DISEGNO

Disegno

Journal of Design Culture

Aims and Scope

Disegno publishes original research papers, essays, and reviews on all aspects of design cultures. We understand the notion of design culture as resolutely broad: our aim is to freely discuss the designed environment as mutually intertwined strands of sociocultural products, practices, and discourses. This attitude traverses the disciplinary boundaries between art, design and, visual culture and is therefore open to all themes related to sociocultural creativity and innovation. Our post-disciplinary endeavor welcomes intellectual contributions from all members of different design cultures. Besides providing a lively platform for debating issues of design culture, our specific aim is to consolidate and enhance the emerging field of design culture studies in the Central European academy by providing criticism of fundamental biases and misleading cultural imprinting with respect to the field of design.

MOME
MOHOLY-NAGY
művészeti egyetem
university of art and
design budapest

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Introduction

There is nothing more natural for the scholarly journal of the only university bearing László Moholy-Nagy's name than to edit a thematic issue to mark the occasion of seventy-five years since his death. This was an opportunity to invite scholars, researchers, and designers to present their thoughts and perspectives and thereby provide a critical assessment of one of the most important designers, educators, and thinkers of the early-twentieth century.

Intrigue still surrounds Moholy-Nagy and the issue is also an opportunity to address some of the more evasive and hidden aspects of his character. Though he is widely known and recognized as one of the most important Bauhaus-inspired thinkers—see, for example, Alysa Nahmias' recent documentary *The New Bauhaus*—many details of his life and work still need to be discovered and made available to the wider public. It is also very telling in this respect that the definitive intellectual biography of László Moholy-Nagy is still to be written. Much of this might be due in part to his early death, which left several of his projects unfinished, and also to the difficult times he lived through, when—as some of the papers published in this issue will show—the shortage of materials, lack of socio-political stability, and unpredictability of funding undermined many of his plans.

In the frameworks of contemporary design capitalism, design is generally understood as the chief booster of profit maximization whereas Moholy-Nagy always regarded design as a fundamental means of the practical criticism of the capitalist production system. Paradoxically, he is often considered a pioneering promoter of capitalist design even though he was also one of its sharpest critics, having understood very early the potential of design to humanize capitalism and alleviate alienation. As is claimed by many of the authors in this issue, Moholy-Nagy's unorthodox vision of designing —not as a profession, but an attitude—shows how he conceived the idea of the integral human as an alternative to the notion of sector-like human beings nurtured by capitalism. As he put it in *Vision in Motion*, "all problems of design merge into one great problem: design for life." No matter how apocalyptic it may sound today, design for life is nothing other than design for survival, the searching for answers that could lead us out of the consequences of global ecological, cultural, and social crises that constitute the unsustainable posthuman condition in which we live.

The papers and essays collected in this issue present a complex and synthesized overview of the ideas and motivations that drove Moholy-Nagy's attitude towards art, design, and pedagogy. Our aim was to provide perspectives for understanding the relevance of Moholy-Nagy's ideas and activities as designer, artist and design educator within a contemporary design cultural context of different design attitudes, and the interconnectedness and relationality of different spheres of life and objects embedded in networks. Not only was our intention to offer a thorough presentation of his work, but also to contemplate the contemporary relevance of his ideas. We were interested in how his approach can be evaluated in the twenty-first century within the context of climate change, ecological thinking, criticism of capitalism, and disability studies—aspects that seem to guide the most innovative design practices and philosophies today. The papers published in this issue underscore that many of his projects and ideas could be integrated within the contemporary discourse on the role of design and creativity, and paint a portrait of a thinker whose work is still able to function as a source of inspiration. Thus, the issue also aims to assess his legacy in the widest sense, and to this end includes papers on design culture topics that analyze processes, practices, discourses, products, and services in the spirit of his philosophy.

Finally, in addition to the critical reinterpretation of the legacy of László Moholy-Nagy, this issue is dedicated to the memory of Victor Margolin, former editorial board member of Disegno and a great Moholy-Nagy scholar. It is our honor to celebrate his legacy with a personal remembrance by his daughter, Myra Margolin, and an intellectual biography by Alain Findeli.

the Editors

Victor Margolin's Early Years

Myra Margolin

*Victor Margolin with Myra
and Sylvia Margolin c. 1978*

The following includes excerpts from memories that my father re-corded in his last year of life. These memories, all my father's words, are indicated by italics.

When I was a small child, my father used to take me to a novelty shop in Chicago called Uncle Fun. It was filled with rows of cabinets with tiny drawers that seemed, to my small self, to reach the ceiling. Each drawer contained a small wonder: little rubber chickens, stickers of Renaissance angels, woven finger traps, wax lips, kazoos. We would venture from our apartment in suburban Chicago to this shop in the city where he and I both delighted in opening the drawers and discovering small bursts of surprise, returning home with bags of treasures. We would lay these out on the dining room table, get out his big box of rubber stamps and spend hours making kookie, kitschy art together.

Another clear memory: searching with him for the perfect Chicago hot dog. First we decided it was at Fluky's, where they gave out bubble gum in the shape of a hot dog. Then we switched our allegiance to Poochie's, where they grilled the onions and slathered on melted cheddar cheese. When my uncles visited from New York, my father eagerly engaged them in the search, taking them around the city to sample hot dog after hot dog.

My father was a seeker of culture, someone who dove into the human-made world, be it looking at paintings at a high-end gallery, questing for hot dog perfection, or buying curios with his pre-schooler. I don't think there was much difference in his mind. He was endlessly fascinated with material culture, engaging in innumerable collecting endeavors throughout his life. He kept catalogs of every film he had seen, had drawers overflowing with records and CDs of music from every continent, and for years devoted shelves of his university office to his "Museum of Contemporary Art", his collection of cultural kitsch.

He was also a big picture thinker. The biggest picture thinker I've ever met. He was always seeking to understand things in their entirety. He took epic walks, sometimes choosing an iconic street and walking its length. In Chicago, he walked Clark Street from start to finish. In LA he did Sunset Boulevard. When I was living in New York, he visited, intent on a "Queens walk", starting in Flushing's Chinatown and weaving down Roosevelt Avenue, stopping for dumplings, tamales, hand-stretched noodles.

On these walks, he followed his "rule of yes". That is, when he was with a companion, if either of them wanted to stop for any reason - to detour down an alley, explore a bakery, stop at a used bookstore—the answer was always yes. I have always thought of this rule more expansively to describe my dad—the desire to take everything in, to look at everything through a bird's eye, to map, chart, experience, understand and imagine. To be expansive.

The goal of these walks was to be immersed in the life of a city slowly, at walking pace, to take in the details of the stores, the people, the street art, the architecture, the way neighborhoods slowly shift from one to another, demographics changing. One of his favorite things to do when people visited him in Chicago was to take them on a tour of the murals in Pilsen, a historically Mexican-American neighborhood, rather than to the traditional sights that tourists visit. He was endlessly fascinated with the small (and not so small) wonders created by people to make the world more colorful, more efficient, more meaningful.

When I brought my boyfriend, now husband, home for the first time, my father organized a food tour of Chicago, driving far north for samosas on Devon Avenue, heading to Uptown and its cluster of Vietnamese restaurants and shops for Pho, then on to Swedish pancakes in Andersonville and finally to Little Village on the southwest side for a legendary taco. It brought my father so much joy to immerse himself in the city in this way, in the tapestries of cultures woven together in one place, and to share it with others.

I can't remember ever going on a hike in my childhood (in fact, I distinctly remember getting to high school and not knowing what the word hike meant). But I have countless memories of walking through cities with my parents, my mother and I going ahead while my father stopped to photograph graffiti, an unusual mailbox, a public toilet. I remember once being in a car with him at an intersection while he leant out the car's window in order to take a picture of an unusual hot dog cart. He was a collector and kept a running catalog in his head of images he was gathering: typography on restaurant signs that mimicked non-Latin alphabets, trash cans, public benches, murals. He left an archive of thousands of these photos, visual documents of the way he made sense of the world.

As some readers may know, in the last four years of his life my father was paralyzed from the neck down, the result of a spinal cord injury he sustained after fainting at a conference in South Korea. This was a very confusing time for my father. He went from living a healthy retired life, working diligently every day on the third volume of his *World History of Design*, consulting on public design projects in Chicago, traveling internationally with my mother and for conferences, eating out, going to concerts, and looking forward to the next twenty years of his life and the many projects he hoped to do to lying in a hospital bed in Korea, unable to move his body.

I flew to be with him as soon as we learned about the accident and stayed until he was stable enough to be flown back to the States. A memory from this time that I hold dear is reading the entirety of Ta-Nehisi Coates's recently released *Between the World and Me* aloud to him as he lay still, not feeling anything below his neck. I would pause between passages and we would discuss the ideas, unpack the text. Even during this most difficult time, what he wanted to do was learn, talk, dive into big ideas. He was an insatiable scholar.

Those few weeks were tender. I stayed with him from morning until night as colleagues from the conference filtered in and out of his room. These visits are what got him through that time. He was an avid conversationalist, choosing time with people above almost anything. I distinctly remember one colleague bringing her fiance with her to his hospital room. He was thrilled to meet the fiance: "She told me about him years ago when they started dating!" he told me with glee. He loved to know people's stories, to follow their lives, to help when he could. He lived for people: both his personal connections and his deep interest in the worlds they created, i.e. design.

After he had returned home, been through months of rehab, and was adapting to life with paralysis, I can still see him in his living room, wheelchair tilted back, doing what he called "wheelchair dancing", Cuban music filling the room and his legs kicking up and down. "This music speaks to my soul," he would tell me, smiling like a child.

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My father was an only child, born in New York City and raised in Washington DC. His mother was an immigrant from Lithuania who served as a lobbyist for the National Council of Jewish Women for 30 years, advocating in areas such as women's issues and civil rights. His father was a lawyer. He was often lonely as a child.

At almost eight months, January 25, 1942

"The sense of growing up in my house was one of isolation rather than family activity. My parents and I sometimes occupied the rooms together, but not as a trio of people who engaged emotionally with each other. We often ate at the Formica kitchen table with my father and mother on the two ends and me in the middle. They would bounce their comments about the latest news back and forth and I would watch the words fly as if I were witnessing a tennis match. I remember feeling left out of those conversations."

*At 19 months
in Washington, DC*

He had a lot of freedom as a child, playing on the streets with neighborhood kids, buying tin soldiers at the corner store, constructing small habitats out of cardboard boxes. He always had an interest in art. In science class, he bypassed the content, choosing to spend hours drawing diagrams of plants instead of learning their biology. He recalled a school geography project, *"Each student was given clay and a different country to research. I don't remember my country, but I enjoyed the colors of the clay countries on the map."* In middle school, his family moved to a large house in the Cleveland Park neighborhood. *"At one point, all the rooms on the third floor were free to use. I made use of them for different purposes. I set up an art studio in the central room and spent several months making pastels and ink paintings."*

As a teenager, he did a school project on the history of the pun, doing a deep dive into the archives at the Library of Congress. *"This led to my first entrepreneurial venture. At that time, I believe it was 1958, the American Booksellers Convention was holding its annual meeting in Washington, DC. One of the publishers was the Peter Pauper Press which published a series of small books of poetry, sayings, and other short topics. I approached the publisher, who was sitting in the booth, and proposed a small collection of puns. He was receptive to the idea and as a result the Peter Pauper Press published* The Little Pun Book. *I was listed as the editor, my first credit as an editor or author."* He was 18 years old.

He went to college at Columbia University where he majored in English, contributed to *MAD Magazine* and edited the *Columbia Jester*, the university's humor magazine. It was during this time that he had a roommate who had joined a relatively new spiritual group called Subud, a practice which my father took up then and followed diligently and with deep sincerity for the rest of his life.

Highschool years

He was an idealist and a seeker but he also struggled with profound anxiety. It took him many years to find his path in life and the period between college and eventually landing in the field of design history was one that was both incredibly rich and personally challenging.

After graduating from Columbia he went to Paris on a Fulbright to study filmmaking. He left the program early to move to Germany where he immersed himself in the local Subud community, learning German along the way. After several months in Germany, he returned to DC where he worked briefly as a film editor at NBC. One day, realizing his dissatisfaction, he quit on the spot. This marked the end of his film career.

