with surprising possibilities, the exploitation of which is only just about to begin. These optical surprises latent in photographic processes were often realized in incidental work by amateurs … natural scientists … etc." (fig. 24) Imaging technologies not only had the capacity to supplement vision, they could actually re-educate it. Moholy's approach derives from the late nineteenth-century phenomenon of aestheticized microscopic imagery—a biological analogy for art—epitomized by Ernst Haeckel in his 1899 album *Kunstformen der Natur* [Art forms of nature]. In his introduction to Lewis Wolberg's 1978 book of microscopic photography, *Micro-Art: Art Images of a Hidden World*, Brian O'Doherty called this phenomenon "the poetics of bourgeois wonder," but as he points out, this wonder is not only one of formal values. It is also, "informed by a quasi-religious sense of a higher order revealed through the microscopic." This sense led to the normative value which Haeckel—who coined the term "ecology" in the 1860s—ascribed to his images. As a founding member, along with Wilhelm Ostwald and Ernst Mach, of Haeckel's Monist League, Francé elaborated Haeckel's construct of ecology as well as his philosophy. As a scientific illustrator, Francé went beyond Haeckel's pictorial strategies by representing entire ecosystems rather than artfully arranged, discrete creatures, as did Haeckel in *Kunstformen der Natur*.

Imbued with Francé's ideas, Moholy's concern with formal values in found photographs was rooted in the normative nature aesthetic of Monism. But how did this affect Moholy's artistic practice? While I can't deal with this question here, let me just say with reference to Moholy's geometric work that biomorphism is no necessary corollary of a biocentric aesthetics. Put another way, Francé taught Moholy that geometry is inherent in nature. Moholy's late work was both biomorphic and abstract, and it is my view that as with Paul Klee, Wassily Kandinsky and Hans Arp, this style visualizes biocentrism; it is a Modernist replay of artistic *Naturromantik*; a *Bioromantik* as Kállai put it. In Chicago, Moholy's stress on ergonomic design and his increasing concern with ecological issues, "the incoherent use of our rich resources" as he put it,

underlines this.[18] With this in mind, it seems reasonable to draw analogies between Francé's artful scientific illustrations of ecosystems and Moholy's art. I do not see the visual parallels between, for example, Moholy's three-dimensional plexiglas *Space Modulator* of 1945 and Francé's image of a microscopic rotifer, as the random effect of Moholy's biomorphic abstract style. (figs. 32, 33) While probably not based on specific graphic works by Francé, Moholy's work may reflect his familiarity with Francé's art, and the fact that Moholy's worldview incorporated a biocentric concern for the microscopic in motion.

I am not promoting a wholesale repositioning of Moholy's oeuvre into the biocentric discourse. I propose, rather, that to fully understand his oeuvre, it must be sited at the intersection of a wider range of discourses than hitherto acknowledged: of *Naturromantik*, biocentrism, the Schulreformbewegung, Lebensreform, the Youth Movement, Biocentric Constructivism and Bioromanticism, as well as Hungarian Activism, Marxism, Dada, Expressionism, the Neue Sachlichkeit and Constructivism, in the exclusive terms of which his oeuvre has been discussed to date. This enables a richer reading of his New Vision and his art.

Few now recognize the centrality of Moholy's leftist biocentrism: Findeli, who calls Moholy's oeuvre "un fonctionnalisme organique" or "fonctionalisme vitaliste" does so.[19] Crucial in this connection is Andreas Haus' analysis, which sees Moholy shifting from a dialectical and revolutionary organicism towards one co-opted by John Dewey's concept of harmonious society.[20] Yet Moholy's contemporaries such as Menno ter Braak, Carola Giedeon-Welcker and Herbert Read took his biocentrism for granted, and in the introduction to her biography of László, Sibyl Moholy-Nagy placed Francé's concept of Bios at the centre of Moholy's thinking. She wrote: "He was Utopian, I a historian; he the vitalist and I the humanist."[21]

Thank you for your attention.