At the time, a friend of his was in Mexico City and my father had an inner feeling to join him there even though he didn't have any concrete plans. *"During that time (in Mexico) I began to learn Spanish on my own. I would go every morning for breakfast at a restaurant known as Sanborn's where I would have my traditional fresh orange juice, Mexican eggs and coffee. Each week I bought the magazine LIFE in Spanish. I would read through the magazine and begin to learn the language by looking up words I didn't know in a Spanish-English dictionary. I also began translating this vocabulary into spoken Spanish. This was not hard since I already knew French and was able to build on French grammar."*

"During my time in Mexico I began to make notes for a very ambitious writing project—a cosmology that could explain the way that cosmic forces were converted into social organization. In retrospect it was an outlandish task and I must have been crazy to even think about it but that's what came to me and I decided to follow the impulse."

This impulse became his earliest work of scholarship: a massive book that no one ever read. Before he became interested in design, before pursuing a PhD, before landing on academia as an area of interest, came a span of a few years that he later dubbed his "library period."

After returning from Mexico, he moved back to his parents' home in DC. *"Back in Washington, for better or worse, I did not look for a job but instead I decided to pursue writing my cosmology. My parent's house in Cleveland Park was just a few minutes' walk from a branch of the DC public library. I would go there each morning with an attaché case filled with books that I borrowed from the library. Following my inner feeling, I read books on a lot of different subjects ranging from biology to international law."*

"My reading was not systematic but instead derived from an instinctive impulse. I was interested in systems without knowing anything about systems theory. I was also interested in the generation of systems related to the spirit. I had been in Subud for a few years and was familiar with John Bennett, who was the founder of a comprehensive theory that sought to combine the spiritual and the material. Bennett wrote a multi-volume work called The Dramatic Universe. *I also read books by several esoteric philosophers."*

"My quest in all this reading was to find models for building a system that combined the spiritual and the material. I began to make copious notes on sheets of lined yellow paper. I developed a set of terms which I began to use. They were based on the tripartite relationship between the cosmos, which I identified with the prefix cosmo, the realm of biology, which I identified with the prefix bio, and the realm of society, including the physical environment such as buildings and the social structures that determine the way society is organized."

"What underlay my scheme was an attempt to show how spiritual forces were converted into material organization. I worked on parts of this project for more than two years, going from my parents' house, walking the three blocks every morning to the Macomb Street public Library, where I dutifully plunked down my attaché case full of books and began my explorations of knowledge fields with which I had previously been unfamiliar. There I sat until the afternoon when it was time for my apple pie and coffee across the street at Peoples Drug Store."

"I don't think I was running out of steam but eventually my parents felt that it was no longer right for me to stay home without working. It is actually a miracle that they allowed me to continue

the arrangement of going from home to library each day without asking me earlier to go out and get a job. I still can't fathom the reason for this acceptance. In any case the mandate to get a job was loud and clear." By this point, he had compiled around 1,000 pages of writing, pages which he carried with him through many moves only to eventually throw them away over a decade later. At that point, he felt they had served their purpose in his life, having been more for the process of writing them than the product they produced. He told me he felt an enormous relief when he finally let the book go and never felt any regret.

In Wolfsburg, Germany, spring 1964

After his parents pushed him to find work, my father spent several years searching for a path. The first job he got after the library period was at the Library of Congress doing research and writing bibliographies, work which allowed him to continue reading, learning, and expanding his scope of knowledge. He had a series of freelance jobs, including curating a film festival for the White House Conference on Children. *"My role in the conference planning was to create a festival of children's films, probably because I had a film background. This project gave me experience in assembling resources. This would serve as good practice for my work on my* World History of Design." He also worked on a film anthology for the National Institutes of Health (NIH).

Eventually he had a feeling to relocate to New York City and in 1972, when he was 30, he moved to a fourth floor walk-up at 77th St and 1st Ave. His time in New York is when he established the foundations on which he eventually built the rest of his professional life. It was also a time of great stress and uncertainty. For the rest of his life, he would have a recurring nightmare about being alone and out of work in New York. Even though he followed his inner feelings during this time and forged a pioneering path that eventually led him to become an innovative and broad-thinking scholar, the anxiety of the unknown left an indelible mark on his psyche that no amount of later success could completely shake.

When I revisit this period in his life, it reads to me like an often-told story of a young person exploring the world to find where they fit in. In our household, though, it was often framed with shame and a sense of failure. Of this time, my father wrote, *"Psychologically, I was not in good shape, especially feeling very insecure. I did not have a clear professional path and was not strong inwardly."* For this, I feel very sorry. I wish my father could have seen in this exploration the beauty that I see. He followed his intuition and guidance, even when it seemed counterintuitive and untraditional. He was enterprising and resourceful, acquiring skills and experiences that only much later came together and made sense. He was dogged and steadfast in his push to find a direction that connected to his inner nature, a career that matched his talents and through which he could develop the best qualities of himself. He forged his own path with an inner assurance I'm not sure he recognized in himself.

It was in New York when he took his first steps into the world of design research. After another series of freelance jobs, including as a media consultant at the U.N., he embarked on his first book project (aside from the pun books he edited as a teenager). *"I contacted WETA, the public television station in Washington, where I had worked on a projected television series handbook about World War II propaganda. We had built a large collection of color transparencies and black-and-white photographs, all related to different forms of propaganda—posters, cartoons, and related visual materials.*

"When the series did not go forward, the station had all that material, which I remembered when I was in New York. I wrote to the station to see if I could use the material to develop a book. By some miracle the station gave me the material to use as I wished. I sold the book project to a New York publisher, Chelsea House. The agreement was that I would become the editor and we would find an author to write the book. We found Anthony Roads, a British writer of fiction and nonfiction. We also found an outstanding book designer, Harris Lewine, who had experience in book design with various New York publishers. The book was completed and published in 1975. I was the editor, Rhodes was the author, Lewine was the art director. The book was beautiful and the text was informative. Rhodes was able to write it with good use of my notes."

"After completion of this book entitled Propaganda: The Art of Persuasion, *I decided to try and write a book of my own. Somehow I found out about an archive of late 19th century American posters at Columbia University. I came up with the idea for a book which I called* American Poster Renaissance. *The subject matter was posters from the 1890s. Columbia had a rich collection of these posters. I formulated an idea for the book and hired a photographer to photograph a large number of posters both as color transparencies and black and white photographs."*

"I organized these images according to theme and wrote a text that told the story of these posters according to the themes. At the end of the book I included a section of brief biographies of the poster artists with small line-drawn images of some artists. The book was published by Watson-Guptill."

Reading about these projects, I am struck by my father's industriousness. He took both book projects from the seed of an idea through to completion, refining the concepts, finding the people to back the projects, acquiring the archival images and working in a field that was, at the time, brand new to him.

At the same time that he was working on these books, he began dating my mother, a teacher who was living in Williamsburg in Brooklyn. The two met through Subud, in which they were both involved, and at a time when each was struggling to find their footing in adult life. They eventually became engaged and a friend of my dad's found him a job in the Chicago area as an interim-director for a multi-institutional effort to create an experimental Open University. They moved to Chicago where he did this job for several months followed by another string of freelance work.

"In the meantime I was giving occasional lectures about my propaganda book and the book on American posters. One of the places where I had arranged to lecture about my propaganda book was the ICOGRADA (International Council of Graphic Design Associations) Congress that was held in Evanston, IL in 1978. While at that conference I met a woman who told me about an organization in England called the Design History Society. Somehow that idea of

design history resonated with me. I put it together with what I knew about nontraditional higher education programs, about which I learned while working on the Open University project."

"Because of radical changes in education that occurred in the 1960s, a new opportunity for PhD education had been created. It was called the Union Institute. This new institution allowed learners to define their own PhD. I decided to apply for a doctorate in Design History. No such program existed in the United States. I was accepted and started in the program."

The rest of my father's story is more widely known. He received his PhD, the first in the U.S. in Design History, with a dissertation on three avant-garde artists, which he later turned into the book *The Struggle for Utopia: Rodchenko, Lissitzky, Moholy-Nagy, 1917–1946*. He worked as a visiting professor at the University of Illinois in Champaign-Urbana before getting a tenure-track job at the University of Illinois, Chicago (UIC), where he would spend his entire academic career. At UIC, he co-founded the journal *Design Issues*, taught widely on topics ranging from design history to high-low art, wrote and edited several books and began work on *The World History of Design*, a project which grew from a single-volume textbook to a multi-volume, comprehensive survey of design starting from pre-historic cave paintings. He lectured and taught all over the world and helped grow the field of design history and studies over the course of four decades.

When I saw my father at the end of his career diligently getting up every morning in the downtown Chicago loft he shared with my mom, going into his office to read, diagram, outline and eventually write chapters for the *World History of Design*, stopping at lunchtime to eat soup out of cup then returning to work in the afternoon, always dogged and disciplined, stopping his workday at dinnertime, never working on weekends (as these were reserved for cultural outings and socializing), I was always reminded of that young man, waking every morning with his attache case, sitting with piles of books at the Macomb Street Public Library, diligently and doggedly mapping out a cosmology of the universe, stopping every day at 4 for coffee and apple pie at Peoples Drug Store. I always felt like the world history was a bookend to a life of searching for meaning, seeking to understand the world from a high-up, bird's eye view, but unlike the cosmology of the universe, the latter book was grounded in a lifetime of knowledge, of the pursuit of large truths through the lens of single field of study.

Design history focused my dad but I often thought that he could have landed in a range of fields and ended up in the same place. From the history of design, he increasingly wrote about broad and idealistic visions for a more equitable and just world, what he used to called the "good society". He was never more energized than when he was talking with others about big ideas about how to make the world more just and less cruel for more people.

When my father died, my mom and I received an outpouring of sympathy from colleagues all over the world. In these notes, a theme emerged that I hadn't anticipated. Of course, many of them wrote about his scholarship and his contributions to the field. But moreso, they wrote of his great generosity, of his deep and open spirit, of his willingness to spend hours in a coffee shop talking to someone about something with which they were struggling. He took immense pride in recounting how he had directed a student to the PhD program that launched their career, about how he connected a junior colleague to an editor who published the book they'd been working on, about how he had helped a young design historian find clarity in the work they were struggling with and muddling through.

His love in life was for people, for the culture that they created through their food, their music, their film, art, and writing, for the material world they constructed through buildings, murals, furniture and practical objects. Of course design is about the material, but for my father the material was simply a pathway to the human. He was a person filled with vulnerability, striving, struggle, triumph and love. And I miss him dearly.

VICTOR MARGOLIN, "CULTURAL PROVOCATEUR" (1941–2019)[1]

Alain Findeli

ABSTRACT

Since this special issue is also published in the memory of the late Victor Margolin (1941–2019), a homage to Victor's intellectual biography is presented here in the form of a journey through his academic career as well as a chronology of his work as editor of Design Issues, *the journal he launched in 1984.*

#Victor Margolin, #Design studies, #Design Issues, #Social Design.

AN ESSAY IN THE FORM OF A TRIBUTE [2]

In November 2019, the international design community lost one of its pioneers, historians, and theorists, the cultural provocateur Victor Margolin. The victim of a serious accident during a symposium in South Korea at the end of 2015, Victor spent the last few years in extremely difficult conditions that significantly slowed the completion of volume III of his magnum opus on which he had been working for fifteen years, World History of Design, whose first two volumes (Margolin 2015) cover Prehistory (yes, Prehistory!) until the First World War (600 pages), followed by the inter-war period (1000 pages more than 400 illustrations). It was with great courage and serenity that he pursued this work, the conditions of which he details "ethnographically" in one of his last published texts (Margolin 2017) and the method of which he presents in a video made by his daughter Myra, a teacher and doctoral student in social design (M. Margolin 2015) (fig. 1). "My spirits are still good, and I continue to work on recovery", he emailed me, still full of hope, in November 2017.

With a bachelor's degree in English Literature and Film Studies (1963, Columbia University) and, after a long break during which he published on graphic design (posters, agit-prop) and did various jobs, Victor obtained his PhD in Design History in 1981 (Union University) and the following year, at 41, was appointed Professor of Art and Design History at the University of Illinois at Chicago, a position he held until his retirement in 2006. Soon after this appointment he joined the "Chicago Group", a multidisciplinary body of colleagues leading a reflection on design in order to come up with "new ideas for the study and practice of design". As he would recount later, the figure of Moholy-Nagy was a major influence on their work: "Two of the founders [of the group] had been students at the Institute of Design in Chicago, where they absorbed some of the spirit that László Moholy-Nagy infused into the school when he was still alive". It is from

[2] *The readers of this essay may wonder why this obituary tribute to Victor Margolin is included in a special issue devoted to Moholy-Nagy. Readers are indeed aware of Margolin's early and lasting interest in Moholy-Nagy's work, which he illustrated in his writings. As relevant and interesting as this could indeed be, such is not the purpose of this essay, my motive here being partly biographical. In the mid-1980s, when I started my study of the pedagogical oeuvre of László Moholy-Nagy in Chicago (Findeli 1995), I had the privilege to meet Victor Margolin at the University of Illinois in Chicago, where he had just started teaching design history. He was so happy to be able to share his enthusiasm about Moholy-Nagy with someone who was as familiar as he was with the paramount influence of what he and his students realized at the New Bauhaus/School of Design/Institute of Design during its first ten years of laborious existence (Findeli 1991). Victor had then recently founded the journal* Design Issues *and was working on his book on Rodchenko, Lissitzky and Moholy-Nagy (the subject matter of his PhD). It is therefore easy to imagine how long and thrilling our discussions became.*
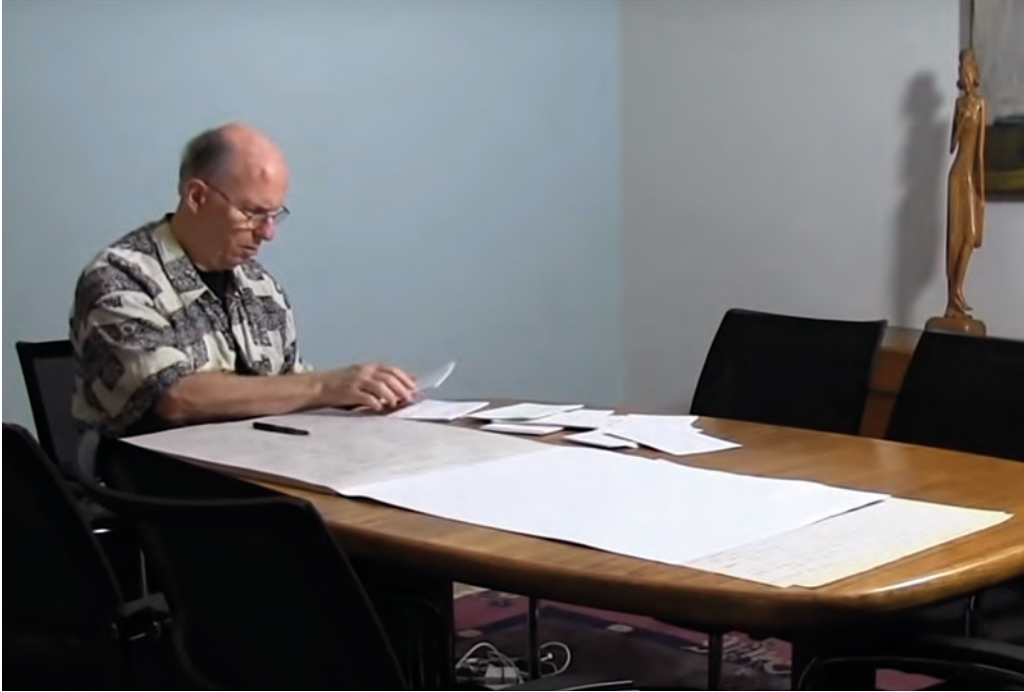
FIGURE 1. *Victor Margolin at work on his* World History of Design, *courtesy of Myra Margolin*

this initiative that the journal *Design Issues* originated in 1984. Victor would be its sole editor for the first six issues, then become a member of the successive editorial committees until 2019.

The period was conducive to the creation of such a journal and of the corresponding academic programs that Victor had long wished for, because it was a time in which departments and faculties of "studies" in the Anglo-Saxon academic world proliferated, following the waves of "postmodernism", "poststructuralism", "cultural studies" or "French theories" that countered the strictly compartmentalized structure of universities and promoted the interrelationship of multi-, pluri-, inter-, and transdisciplinarity that ended up, not without struggle, infiltrating those well-guarded fortresses.

Design research, however, was distinguished from other fields by the fact that its territory was still relatively pristine and everything was to be built. Since the title *Design Studies* had already been adopted by the British research journal founded by the Design Research Society (DRS) five years earlier, the name chosen was Design Issues, which the subtitle of the journal specified as: *History/Theory/Criticism*. Throughout his career, Victor would strive to build, develop, clarify, and consolidate the intellectual project of these "design studies", according to the following program: "Design studies is about reflecting on design as it has been practiced [*History*], is currently practiced [*Criticism*], and how it might be practiced [*Theory*]" (Margolin 2016), in other terms, the field of design studies should include historical perspectives on the past

state of design, critical discussions on its current state and theoretical discussions that may reveal where it will orient itself in the future. Margolin will constantly ensure, with the generosity that all those who have worked with him will acknowledge, that the journal maintains the following two main gestures towards its contributors and its audience: openness and pluralism.

In this essay, I have selected some key milestones of Victor's itinerary and of the journal *Design Issues* (fig. 2), a personal choice guided by my admiration for the scale and scope of his work and by my gratitude for the fruitful influence resulting from an intellectual friendship and our shared affinities that led me to cross his path several times and to have been welcomed in the pages of the journal and associated anthologies. For a more scholarly and historiographical (less hagiographic) approach, one can start with the complete and recent CV of "dropout" Victor,[3] as he qualified himself with his well-known sense of humor, and continue with the retrospective written by the *Design Issues* editorial team to mark its twenty-fifth anniversary (Buchanan, Doordan, and Margolin 2010). The introduction to the latter includes the philosophical anthropology on which the journal is based and which it continues to express: "*Design Issues* has not ceased to insist on the need to appreciate human beings as autonomous individuals, members of communities sharing distinct forms of cultural, ethnic or other identities and experiences".

[3] *See online:*
https://disegno.mome.hu/
victor-margolin/
(kindly transmitted by
Sylvia Margolin).

FIGURE 2. *Left: cover of the first, Spring 1984 issue of* Design Issues; *right: cover of the Winter 2010 issue*

Design Issues
HISTORY | THEORY | CRITICISM

Spring 1984

Design*Issues*

● History
● Theory
● Criticism

VICTOR MARGOLIN
1941–2019
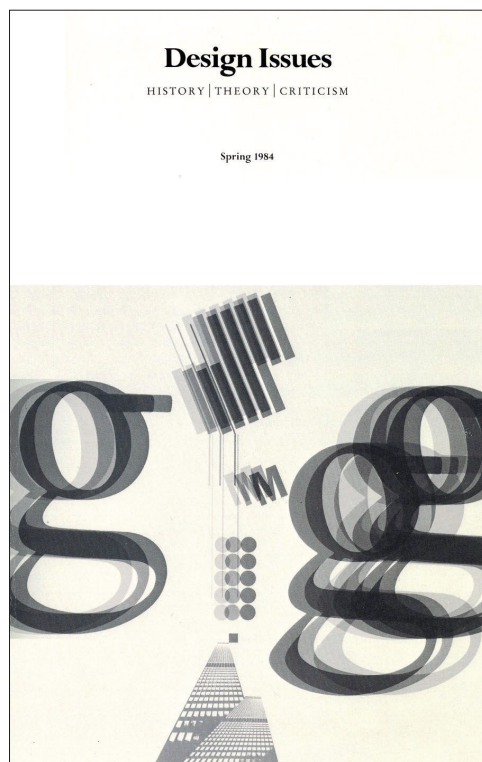
THE JOURNEY OF VICTOR MARGOLIN

Three main periods may be roughly distinguished in the intellectual journey of Victor Margolin:
    • **From 1982 to the mid-90s:** Beginning of his academic career at the University of Illinois at Chicago; organization of thematic meetings between researchers and practitioners; creation and positioning of the journal *Design Issues* as a place of "controversies and debates" wanting to distinguish itself from a scholarly journal in the strict sense, hosting manifestos and an original graphic contribution, with, as backdrop, the visionary utopia of Moholy-Nagy, who died in Chicago in 1946.
    • **From the mid-90s to the mid-2000s:** Intensive publication (essays and books) and lecturing activity in international symposia; consolidation of the field of design studies and academic orientation of the journal; development and promotion of a vision of research and training in design; environmental issues; global geographical opening; spiritual dimension in design.
    • **Since the mid-2000s:** In addition to working on his *World History of Design*, continued international activity and presence in many important forums; with priority given to the ethical, social, anthropological, and spiritual/metaphysical issues of design; design and democracy ("the good society").

    The following are some highlights from this more than thirty-five-year journey, illustrated by significant quotes from him or the editorial board of the journal.

FIRST PERIOD

→ **1984:** Editorial of the first issue of *Design Issues*: "Our goal is to provoke and raise controversial issues".
→ **1989:** International and multidisciplinary meeting "Design at the Crossroads" in Evanston (fifteen participants, by invitation). The aim was to "define and structure the role and function of designers in a culture in continuous change".
→ **1989:** Publication, titled *Design Discourse*: an anthology of the first six issues of Design Issues (vols. 1–3) that he edited alone before the broadening of the editorial board: "We need a new discipline of design studies to train scholars of design". The book opens with a dizzying introductory text of twenty-five pages and closes with a no less impressive commented bibliographic corpus of twenty-two pages (*Postwar Design Literature*, limited to monographs only).
→ **1990:** Organization of another international and multidisciplinary meeting ('Discovering Design') in Chicago (twenty-five participants, by invitation): "Design deserves attention, not only as a professional practice, but also as a subject of social, cultural and philosophical inquiry". The full reports of the meeting were published under the same

title in 1995, along with Richard Buchanan (Buchanan and Margolin 1995). Throughout his career, Victor continued to advocate the urgent construction of this form of "social, cultural and philosophical inquiry" called design studies, of which this meeting was in a way a prototype. To make himself better understood, he insists that "we have to ask ourselves what a word processing software and a comfortable chair have in common or how a nuclear power plant and a tax return form work similarly as forms of material culture". Inspired by Schütz's phenomenology and Dewey's pragmatism and adopting the concept of "product *milieu*", Margolin emphasizes that we should research the reception of design products as much as their conception, manufacture and distribution: "For designers and design researchers, Dewey's theory of experience opens up a rich space for new reflection. Once we recognize that there is an inextricable relationship between product quality and how we experience the world, we realize how much we have to learn about how products influence our lives", adding that there is "no set of studies more useful to cultural studies researchers from different fields in understanding the role of products in human societies [than design studies]". Unlike the usual and widespread rationalizing, operational, and methodological approach adopted in design, the design studies approach is cultural and focused in this volume on the four following topoi: the practice of design, the products of design, the discourse of design (mediation) and the metadiscourse (reflection) of design. Throughout, like in his "Design Studies: Tasks and Challenges" (Margolin 2013), he tirelessly returns to this crucial issue.

→ **1990:** Thematic issue of the journal devoted to the teaching of design (*Educating the Designer*): "A discussion on design training with designers on one side of the table and design teachers on the other will usually result in a draw. [...] The editorial board of *Design Issues*, understanding that this is a never-ending discussion, wishes to suggest that a stimulating, continuing dialogue among designers, critics, historians, and educators might be productive". As one can see, the journal adopts no other doctrine than that of arranging a space for the confrontation of ideas, thus inviting its readership to form its own point of view. The special issue, edited by Leon Bellin and Marco Diani, took a year of preparation, during which about one hundred contributions were solicited and from which eight would be published.

→ **1992:** Organization of a meeting of historians and design theorists on the theme "Design History or Design Studies" in Washington, DC (fifteen participants, by invitation). Victor criticized the design history research community, particularly the British, for its conservatism and lack of interest in the epistemological foundations of the discipline. He also called for the expansion of the geographic and thematic boundaries of a field deemed too narrow, in order to "question what has or has not been accomplished to establish the history of design as a productive academic intellectual enterprise". That is why he proposed to update the field by considering history as a branch, clearly important but

nevertheless ancillary, of design studies. Indeed, such a proposal did not have the good fortune to please Adrian Forty, the British author of a very commendable social history of design (*Objects of Desire*, 1986), who replied in the British *Journal of Design History* (Forty 1993) to the article in which Victor presented his argument (Margolin V. 1992). In 1995, the editorial board of *Design Issues* published a special issue dedicated to this lively debate (11, 1, Autumn 1995), which includes Victor's original article, Forty's answer, and Victor's reply to this answer, all augmented by six articles by confirmed historians. This debate, as Victor hoped, was a landmark in the field of design history. He will return to it in his own way several times in symposia and articles, but especially when he justified the historiographic approach adopted for the composition of his monumental *World History of Design*.