NOTES

[1] The full translation appeared in: Oliver A. I. Botar, editor and translator, "Four Poems of 1918 by László Moholy-Nagy," *Hungarian Studies Review* 21, 1–2 (Spring-Fall 1994), 108–09. Note that I have chosen to publish here the nearly unaltered conference paper I gave at the Delaware Conference in 1995. Aspects of this talk were worked

into my Ph.D. Dissertation, "Prolegomena to the Study of Biomorphic Modernism: Biocentrism, László Moholy-Nagy's 'New Vision,' and Ernő Kállai's Bioromantik," University of Toronto, 1998 (Ann Arbor, MI: UMI, 2001). A treatment of this topic in particular appeared as Botar, "The Roots of László Moholy-Nagy's Biocentric Constructivism," in *Signs of Life: Bio Art and Beyond*, ed. Eduardo Kac (Cambridge, Mass.: The MIT Press, 2007), 315–344. I have provided only the sources of quotations in the present publication. Please refer to the publication in *Signs of Life* for a full referencing apparatus.

[2] Anna Bramwell, *Ecology in the 20th Century: A History* (New Haven: Yale University Press, 1989), 4.

[3] László Moholy-Nagy, review of Árpád Garami, "Gyötrödő, szerelmes tavasz" [Anguished spring in love], *Jelenkor*, 1, no. 5 (April 1918), 138–141.

[4] Heinrich Vogeler, "Frühlingsbrief an meine Freunde!" Page 8 in *Der Einbruch 1. Rundbrief der Entschiedenen Jugend Deutschlands*; in Ulrich *Linse, Die Entschiedene Jugend 1919–1921* (Frankfurt/Main: dipa, 1981), 191.

[5] Lucia Moholy, quoted in Rolf Sachsse, *Lucia Moholy: Bauhaus Fotografin* (Berlin: Bauhaus-Archiv, 1995), 108.

[6] László Moholy-Nagy, "Produktion-Reproduktion," *De Stijl* 5, no. 7 (1922). The translation is adapted by me from the one in Krisztina Passuth, *Moholy-Nagy* (London: Thames and Hudson, 1985), 289.

[7] Marie Buchold, diary entry of October 11, 1924, quoted in Marion E. P. de Ras, *Körper, Eros und weibliche Kultur. Mädchen im Wandervogel und in der Bündischen Jugend 1900–1933* (Pfaffenweiler: Centaurus-Verlagsgesellschaft, 1988), 162.

[8] László Moholy-Nagy, *Von Material zu Architektur* (Munich: Albert Langen Verlag, 1929), 13.

[9] László Moholy-Nagy, letter to Theo van Doesburg, 10 July 1922, in: the appendix to Theo van Doesburg, *Grondbegrippen van de nieuwe beeldende kunst* (Nijmegen: SUN, 1983), 102.

[10] László Moholy-Nagy, "Geradlinigkeit des Geistes – Umwege der Technik," *bauhaus* 1 (1926), 363.

[11] László Moholy-Nagy, response to Ernő Kállai's article in *Bauhaus* 10 (1927), 234.

[12] László Moholy-Nagy, *The New Vision. Fundamentals of Design, Painting, Sculpture, Architecture*, (New York, W. W. Norton & Co., 1938), 13–14.

[13] Ernst Fuhrmann, *Der Sinn im Gegenstand. Nebst Beitrag über die Bedeutung der Ornamente* (Munich: Georg Müller, 1923), 29.

[14] László Moholy-Nagy, *Von Material zu Architektur*, 12. In English: "Education and the Bauhaus," *Focus*, volume 2 (Winter 1938), 22.

[15] For a more nuanced discussion of Francé's association with the National Socialists, and particularly of the economic reasons for his membership in the Party,

see Chapter Two of my dissertation, 320f.

[16] László Moholy-Nagy, *Painting, Photography, Film* [1925; 1927]. Translated by Janet Seligman (Cambridge, MA: The MIT Press, 1969), 17.

[17] *Ibid*.

[18] Moholy-Nagy, "Space-Time and the Photographer," *The American Annual of Photography* (1943), 11.

[19] Alain Findeli, "L'esthetique pedagogique de László Moholy-Nagy et son role dans la transplantation du Bauhaus à Chicago." Typescript, 12. Published in German in an abridged version in 50 *Jahre New Bauhaus* (Berlin: Bauhaus-Archiv, 1987).

[20] Andreas Haus, "Sinnlichkeit und Industrie," in *Avant-garde und Industrie*, ed. Stanislas von Moos (Delft: Delft University Press, 1983), 113–114.

[21] Sibyl Moholy-Nagy, *Moholy-Nagy: Experiment in Totality*, Second Edition (Cambridge MA: The MIT Press, 1969), xi.