→ **1994:** The journal expanded to three issues per year and narrowed its editorial board (Richard Buchanan, Dennis Doordan, Victor Margolin), a stable team joined by Bruce Brown in 2006 (22, 4, Autumn 2006), the year of Victor's retirement, followed by Carlo DiSalvo in 2012 (28, 4, Autumn 2012). Previously housed at the University of Illinois at Chicago, it was now to be housed at Carnegie Mellon University in Pittsburgh (and MIT Press) and, since 2009, in the brand-new building designed by Frank Gehry, at Case Western Reserve University in Cleveland (25, 1, Winter 2009) where it followed Buchanan. The editorial, titled "To Begin Again" (10, 1, Spring 1994), which confirms that "the mix of history, criticism and theory had become a signature of *Design Issues*, accompanied by a commitment to pluralism [...] advanced through the interplay of contrasting perspectives and approaches represented among those who practice design as well as those who study it", then sets out a detailed description, not only of the desired authors, but also of the interested readers, summarizing the editorial board's evaluation criteria in this laconic formula: "Our primary test in selecting manuscripts is simply this: 'Why should anyone interested in design read this article?'". The answer, they state, must be "that it contributes to the understanding of the conception and planning of the human-made environment of graphic images and symbols, products, services and activities, or systems shaped by designers to support the activities of men and women in all walks of live", that is, as we sometimes say today, to ensure the habitability of their world. This is followed by a long list of intended issues and the guarantee that "the unity of the journal lies in the judgment of the editors that these articles contribute to the advancement of design, in practice or in study". But, they hasten to add, "Who shall judge our judgment? Time, and the reader". As one may conclude from this significant and decisive manifesto, there is no fundamental change of editorial line, except that from now on several thematic issues will be entrusted to guest editors.

→ **1995:** Publication of the second anthology (vols. 4–9), edited by Victor Margolin and Richard Buchanan and titled *The Idea of Design*, a set of twenty texts divided into three themes: Reflecting on Design, The Meaning of Products, Design and Culture (Margolin and Buchanan 1995).

Buchanan had just made, since his initial training in rhetoric, a remarkable entry into the academic world of design with his famous essay on wicked problems in design thinking (Buchanan 1992), quoted more than 3000 times since. It is in this essay, sketched on paper and delivered in 1990 at the first conference devoted in France to design research ("Recherches sur le design", UTC de Compiègne), that he distinguishes the four "areas" of increasing complexity of design objects, a taxonomy to which design research still refers to today: the signs of symbolic and visual communication, the material objects, the activities and organized services, the complex systems or environments for living, working, playing, and learning. In their introduction, both editors recall the principle of "radical systematic pluralism" that drives the journal and, referring in particular to John Dewey, assign design the task of helping to elucidate "what it means to be human in the contemporary world".

INTERMEDIATE PERIOD

→ **1997:** Victor returns to his doctoral thesis and to the corresponding fields of research (archives and interviews in Moscow, Berlin, Chicago) for the publication of *The Struggle for Utopia: Rodchenko, Lissitzky, Moholy-Nagy, 1917–1946.* He has certainly drawn lessons from such "disillusioned hopes", from these failed attempts to enrich and change the political-social situation through art and design.

→ **1998:** The journal is the main coordinator of the first international conference on doctoral studies in design ("Doctoral Education in Design") held at Ohio University in Columbus, the first in a series of biennial meetings on the same theme. Opened by a plenary conference by Buchanan, the event stages a series of nearly thirty speakers from around the world in front of a full room. This meeting and those that followed have long been the most active and controversial forum to clarify the nature of such a doctorate and to discuss the epistemological, methodological, praxeological, criteriological, and ethical issues it raises. At the end of the symposium, Victor kindly confirmed his invitation, transmitted to me two years earlier in Helsinki, to guest edit the first issue of the journal devoted to research in design (15, 2, Summer 1999), for which eight authors were selected and in the introduction of which the principles of "research *by* design" are specified, following the ceaselessly quoted and still discussed taxonomy proposed by Christopher Frayling in 1994 (Frayling 1993/94).

→ **1999:** Thematic issue "Design Research" where Victor and I discover the incompatibility of our respective visions of design research, one of the few disagreements of our otherwise friendly intellectual collaboration. Victor will return on many occasions to the issue of research and its associated theme of doctoral studies, to which he has devoted several articles, without ever changing, much less fundamentally revising, his original perspective. First sketched in a paper titled "The Multiple Tasks of Design Research" delivered in Helsinki in 1996 at the memorable

"No Guru No Method? Discussion on Art and Design Research" symposium (Margolin 1998a), his model is then specified and refined, indeed at Columbus in 1998 (Margolin 1998b), then in 2000 in "Building a Design Research Community" at the "Design Plus Research" symposium of the Politecnico di Milano (Margolin 2000), the following year in "Design Research and its Challenges" at the fourth EAD Conference in Aveiro (Margolin 2001). After an interlude devoted to other issues and activities, he resumes and persists in "Doctoral Education in Design: Problems and Prospects" (Margolin 2010a) and, the same year but now as historian, in the paper "Design Research: Towards a History" delivered at the DRS conference in Montreal (Margolin 2010b), and finally one last time in 2016 at the conference celebrating the 50th anniversary of the Design Research Society, held in Brighton: "Design Research: What is it? What is it for?" (Margolin 2016). His model is built on the radical distinction between the field of *design*, its practice and products, and the field of design *studies* (corresponding more or less to what is often called research *about* or *into* design). These two fields should, he maintains, always be so well distinguished that they would yield separate doctorate programs and even separate education and research institutions (schools, departments, faculties). Indeed, one recognizes here the practice/theory (or power/wisdom) polarity, the central, metaphysical, and highly controversial dichotomy that has occupied (at times poisoned) and still animates the field of design. Victor actually called for the creation of a department of Design Studies analogous to others such as Gender Studies or Afro-American Studies, separate from design schools, granting equivalent academic degrees. He also insisted that future practitioners trained in schools acquire some scholarship in design studies and become familiar with a body of literature that would be drawn, for example, from the one he provides in his already mentioned anthology *Design Discourse*, with the purpose of enlightening their practice as to its social, cultural, political, environmental, and spiritual consequences. Similarly, he proposed to distinguish the doctorate in design from the doctorate in design studies, as is the case for instance in many faculties of music (D. Mus. in composition and performance on one hand, Ph.D. in Music or Musicology on the other) and as do some schools or faculties of architecture (D. Arch. and Ph.D. in Architecture). Since such a model further accentuates the existing gap between practitioners and theorists, some design institutions strive to adopt an alternative approach to design research (sometimes called research *by* or *through* design, or *project-grounded*, or *practice-based* design research) (Chow 2010; Jonas 2014), in order, not merely to reconcile both poles but, somehow like the mythological androgynous figure, or faithful to Dewey's or Lewin's pragmatism, to cross-fertilize each other. Nonetheless, Victor and I tended to agree on the aim and purpose of design research, since he unequivocally held that "research must prove its value to those who train designers and produce design". In "Design research and its challenges" (Margolin 2001), he raises the question

of membership in the design research community, whose constitution he traces back to the creation in 1979 of the DRS organ, the journal *Design Studies*: "I believe it is more useful to consider membership in the community from a constructivist position than a taxonomic one. A taxonomic definition of design research is based on fixed categories while a constructivist definition is based on more pragmatic considerations. What problems do researchers address? Whom do they collaborate with and how are the results of their collaboration evaluated and disseminated?" Consequently, one may ask how the research field and approach thus considered will get academic recognition. Here it is: "The most fundamental objectives [of our research community] are to show how design research relates to work being done in other fields and to demonstrate how it might lead to an improvement of human welfare".

→ **2001:** The journal becomes a quarterly, proof of its success, without compromising its positioning and editorial policy.

→ **2002:** Publication of a major book, *The Politics of the Artificial*, an anthology of thirteen of Margolin's texts, mainly from the 1990s, most of which had been difficult to access (lectures, interventions, unpublished texts). The book is actually an attempt at a comprehensive intellectual biography, structured in two parts, "Design" and "Design Studies", preceded by an introduction of nine pages. Victor reveals the diverse influences that contributed to his vision of the world and of design. We learn that in his twenties he was thinking of conceiving a cosmology (actually, a cosmogony) that would have accounted for the different forces at work in the world, an undertaking "that no philosopher in the past had successfully done". The world thus envisaged, structured hierarchically in several levels, somewhat in the manner of Teilhard de Chardin, was the result of a "highly intuitive [process], developed from spontaneous images and spontaneous flashes rather than from logical deduction". Having realized the idea in the form of a structure composed of a cosmosphere, a biosphere and a sociosphere in constant interrelationships, and after having filled a thousand pages "which a few years later seemed totally incomprehensible to [him]", Victor finishes, "in an act of liberation", by throwing "the whole lot out, having decided that [his] goal was unachievable". One would be greatly mistaken to believe that such an effort leaves no trace in an intellectual biography, even several years later. Indeed, such metaphysical and existential questions very often continue to make their way into the inner world and feed one's inquiries as researcher and writer. That's exactly what Victor tells us: "I did not return to the three spheres, but I did begin to think about design as a vehicle that revealed human intentions for making the world". Such intellectual program, he adds, resonated with "St. Augustine's belief that 'by means of corporeal and temporal things we may comprehend the eternal and spiritual'. I was not then thinking consciously about how design provided evidence of spirituality or signs of what life in a world beyond might be like, but this did emerge later as a theme of my reflection, although I rarely foregrounded it in my

lectures or my essays". Rather astonishing, isn't it? Not if one returns, for instance, to the early writings of Walter Gropius when he was founding the Bauhaus. Indeed, his famous 1923 maxim "Art and Technology: A new Unity" may be interpreted as the more metaphysical and perennial quest for the unity between spirit and matter (Findeli 1999/2000). Notwithstanding, Victor had explicitly addressed the issue in 1995 in an essay (actually, the transcript of a lecture given in California in 1991) published in *Leonardo* (Margolin 1995), in which he calls for "a new sense of spirituality [that] can address the increasingly complex relations between the natural and the artificial and offer the basis for a new project for designers". Such a conviction is based on his commitment to what he called a "secular humanism" and on his personal spiritual practice which strongly influenced the way he presented the task of what will soon be called social design. In his texts he provides strong criticism of the postmodernism of Lyotard, Vattimo, Baudrillard, and others, convinced that, without one or more meta-narratives whose contours remain to be specified, the world would become uninhabitable. Spirituality is for him "a means to confront the nihilism of postmodern theory and the materialism of posthumanist discourse". Victor seeks "a transcendental source of accountability that can inform our judgment about how to set limits for design interventions", remaining firmly convinced that design and technology would have much to gain from being inspired by a spiritual meta-narrative. Accordingly, in his critique of neuroscience and cybertechnologies, he testifies that the practice "of a lived spirituality induces a fulfillment of human experience and thus leads to a firmer attitude to assimilate or resist new technologies". In a review published in the newly created Australian journal *Design Philosophy Papers* (Lopes 2003), the book was criticized for not being sufficiently political, despite what its title indicates. Not surprisingly, Victor struck back without delay (Margolin 2003) by opening the dialogue on the reasons why the current design practice hesitates to engage in projects with stronger ethical or social content. His diagnosis is followed by the following "solutions": more critical discourse, more voices advocating alternative models, less promotion of theorists and critics who simply reproduce or refine the dominant model and more risk-taking in academic programs, adding: "May those who feel concerned raise their hands!" In the same year, he co-authored, with his wife Sylvia—a doctor, social work practitioner, and educator— "A 'Social Model' of Design: Issues of Practice and Research" (Margolin and S. Margolin 2002), sometimes considered a groundbreaking programmatic text and conceptual founder of social design. It is, by the way, Victor's only co-authored essay, apart from the editorials of the journal and some introductions to collective works and anthologies. If the question of the social commitment of designers and the ethical foundations of design were not really new issues in his and other author's writings, it is in this text that both authors express themselves most explicitly. Beginning by observing that, unlike the ubiquitous "design for market",

"product design for social need" was poorly theorized, arguing that while "[Papanek's] efforts provided evidence that an alternative to product design for the market [was] possible, they had not led to a new model of social practice". While it is true, they continue, that there have been some interesting initiatives, particularly in design for development in poorer countries, "regarding the broader understanding of how design for social needs might be commissioned, supported, and implemented, little has been accomplished". As for the training of designers, the situation is hardly better since it is the business model that still largely dominates. The authors then point out that the field of environmental psychology (or ecopsychology) is concerned with the living conditions of people, especially vulnerable populations, within their environment, a topic leading to interdisciplinary research and projects involving architects, psychologists, social workers, occupational therapists, among others. But nothing like this, they regret, exists in product design, a good reason for proposing "a 'social model' of product design practice" and establishing a research agenda that "would examine and develop [such model] in the same way that comparable research has supported design for the market and environmental psychology". However, in a first step, they limit their proposal to the methodological dimension by discussing the possibility of considering and teaching the process of product design just like the intervention process is taught and practiced in social service. The authors do not wish to oppose commercial design and social work, which have distinct aims and objectives, but to consider them as poles of a spectrum where the division and arbitration between the economic purpose, on one hand, and the social purpose, on the other, are conditioned by the project owner, by the sponsors or by the stakeholders, in short by the situation. The theoretical framework of the field of social work is ecological and transactional and it is actually the complex dynamics of interaction between two systems that constitutes its core: the system of the client (the person, his relatives and his social network) and the system of the environment in which s/he evolves, the latter considered in its biological, psychological, cultural, social, natural, and physical/spatial dimensions. According to Sylvia and Victor Margolin, the focus of design is largely limited to the physical/spatial realm. They then specify the six steps of a general "problem-solving process" in social design, in which we may easily recognize the corresponding stages of a product design process: the engagement with the project ("commitment"), the diagnosis and problematization of the brief ("assessment"), the design hypotheses and their visual representation ("planning"), the materialization and development of the chosen concepts ("implementation"), the prototyping and testing phases ("evaluation"), the delivery and closure of the project ("termination"). Importantly, social work interventions are always carried out with the active and permanent participation of the parties concerned (family, marital, social, professional system, etc. of the client or beneficiary), in close collaboration with a multi-professional team of specialists.

The Margolins then ask the following question, while providing elements of an answer: how could the skills of a product designer integrate and enrich such a team and at what stages of the process would his/her contribution be most relevant and useful? The research agenda that the authors set out at the end of the article addresses the alleged lack of interest and support of the design community for social design services, due to "the lack of research to demonstrate what a designer can contribute to human welfare". In a later essay where he contrasts the field of contemporary art studies with that of design, evoking "the crisis of design" (Margolin 2013), especially in design related to the public sector, Victor writes that "officials in that sector have difficulty understanding design as an activity that is relevant to their concerns. They are similar to the public that still does not understand why Duchamp's urinal should be considered a work of art". Fortunately, one can observe with satisfaction today that things have changed rapidly in a decade and that much of that program has begun and will continue to be realized, both in practice and in design education. Although being very busy writing his monumental *World History of Design*, the publication of which has been announced (and repeatedly postponed), Victor will nevertheless return several times to the theme of social design, associating it with environmental issues and, more broadly, as Dewey had done in his own way, with the ethical-political commitment of designers and the future of democracy.

LAST PERIOD

→ **2006:** Victor retires from the University of Illinois at Chicago, which means he can now invest twice as much time, energy, and conviction into his activity and continue his work. In "Design, the Future, and the Human Spirit", an essay written that same year and published in the journal in 2007, he again strongly urges designers to commit to the future in a more direct way if they want to have a say in giving it shape. He then develops a broad, somewhat disjointed, diagnosis of the world situation in various fields (geopolitical, humanitarian, technological, medical, ethical, etc.), followed by a critical discussion of various scenario techniques used by futurologists, and by a conceptual return to the cosmological model of his early years, to conclude that it is up to us designers to give priority to the creation of an ethics of design "because the milieu of products and services in which we live does not enhance and affirm human potential and well-being, [a situation] for which we must hold designers at least partially accountable".

→ **2010:** Publication, by the editorial triumvirate, of the third anthology (if we exclude the one reserved exclusively to history, edited by Dennis Doordan in 1995) devoted to the last ten years of the journal, entitled *The Designed World. Images, Objects, Environments*, a choice of twenty-seven articles divided into three sections: Conceptualization, Manufacturing, Evaluation. It opens with the question

"What will be the future of design?", the latter to be understood at once as a professional practice, a subject of research, an opportunity for debate, and an object of evaluation. The journal having achieved, after a quarter of a century, a good cruising speed and undisputed recognition by the international design community, it seemed appropriate for the editorial board to return to the genesis and development of what constitutes its primary and fundamental topic, namely design studies. Three distinct historical periods are thus distinguished, characterized by the following main phenomena or trends. From the beginning of the twentieth century to 1985, the erasing of boundaries between history, theory and criticism; from 1985 to 1995, the entry of researchers from other disciplines into the field of design (philosophy, economics, social sciences, communication, management, technology); and from 1995 to 2010, the entry of design into other fields (philosophy, psychology, anthropology and material culture, management sciences, history), the latter phenomenon arising from the fact that design is a way of engaging knowledge in action, a mark that constitutes its epistemological specificity. The editors of the book think they have, by their selection, been able to show how much design had changed in a significant and meaningful way by becoming a much more "pervasive" practice. Victor does nevertheless deliver a more pessimistic picture of this change when, in the above-mentioned article (Margolin 2013), he speaks of a "crisis of design" occurring in the fields of practice, research, discourse (mediation), and education. His diagnosis is severe and, once again, the remedy lies in the construction "of a framework integrating in the most effective way the various voices, theories, arguments and assertions taking design as subject matter". As expected, such framework can be no other than the field of design studies. A similar turn, according to him, was provoked in art by analytical philosophers of art, who in the 60s declared that the search for an ontology of art was vain and pointless, preferring the laconic "art is what the art world recognizes as such". One should indeed be surprised by such a strong relativistic position, incompatible with Victor's call for a transcendental instance of previous years. Does this indicate a turn in his own worldview? Let's see.

→ **2012:** Under the thematic of "Good Society" or "Good City" or even "Citizen Designer", Victor pursues his project of a global policy of design. Whether in his Carnegie Mellon University lecture of April 2012 ("Democracy and Design in a Troubled World"), in his inaugural speech at the 2013 Cumulus Meeting in Kalmar ("The Good Society: An Action Frame for the 21st Century"), or in published essays (e.g. "The Good City: Design for Sustainability", 2015a; "Social Design: From Utopia to the Good Society", 2015b), Victor believes that it is now time, after a decade or so, for social design to widen its scope, initially dedicated to disadvantaged populations, to a more comprehensive "design for a new society". In order to achieve this, it is important for designers to adopt the point of view of the recipients of design, i.e., all of us who dwell in the artificial world conceived and constructed by designers,

before establishing what he calls an "action frame [or matrix]". By that he means the source of the values that guide the actions of designers as well as the source of the worldviews that justify their behavior, a source that Otto Scharmer, in his *Theory U*, considers the "blind spot" to be located in every project (Scharmer 2007). However, he observes, the current action frame, constrained by capitalist ideology, is no longer sustainable; it is necessary to invent a new one. In this regard, "it is not only a matter of changing values, he warns, it is necessary to change strategies [of action] as well" and for this, Victor proposes eight conditions and suggests institutions and design centers such as Cumulus or DESIS tackle the task. He maintains that it is their special skills and competences (the term "design thinking" is avoided, having become too mundane) that best equips designers to contribute to the design of such a "good society".

→ **2015:** Publication of the first two volumes of *World History of Design*, a major and long announced masterpiece on the specific approach of which he has repeatedly expressed and justified himself by resolutely departing from the proponents of mainstream historiography. The initiative, Victor recalls, emerged around 2000 when he "became intrigued with the idea of writing a world history of design". The book begins with the following question: "How does one write the history of a subject whose boundaries are indeterminate and whose subject matter has already been partially claimed by other disciplines" like archaeology, art history, linguistics, the history of techniques and crafts, material culture? Sharply disassociating himself from the traditional typological or formal distinctions that have entrenched the discipline in "narrow geographic and temporal borders", Victor insists on the interdisciplinary and globalized stance, as well as on the expanded periodicity (from prehistory to the present day) adopted in his narrative: "My own priority [...] is to show how human beings have conceived, planned, and produced the artifacts, whether material or even immaterial, that they have used to satisfy their needs and desires, and to organize and manage their lives". But, adds the citizen-Margolin, "there were also intellectual and political reasons to write a world history of design: I came to feel that it was unjust to perpetuate a history that did not integrate the accomplishments of peoples in parts of the world outside Europe and the United States into a narrative that treated design everywhere as valuable on its own terms rather than in terms of whether it measured up to what was being done in the Western industrialized countries". He concludes by stating that "the project has given [him] a vision of how design had developed in all parts of the world at all times" and that "[he] now believes that [he] understands the world a lot better for that".

→ **2017:** Open letter to the design community ("Stand Up for Democracy") co-written with Ezio Manzini urging the design community "to stand up, speak out, and act, [to] take a strong stand against the on-going de-democratization process, and support broader and richer opportunities for democracy and well-being" (Manzini and Margolin

2017). The convergence between design and democracy is reduced into the four figures of "design of", "design for", "design in" and "design as" democracy, a nod to Frayling's categories.[4] The platform "Design and Democracy" resulting from this letter was to build, through collective dialogue, an open body of knowledge by exploring the intersection between design and democracy. From such a perspective, the two authors invite members of the community to "write a personal statement of less than 500 words, make it public and circulate it in their networks, finally organize an event in the next few months". They are also asked to send their point of view in the form of a short video. Just before the pandemic broke out in 2020, nearly forty messages had been collected, among them Victor's message calling to resist the efforts of "nationalists" who attack democratic values, otherwise "the disruption of policies that favor well-being and justice would be a disaster for nations that hold these values or even embed them into their constitution". The video is not dated but obviously points to the situation that prevailed then in US policy.[5]

→ **2018:** The *Maryland Institute College of Art* in Baltimore awards Victor Margolin an Honorary Doctorate, which is certainly not the only distinction he has been awarded for his achievements as evidenced by his CV. The few written references I have chosen for this essay are but a sample of a record of nine books, more than sixty essays, about fifty book reviews and nearly a hundred lectures, speeches, keynotes, and papers around the world. But the Baltimore distinction is symbolic in several ways. It takes place in an institution that bills itself as the first in the United States to have launched a full program in social design (M.A. in Social Design, 2011), associated with the Center for Social Design, an institution dedicated to highlighting the contribution of design to social equity and justice, as well as inspiring and preparing the next generation of changemakers. It was also probably one of the last public appearances of Victor who, very affected by his accident, gave from his wheelchair and dressed in the Doctor's robe a very moving reception speech. Addressing the students of the program, he closed his speech with these words: "Your training has given you the skills and motivation to promote the values of equality, justice and beauty. By doing so, you will be able to make the world more livable and contribute to what I have called the 'good society'".

TO CONCLUDE

As Clive Dilnot points out in his obituary and biographical sketch, at the ceremony held in Washington DC on December 3, 2019 in memory of Victor Margolin, "by far the dominant term that writers and speakers used to try to capture him, at once as a person *and* as a scholar, was "generosity" (Dilnot 2020). To which he adds: enthusiasm and a sense of humor. It's all there: all those who have had the privilege and joy to cross his path will remember his generous hospitality, both intellectual and social, and his passion.

[4] *These categories update the ones Victor had already identified in his 2012 Carnegie Mellon University lecture: "Democracy and Design in a Troubled World." Video 1:23:46. https://vimeo.com/51090940)*

[5] *Victor's statement is published on the platform, along with other authors' (http://democracy-design. designpolicy.eu/statements/)*

Victor recounts having been marked by his one-year stay in pre-1968 Paris and by the stature of influential intellectuals, a figure on the absence of which so much is written today. Victor did embody this figure of the intellectual both in his style, his particular way of reading his texts on the microphone, and in his arguments. As a living encyclopedia, never short of references, he became the indispensable whistle-blower of the design community, and at times even its prophet. He always displayed an irreproachable rigor, while being endowed with an insatiable intellectual curiosity and a sincere active listening ability, animated by his sense of the human experience, whatever its form and nature.

Some criticized him for his lack of practical experience in design and his style, sometimes close to mere erudite and scholarly journalism. While it is true that, as a historian, his basic research material was mainly textual (and visual), he nevertheless showed a very attentive, deeply phenomenological, ability to observe and listen, a sample of which can be found in the thirty vignettes he published on his "Design-Altruism-Project" platform to which he had remained faithful since 2006.[6] These vignettes display a precious (and humorous) ethnographic material, illustrating the adventures of human dwellers of the artificial struggling with the difficult conditions of habitability of the contemporary world.

In order to stick more closely to the theme of this special issue of *Disegno*, it would have indeed been relevant to see if the above "intellectual and cultural legacy" of Victor Margolin actually achieved what he intended at the outset, i.e., to position his own journey in the continuity and influence of Moholy-Nagy's work in Chicago. There is no doubt that the intellectual, political, and pedagogical program that Moholy-Nagy presents in the first two chapters of his posthumous *Vision in Motion* (1947)—the topicality of which certainly still deserves to be meditated—find a strong resonance with Margolin's programmatic call to establish the new field of design studies. How could one not sense this resonance in Moholy-Nagy's often quoted (and often misunderstood) statements that in design, "not the product, but man, is the end in view", adding that it is "the whole man" that is required in the future since the task is "to see everything in relationships", in order to remember that "design is not a profession but an attitude"? To develop such an argument would arguably be the task of another, maybe future, essay.

Victor Margolin was a member of the editorial board of Disegno *since its inception in 2014.*

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Another interesting and comprehensive list is to be found here:
https://scholar.google.com/citations?user=DpXcgxEAAAAJ&hl=en. See also footnote 2.

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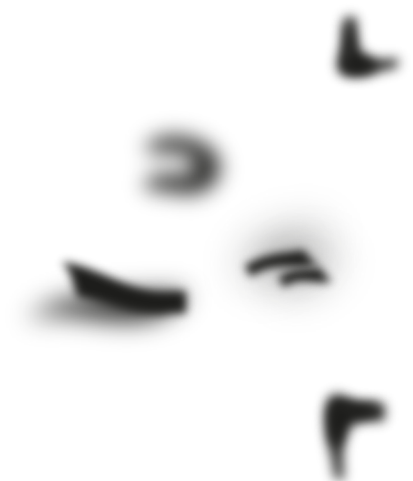
DESIGN FOR LIFE:
MOHOLY-NAGY'S HOLISTIC BLUEPRINT FOR SOCIAL DESIGN PEDAGOGY AND PRACTICE

Lee Davis and Bori Fehér

ABSTRACT

Design discourse is evolving in response to a confluence of global challenges: a pandemic; increasing economic disparities; systemic racism and social inequality; rising authoritarianism, nationalism and political division; and the urgency of the climate crisis. Designers are increasingly questioning their role and responsibility in the world and seeking opportunities to leverage their creative talents to address these intractable problems. At the center of this critique is also a fundamental reappraisal of the predominant design paradigm, the anthropocentric process of "human-centered design," promulgated since the mid-1950s (Dreyfuss 1955). A growing body of literature has emerged, questioning the human-centric perspective in design (Benyus 1997; Norman 2005; IDEO 2014; Fulton 2019; Escobar 2018; Boradkar 2015; Weaver 2019; Hess 2020). Concomitantly, the concept of "life-centered design" is gaining attention among design educators, students and practitioners. But to refer to the concept of life-centered design as "new" would be disingenuous. László Moholy-Nagy advocated for such a revolution a hundred years ago. From the early 1920s he called for a holistic, organic, life-centered design pedagogy, practice, and mindset. Much has been written about Moholy-Nagy's art, photography and teaching but relatively little attention has been given to his pioneering thinking, writing, and practice in "social design." Moholy-Nagy was also a pioneer in articulating a role for designers in addressing the critical economic, social, and environmental challenges of the time. As the founding director of the New Bauhaus and the Institute of Design in Chicago, he believed designers would need to move beyond the consumerist view in favor of "a better understanding of those principles which control all life"—individual life, social life, and life in the natural world. Driven by his own humble beginnings and rural upbringing, his personal trauma in war, the rise of Fascism and the onset of a second world war, his itinerant life across diverse cultural, artistic, natural, and theoretical influences, Moholy-Nagy evolved a blueprint for a vision of life-centered design that is as salient today as it was a century ago.

#holism, #design pedagogy, #life-centered design, #New Bauhaus, #social design

> *A designer trained to think with both penetration and scope will find solutions, not alone for problems arising in daily routine, or for development of better ways of production, but also for all problems of living and working together. There is design in family life, in labor relations, in city planning, in living together as civilized human beings. Ultimately all problems of design fuse into one great problem of "design for living."*
> (Moholy-Nagy, "School of Design," 2)

LIFE INFLUENCES

László Moholy-Nagy's conception of life-centered design evolved over time through his own process of self-actualization and exposure to a diverse variety of personal and professional life experiences, philosophies, and movements, much as he hoped would be the result of his teaching for his own students. It seems that his childhood upbringing in rural, southern Hungary had a lasting effect on how he saw and experienced the world around him and ultimately how he conceptualized a holistic, life-centered approach to his art, design, and teaching. He was born in the two-street village of Borsód, now Bácsborsód. In *Experiment in Totality*, Sibyl Moholy-Nagy indicates that from this early village life Moholy-Nagy developed a deep appreciation for authenticity and simplicity in people and in life. He "retained a deep suspicion of verbal smartness, and he delighted in straight earthly fun. 'Shaggy-Dog Stories'—of talking animals and dumb humans—were his favorites." (S. Moholy-Nagy 1950, 191)

According to his daughter Hattula, Moholy-Nagy's experience in World War I was also formative and crystallized his social idealism and sense of purpose in life. (H. Moholy-Nagy n.d.) In May 1919, upon returning to Budapest from the front, Moholy-Nagy wrote in his notebook about his social responsibility and the meaning of "biological happiness":

> *During the war, but more strongly even now, I feel my responsibility toward society. My conscience asks incessantly: is it right to become a painter in times of social revolution? May I claim for myself the privilege of art when all men are needed to solve the problems of sheer survival? […] I have finally learned to grasp what is biological happiness in its complete meaning. And I know now that*

if I unfold my best talents in the way suited best to them—if I try to grasp the meaning of this, my life, sincerely and thoroughly—then I'm doing right in becoming a painter. It is my gift to project my vitality, my building power, through light, color, form. I can give life *as a painter.* (S. Moholy-Nagy 1950, 12)

Moholy-Nagy was also heavily influenced by the social idealism and anti-capitalist ideals of the European Avant-Garde and Constructivists (Margolin 1997). According to Hattula, Moholy-Nagy was "strongly attracted to Constructivism for its social philosophy, which saw art and the artist as active agents in improving society." (H. Moholy-Nagy n. d.). After the First World War and Hungary's own revolutionary and political turmoil, Moholy-Nagy moved to Vienna where he joined the revolutionary *Ma* (Today) group of Hungarian avant-gardes. He wrote in *Ma* magazine in May 1922 of Constructivism's purity, that it was primordial, that it "expressed the pure form of nature". (S. Moholy-Nagy 1950, 19) In his November 1923 lecture to Bauhaus students, Moholy-Nagy further extolled its virtues: "The Constructivism that is our new dimension has no other purpose than *to participate in life*. It is essentially one with the spirit of evolution that created science, civilizations, and the systems that govern social life." (Quoted in S. Moholy-Nagy 1950, 197)

Moholy-Nagy's colleagues at the Bauhaus in Germany further shaped his thinking, teaching, and practice. In particular, the views of the principal founder, Walter Gropius, of a "new architecture" and "new community" served as the starting point from which Moholy-Nagy evolved his concept for a "new individuality" (Findeli 1991, 40). As Hattula Moholy-Nagy noted, the social and ecological aspects of the Bauhaus dovetailed nicely with her father's own social idealism and his biocentric views. (H. Moholy-Nagy n.d.) In his introductory design courses at the Bauhaus, Moholy-Nagy assigned biology textbooks to his students. He and his Bauhaus colleagues saw the study of nature, its dynamic and organic equilibrium, as central to the utopian society they envisioned. But Moholy-Nagy's thinking and teaching evolved even further in the New Bauhaus curriculum where he emphasized more and deeper scientific courses, including physical, social, and biological sciences (Findeli 1995, 40; S. Moholy-Nagy 1950, 152–53).

Moholy-Nagy was heavily influenced by the work of the prominent American philosopher, Darwinist, and social commentator, John Dewey, a leading proponent of "pragmatism." Dewey was a frequent contributor to *The New Republic* and *Nation*, and was politically active in the women's suffrage movement and the unionization of teachers. Moholy-Nagy and Dewey first met in 1938 and Dewey ultimately became a sponsor of the School of Design founded by the former in Chicago. Dewey argued that man is a "Life Creature", and that the nature of experience is determined by the essential conditions and contexts of life (Dewey 1943). His book *Art as Experience* was a compulsory textbook

at the school and, together with *Experience and Nature*, formed much of the theoretical foundation and justification of Moholy-Nagy's design pedagogy at the New Bauhaus.

Moholy-Nagy frequently cited German writer and statesman Johann Wolfgang von Goethe, particularly his works on natural history, *Metamorphosis of Plants* and *Theory of Colors*. Most influential for Moholy-Nagy was Goethe's *Naturphilosophie* that challenged the purely mechanical taxonomy of plant life. Goethe's departure from the traditional, rational approach of articulating and testing abstract scientific hypotheses, resonated with Moholy-Nagy. Goethe saw science as an art and valued direct experimentation, believing that the solution to a problem lay in the problem itself, not within the experimenter (Findeli 1995). He argued that knowledge was best gained by immersing oneself in the natural phenomena to be studied, with all available senses. The influence of Goethe's humanistic epistemology is evident in Moholy-Nagy's writing in *Vision in Motion* (1947b) and in his practice-based design pedagogy.

Moholy-Nagy's views were also heavily influenced by Austro-Hungarian botanist, microbiologist and theosopher Raoul Francé (Botar 2010). During the interwar period, Francé was an active author and director of the prestigious Biological Institute in Munich. As an advocate of "psychobiology," Francé argued in *Germs of Mind in Plants* (1905) that plants, like humans, have a psychic energy, and sense of life, and purpose. Francé is recognized today as the founder of bionics, biomimetics, and biomimicry, the emulation of the models, systems, and elements of nature for the purpose of solving human problems. His theory of *Biotechnik* aimed to study nature's forms, functions, and structures and envisioned a "futuristic utopia," based upon natural principles and processes, for the design of human-made artifacts, architecture, and city planning. Francé was "a pioneer of the conception of the eco-system itself, indeed of systems theory in general." (Botar 2004, 528) Francé's work appealed to Moholy-Nagy and his desire "to find a design method that would set human life in harmony with nature's economy" (Anker 2010, 16). After encountering Francé's texts in the early 1920s, Moholy-Nagy's own writings became increasingly more biocentric. He frequently referenced Francé, highlighting *Biotechnik* in *Vision in Motion*, and quoted from *Plants as Inventors*, (Francé [1920] 1923) including in *Design Potentialities* (Moholy-Nagy 1944).[1]

Moholy-Nagy and renowned Finnish architect and designer Alvar Aalto met in 1929 in Switzerland during the Congrès internationaux d'architecture moderne (CIAM), a highly influential movement committed to advancing the cause of architecture as a social art to improve the world. Moholy-Nagy and Aalto developed a lasting relationship (Samuel and Menin 2003). In 1931, Moholy-Nagy visited the Aaltos and they traveled together to Lapland where he took a series of photographs of the indigenous Sámi people (fig. 1).

[1] *On Francé and Moholy-Nagy see Edit Blaumann's "Bios, Lobsters, Penguins: Moholy-Nagy's Vitalist Thinking from Francé to London Zoo" in the present issue.—Eds.*

FIGURE 1. *Carlo Hubacher's image of Moholy-Nagy filming, 1931. gta Archives / ETH Zurich, Hans Hubacher und Grete Hubacher-Knokke.*

The two designers' biology-informed perspectives were closely aligned and heavily influenced one another (Charitonidou 2020). Just as Francé's *Biotechnik* was pivotal for Moholy-Nagy, Baltic German biologist Jakob von Uexküll's concept of *Umwelt* was formative in Aalto's biocentric view of the relationship between nature and architecture (Charitonidou 2020).

While these influences are in no way exhaustive, they represent some of the key life experiences, people, philosophies, and movements that shaped Moholy-Nagy's thinking. Moholy-Nagy was not unique in his embrace of any one of these influences individually. For example, the concept of "biocentrism" was widespread among his peers. The rejection of anthropocentrism for a monist, neo-vitalist, holist, and more ecological view of the world was not uncommon among intellectuals in the late-nineteenth and early-twentieth century, especially in Central Europe (Botar 2010). It was Moholy-Nagy's ability to integrate a multitude of diverse influences into a systemic, life-centered design vision that is distinctly unique.

LIFE-CENTERED DESIGN: A BLUEPRINT

Through his art and design, teaching, and writing, Moholy-Nagy mapped out a blueprint for a life-centered design philosophy, pedagogy, and practice. He was holistic and integrative in his view of the whole of

life, combining many interests and disciplines. He called for artists and designers to anchor their work "in the complex whole" (Moholy-Nagy 1947b, 42), to embrace the "complexity of life," to be "integrators," recognizing the interconnectedness of art, economics, technology, and the social and physical sciences, in order to design for life:

> *Ultimately all problems of design merge into one great problem: "design for life". In a healthy society this design for life will encourage every profession and vocation to play its part since the degree of relatedness in all their work gives to any civilization its quality.* (Moholy-Nagy 1947b, 42)

FIGURE 2. *Moholy-Nagy's holistic view of "design for life." Diagram by the authors.*

LIFE-CENTERED DESIGN
Based on the writing, teaching & practice of László Moholy-Nagy

UTOPIAN

SOCIO-ECOLOGICAL

New Vision

Discovery, Exploration

Futuristic, Aspirational

Solidarity, Collective action

Mindsets, attitudes

Humanistic, Holistic

Innovative, Experimental, Inventive

Self-discovery

Creative potentiality

Ethical - Moral

INDIVIDUAL

Integrated, Synthesized

Idealistic, Optimistic

Organic

Biological happiness

Biological functions

Biological System

Scientific, Technological

Creative, Artistic

Biomimetic

Social System

Spiritual

Natural System

Evolutionary, Intergenerational

Transformational, Revolutionary

Cultural System

Levels

1. Individual - *biological system*
2. Socio-Ecological - *societal & natural systems*
3. Utopian - *cultural transformation*

Diagram Design: Szabolcs Vatány

The above diagram (Fig. 2) endeavors to visually capture Moholy-Nagy's holistic view of "design for life", representing a synthesis of his vision across three, interconnected levels:

- ***individual level:*** At the heart of Moholy-Nagy's vision was the organic, biological self, the inner transformation and self-actualization of an individual's innate biological functions and latent aptitudes, intellectual and emotional powers, and creative potentialities. The development of an individual's attitudes, mindsets and senses were, he believed, a prerequisite to mastering "the whole of life".
- ***socio-ecological level:*** Moholy-Nagy saw the societal and natural systems as intertwined and inextricable. He advocated for a "new individuality" in design combining a greater sense of moral and social consciousness, responsibility, solidarity, and accountability. Simultaneously, he called for a more organic environmental and ecological perspective in design wherein man and nature live in harmony, health, and peace.
- ***utopian level:*** Moholy-Nagy envisioned design as an optimistic endeavor, constantly experimenting, exploring, and evolving new ideas. He was frustrated by the status quo. He was revolutionary and utopian in his views, calling for cultural, economic, and societal transformation, fundamentally new systems, policies, and ways of thinking and seeing.

Together these three levels represent Moholy-Nagy's holistic and systemic view of design as life-centered:

1) THE INDIVIDUAL: The Biological System

Moholy-Nagy was, according to Herbert Read, a "prophet of a new humanism" (Read 1935). In spring 1929, he was interviewed for *The Little Review* and is quoted as saying "I do not believe so much in art as in mankind. Every man reveals himself. Much of it is art." (Moholy-Nagy, quoted in Passuth 1985, 403–4) This supreme faith in man's ability to reveal himself in and through art (and design) represents the heartbeat of his life-centered design vision (S. Moholy-Nagy 1950):

> *From his biological being every man derives energies which he can develop into creative work.* Everyone is talented. *Every human being is open to sense impressions, to tone, color, touch, space experiences, etc. The structure of a life is predetermined in these sensibilities. One has to live "right" to retain the alertness of these native abilities.* (S. Moholy-Nagy 1950, 44)

In *The New Vision*, Moholy-Nagy used the term "biological" in reference to the laws of life that guarantee an individual's genuine and organic development (Moholy-Nagy 1933). He saw the individual as a whole biological organism, a system with five senses, all yearning for harmonious development. He believed that "children and very simple people" (S. Moholy-Nagy 1950, 71) are naturally attuned to and act more purely

according to the biological laws of feeling, sensation, and creative thought. "If you can extend the sensorial directness you had as a small child [...] into creative work with materials and relationships, you feel for the first time that you are a supreme individual." (S. Moholy-Nagy 1950, 167) But Moholy-Nagy believed that these primal human reactions and genuine biological functions were deformed and adulterated by societal pressures:

> *The creative human being knows, and suffers from the realization, that the deep values of life are being destroyed under pressure of moneymaking, competition, and trade mentality. He suffers from the purely material evaluation of his vitality, from the flattening out of his instincts, from the impairing of his biological balance.* (Kostelanetz 1970, 167)

He expressed dismay with the overemphasis on mass production, market demand, specialization, and purely vocational training in design education, claiming that these stunted students' organic development. He proposed instead a pedagogy that laid "the organic basis for a system of production whose focal point is man, and not profit interests." (Kostelanetz 1970, 167) The student designer as human, as a biological individual, "the man in *toto*, in all his vitality and potentiality," he said, "must become the measure of all educational approaches." (Moholy-Nagy 1946, 3)

In his 1946 article, "New Education: Organic Approach" in *Art and Industry*, Moholy-Nagy strongly centers "the supreme individual" at the heart of design education and practice (Moholy-Nagy 1946, 5). This philosophy of self-actualization and potentiality was represented in the School of Design's approach articulated in a 1941 brochure that stated "educational policy is based upon the belief that talent is potential in everyone and that the function of education is to uncover it, activize it and develop it." (School of Design Summer Session Brochure 1941). Through deep, guided self-analysis, Moholy-Nagy believed, students could regain their natural "human powers," evolve an "individual plan of life," and "achieve a natural balance of intellectual and emotional power." (Moholy Nagy 1947a, 17, 15) He argued for the education of attitudes, mindsets, and the senses:

> *I love to dabble. That is what made me what I am today. I was educated as a lawyer, but because I dared to dabble with plastics and wood and so on, I gained a wide experience. Almost every educator, if he is sincere, tries to influence students to try the things he himself missed in his life or in his education. I was educated at a university as a so-called academist. That is how I found out I had a right to educate the senses of people.* (Quoted in S. Moholy-Nagy 1950, 242)

While Moholy-Nagy placed the realization and potentiality of the individual at the heart of his pedagogical vision, he did not believe in the

individualistic, celebrity designer. Rather, he sought to place the individual "rightly within his community" and "in solidarity with the aims and requirements of a community." (S. Moholy-Nagy 1950) Moholy-Nagy believed that design education could foster a new individuality encouraging a sense of social responsibility and solidarity among designers and students. His philosophy and pedagogy advocated for economic, scientific and technological advancement not as goals in themselves but rather as means of achieving benefit for all and for the advancement of all life.

2) THE SOCIO-ECOLOGICAL: The Societal and Natural Systems

Moholy-Nagy saw societal and natural systems as intertwined and inextricable. Design was humanistic and humanitarian, he believed, and he called for greater humility among designers to submerge our egos into the collective whole. "Art has two faces, the biological and the social, the one toward the individual and the other toward the group." (Moholy-Nagy 1947b, 28) This "new individuality" he envisioned prioritized a greater sense of moral and social consciousness, responsibility, solidarity and accountability alongside a more organic environmental and ecological perspective in design. Man and nature should live in harmony. His references to the importance of "biology," therefore, had dual significance: first in the anthropocentric and humanistic sense of realizing the innate biological potentiality of human senses and improving the quality of collective human life and society; and second, in the ecological sense of designing according to the laws of nature wherein humans are a part of a wider ecosystem of life. As Peder Anker notes in *From Bauhaus to Ecohouse: A History of Ecological Design*, "Ecological designers were concerned about environmental problems in the household of nature as well as in the nature of households." (Anker 2010, 126)

Moholy-Nagy's overall aim "was to find a design method that would set human life in harmony with nature's economy as understood by Francé." (Anker 2010, 16) Moholy-Nagy had a strong mistrust of capitalism, driven by conspicuous consumption, industrialization, mass production, and popular culture (the penchant for fads, fashions, styles, and trends). Instead, he envisioned a new, more collective, organic, socio-economic system inspired by natural principles, form, and function.

Moholy-Nagy spoke strongly about humanity's abuse of nature, consumption, smoke polluted cities, and waste. (Moholy-Nagy 1947b, 55–56) He had a deep reverence for the environment, derived personal solace in nature, and elevated science and the study of nature in his design pedagogy and practice. He saw nature as "optimum" and as "the great designer," drawing creative inspiration from nature and from the simplicity of daily life. We know from his work and writing that nature served as a source of inspiration in his art and design, and a fundamental guiding principle of his work. (Fig. 3) The School of Design's summer session at the Somonauk school farm outside Chicago "became Moholy's greatest enjoyment," according to Sibyl Moholy-Nagy. "The abundant nature around us presented an unending variety of form and

function [...] When [the war] forced the discontinuation of the farm summer sessions in 1944, we felt we had lost one of the most joyfully rewarding aspects of our work" (S. Moholy-Nagy 1950,181–82). The pebbles, bones, bark, mushrooms, wasp nests, shells, and bird's eggs were "magnificent photographic material." She recounts too how, in 1940, during a cross-country drive, the frequent stops when "Moholy had spotted a 'photogenic' vista, and I melted patiently in 108 degrees heat while he recorded [...] every interrelationship of nature and technology." (S. Moholy-Nagy 1950, 180)

FIGURE 3. Fotogramm 157 by László Moholy-Nagy. Moholy-Nagy created flower photograms throughout his entire career, from Berlin to Weimar, Dessau, London, and Chicago. Courtesy of the Moholy-Nagy Estate.

"Scientific subjects" became an even more central element of the New Bauhaus pedagogy in Chicago. Moholy-Nagy added distinct courses and faculty in the life, physical and social sciences. Among these were classes in chemistry, geology and physics, and a biology faculty presenting a general overview of all living things, as well as the nervous system and sense perception of human beings. Moholy-Nagy also centered "Nature Study" in the new curriculum, drawing heavily from Francé, emphasizing the use of nature as a "constructional model" and

always looking for prototypes in nature. In *Vision in Motion*, he rues the use of the "cheap slogan" that "form follows function," claiming that it had lost its profound meaning in the capitalist system of consumption. But the statement was profound, he purported, if applied to phenomena occurring in nature, quoting Raoul Francé:

> "[E]very process has its necessary form which always results in functional forms" [...] Man has used the functional suggestions of nature innumerable times. Utensils, appliances, containers, tools are based upon his observation of nature. Nevertheless, "form follows function" translated into the human technology falls far short of the optimum which nature achieved in infinite applications. (Moholy-Nagy 1947b, 44)

Moholy-Nagy was deeply drawn to Francé's concept of *Biotechnik*, referencing it in *Vision in Motion* with examples of pliers designed to mimic the gripping function of human fingers, a bomber plane that "resembles a giant, terrifying insect", the ornament of a wrought iron gate mimicking leaves, structural principles of skyscrapers mimicking the stalk of a plant (Moholy-Nagy 1947b, 44–45), and the biotechnical adaptation of a natural shell for corrugation (53). In "Design Potentialities", he referred to biomimetic inspiration in manufacturing and "streamlining" mass production of everything from airplanes to cards, ships and highways. A *Saturday Evening Post* reporter also recounted Moholy-Nagy's story of a class assignment he gave to his students to build a new style oven that would utilize infrared lights to cook. After cooking a chicken in one of the student's prototypes, Moholy-Nagy discovered that the wishbone of the chicken "is a beautiful piece of engineering, and offers a lot of good ideas as to making joints in plywood." (Yoder 1945, 89)

Moholy-Nagy believed that art and science fell short of fully capturing the perfection of nature: "All these experts aim at the closest possible imitation [...] and they know they always fall short of their goal [...] We're back where realistic painters started in the Renaissance—the imitation of nature with inadequate means" (S. Moholy-Nagy 1950, 105). He expanded on this in *Vision in Motion*: "After a million years of trial and error, nature has produced well-functioning shapes, but human history is much too short to compete with nature's richness in creating functional forms." (Moholy-Nagy 1947b, 33)

But Moholy-Nagy also believed that designers should go beyond simply mimicking natural forms. He argued for a deeper understanding of natural processes and systems and for integrating and modeling these in the design of new products, technologies, and social systems. "In designing for human consumption, function is not only a demand for a limited mechanical task; 'function' also includes the fulfillment of biological, psychophysical, and sociological requirements." (Moholy-Nagy 1947b, 44) As Peder Anker argues in *From Bauhaus to Ecohouse*, Moholy-Nagy sought not only inspiration from nature to solve human problems but

also reconciliation between the artificial and natural that would "both enhance human life potential and create a harmonious environment" for both human and nonhuman biological needs. (Anker 2010, 16–17)

3) THE UTOPIAN: *The New Vision*

In *Experiment in Totality*, Sibyl Moholy-Nagy refers to Moholy-Nagy as a "utopian" and "vitalist" (S. Moholy-Nagy 1950, 12). Writer Robert M. Yoder, in a 1943 *Saturday Evening Post* article, declared: "He's crazy." (17) Whatever the label, Moholy-Nagy was frequently ahead of his time and, as a result, also frequently misunderstood. He believed society was "anywhere from fifty to a thousand years behind the times" and saw his purpose to "break through old attitudes by ingenious practice" (Yoder 1943, 89).

Moholy-Nagy emphasized "potentiality" in design, seeing design education as a "laboratory," an exploratory process to experiment, make new connections, discover new possibilities. He celebrated the new inventions, patents, methods, tools, applications, and products that emerged from faculty and student workshops in the New Bauhaus. He held a long-term, futuristic view of change, advocating for slow and organic growth of ideas "over generations." But Moholy-Nagy's vision was not simply of incremental change, he was revolutionary and utopian in his views.

Moholy-Nagy is most recognized for his utopian views in his fine art, photography, and film. As one of the founders of the *Neues Sehen (New Vision)* photography movement in the 1920s, Moholy-Nagy's experimentation with light, shadow, unexpected angles, photomontage, and composition, represented a completely new way of interpreting photographic subject matter. In 1935, he was commissioned to do special effects for the futuristic science fiction film *Things to Come*, by H.G. Wells. The film speculated on future events up to the year 2106, and Moholy-Nagy imagined fantastic technology of the Utopian city of the future: "Houses were no longer obstacles to, but receptacles of, man's natural life force, light. There were no walls, but skeletons of steel, screened with glass and plastic sheets […] a new reality rather than reality itself" (S. Moholy-Nagy 1950, 129). In *Experiment in Totality*, Sibyl Moholy-Nagy also recounts in a somewhat exalted tone a visit in 1935 between Moholy-Nagy and his friend Piet Mondrian, where they imagined a purer, future life amidst the agony and chaos of approaching war:

> *The two men on chairs were like seers […] The chaos of the finite world had been left far behind. They were living a "future life—more real, more pure; with needs more real, fulfilled more purely by the harmonious relations of plan, line, and color." Optimistic, and serenely confident, they created a macrocosmic order of the absolute rectangle, endowed with magic powers more potent than the pentagram of old.* (S. Moholy-Nagy 1950, 116)

This utopian perspective also manifested in Moholy-Nagy's design teaching and practice. Moholy-Nagy wrote of Utopia in *The New Vision*, expressing frustration with 180 years of "thinking about the problem, talking about it" and warning that only "partial solutions" and "partial rebellion" represents and addresses only the symptom (Moholy-Nagy 1933, 18). Instead, he called for "Utopians of genius" and "integrators" the likes of Leonardo da Vinci with "gigantic plans" who can synthesize all knowledge, integrate art, science, and technology, and join together through collective action, solidarity and "conscious collaboration" to lead to creative solutions. Sibyl Moholy-Nagy wrote of Moholy-Nagy's "vision of the totality of revolutionary design, and an unlimited willingness to work and to sacrifice for it." (S. Moholy-Nagy 1950, 22) Moholy-Nagy adopted botanist Raoul Francé's view of a "futuristic utopia" wherein the optimal functions of nature were applied to the development of new architecture, technology, and urban planning. Only then "humans would live in health and peace not only among themselves but also with the earth." (Anker 2010, 15)

CASES IN PRACTICE

The three cases in practice featured here represent examples of Moholy-Nagy's efforts in 1941–42 to contribute to the war effort and to address the bleak enrollment and financial state of the School of Design in Chicago. During the fall of 1941, more than half of the School of Design's students and teachers were conscripted into the armed services. Many school staff departed for factory jobs supporting the war effort and Moholy-Nagy moved quickly to develop a new strategy for the school to remain relevant, useful, and financially viable during wartime. The challenges he faced as the war effort widened also presented opportunities to demonstrate his vision of "designing for life." None of these cases alone fully demonstrates Moholy-Nagy's life-centered design blueprint in *toto*, but together they provide insights into how elements of it manifested through his practice and teaching.

1. Victory Springs
When the spring semester started at the School of Design in 1942, Moholy-Nagy faced growing shortages and prohibitively expensive studio materials, contracting enrollment, and a financial crisis. As Sibyl Moholy-Nagy recounted: "Plywood, photographic materials, metal, and paper rose in price and soon became unobtainable" (S. Moholy-Nagy 1950, 182). But these wartime austerity measures (especially the shortage of metal for civilian use) also led to opportunities for innovation in the school's workshops. Under Moholy-Nagy's leadership, students in the Product Design Workshop capitalized on their deep "knowledge of wood and its infinite adaptability" (S. Moholy-Nagy 1950, 183) to develop innovative wood products to replace war-

rationed metal, specifically for steel springs. Based on patents from the early 1800s and experimentation in the workshop, students developed twenty-four different prototypes made of thin strips of plywood that were then laminated and glued to create comfortable, rubberlike elasticity to mimic that of a metal box-spring. The resulting wood-spring design was named "Victory Spring" in reference both to the war effort and to the basic "V" shape of the spring, formed from hinging thin wood at alternate ends to form successive V's, folded upon each other in a zigzag fashion.

According to an October 1942 *Business Week* article, Moholy-Nagy claimed that the School of Design wooden spring design could simulate "any metal spring of any compression weight." ("Wooden Springs" Business Week October 31,1942, 35) He also referred to the technique in *Vision in Motion* as an example of his pedagogical approach to provide students with the "moral power" to improve upon and transform materials and technology to solve problems.

Tests on the wooden springs to mimic years of wear indicated they were "fully as durable as metal springs, and equally satisfactory in performance." ("Wooden Springs" 1942, 35) Unlike metal springs, they regained some of their elasticity and buoyancy after prolonged use. Moholy-Nagy featured the bed springs in *Vision in Motion* (1947b), and the springs' elasticity and comfort were further demonstrated in a photo that appeared in the July 1943 issue of the *Saturday Evening Post* (Yoder 1943), featuring the School of Design's janitor, Gus, taking a noon nap on the wooden springs prototype.

The wooden springs were also displayed at the July 1942 Chicago furniture show and ultimately patented by furniture manufacturing pioneer, The Seng Company. President Frank J. Seng provided $10,000 in working capital and created special machinery to produce the first nonmetal, all-wood bedspring. (S. Moholy-Nagy 1950). Moholy-Nagy worked with Seng to produce a simplified version of the spring design that was also less expensive to manufacture. But the economic viability of producing the wood-springs more widely proved difficult: "Unless someone bobs up with a design that permits production economies which as yet seems improbable, the cost differential is too great to enable wood to compete with wire, when metal again becomes available for civilian use." ("Wooden Springs" 1942, 36)

Despite the manufacturing limitations, the Victory Spring was recognized as ahead of its time. As Robert Yoder of the *Saturday Evening Post* put it:

It is Moholy-Nagy's idea that we are anywhere from fifty to a thousand years behind the times, and among the causes, he blames the habit of learning one field of endeavor, one profession or one craft and one alone. There are far too many specialists, he thinks. (Yoder 1943, 16–17)

2. Occupational Therapy Course

Moholy-Nagy had a life-long interest in occupational therapy, psychology, and the therapeutic value of art and design. In both *Malerei-Photographie-Film* and *The New Vision*, Moholy-Nagy explored the psychological blockages to an individual's biological creative potentiality. In *Vision in Motion*, he extolled the effectiveness of creative expression as a means of recovering a student's "all-embracing biological potency" (Moholy-Nagy 1947b, 72). Through a process of "self-testing" and guided exploration, he believed an individual could uncover her / his innate potentiality, "his 'best'". (73) In 1943, Moholy-Nagy saw an opportunity to apply this philosophy and process, which was at the heart of the New Bauhaus pedagogy, to the war effort in service of the rehabilitation of handicapped veterans. In his strategy memo "New Approach to Occupational Therapy," he emphasized the urgency and lasting need for rehabilitation (both physical and psychological) during the war and long after the armistice. (Moholy-Nagy "New Approach", 1)

In collaboration with numerous partners in medicine, psychiatry and occupational therapy, Moholy-Nagy scoped out a strategy for the School of Design to create a rehabilitation therapy process for army, navy and air force veterans and injured industrial workers. The series of seminars, symposia and classes offered at the School of Design would benefit not only veterans and workers themselves but also their doctors, nurses, therapists, and clinical administrators. He outlined a comprehensive strategy for the new program. The vision involved new techniques and types of occupational therapy hospitals and medical supervision alongside an experimental "laboratory school" and research department. Such a center would resemble a university campus more than a hospital (Moholy-Nagy 1943a). The laboratory would offer vocational guidance and occupational training for patients, and psychotherapy for patients and their therapists / teachers integrating the arts, science, and technology.

Moholy-Nagy's rehabilitation vision emphasized "conditioning to creativeness," involving experimentation with sensory experiences, starting with the skill of the fingers, the hands, the eye and the ear, and their coordination. This was accomplished through so-called "tactile charts" with purposefully organized textures (Moholy-Nagy "New Approach" 6) that Moholy-Nagy had tested at the School of Design with blind people (fig. 4)

Moholy-Nagy made appearances at various medical conventions to promote his vision for rehabilitation. But he met with resistance from institutions mired in a system of bureaucracy and tradition that relied on "charity" and "the old sentimentality toward the 'crippled'" (Moholy-Nagy 1943a, 3) as the means of rehabilitation:

> *[T]he appointed guardian angels of the crippled and the handicapped didn't like Moholy's ideas. They resented his efforts to take*

rehabilitation out of the grasp of charity […] Wounded veterans had to keep on listening to the benevolent ladies who considered basket-weaving or lamp-shade decorating adequate work for a mature man. (S. Moholy-Nagy 1950, 184–85)

Moholy-Nagy believed that occupational therapy needed to move beyond this "charity atmosphere" and sentimentality. (Moholy-Nagy "New Approach", 2) In his November 1943 article "Better Than Before", he challenged the status quo, positing that the existing system of rehabilitation focused on curing of symptoms rather than the elimination of causes:

> *The industrial age, focusing its interest in exploitation of nature's wealth and in production of goods, did not consider too thoroughly the biological, physiological, and psychological requirements of the individual, his need for a balanced program of work, recreation, and leisure […] The new aims for rehabilitation have to take into account this general situation.* (Moholy-Nagy 1943a, 3)

Moholy-Nagy argued that "new situations required new attitudes" and that a new plan and legislation for rehabilitation needed to be based upon "high social responsibility" and upon scientific and technological innovations, "contemporary thinking and practices, without traditional fixations." (Moholy-Nagy "New Approach", 2.) He believed that every person "has a variety of potential talents differing only in degree" (Moholy-Nagy 1943b) and a patient needed to be stimulated by

FIGURE 4. *Blind people testing tactile charts and hand sculptures at the School of Design in Chicago. Photographer unknown. Source: László Moholy-Nagy. 1943 "Better Than Before."* The Technology Review *46 (November): 45–48.*

"a well-rounded program in order to activate him to a full evaluation of his own situation." (Moholy-Nagy "New Approach", 2) Through a design-driven rehabilitation, Moholy-Nagy posited, a handicapped individual could not merely earn a livelihood but reincorporate "as a creative and responsible member into society" (Moholy-Nagy 1943a, 5), by awakening his "full productive capacity" and gaining a "self-reliance he never had before" (Moholy-Nagy 1943a, 7).

Moholy-Nagy's new vision for rehabilitation was considered too expensive by some critics. But he argued that his approach was not only "more humane" but more economical in the long run. "It would produce better, more balanced citizens with greater earning power and less welfare costs." (Moholy-Nagy "New Approach", 3) Moholy-Nagy was unable to realize his wider rehabilitation vision prior to his death but his ideas had a lasting influence. In 1944, for example, Victor D'Amico, director of the Department of Education at the Museum of Modern Art (MoMA), outlined a national strategy for using art to resocialize veterans at MoMA's new War Veterans' Art Center, inspired by Moholy-Nagy's rehabilitation pedagogy (Turner 2015).

3. Camouflage Workshop & Exhibition

On December 19, 1941 (only twelve days after the Japanese attack on Pearl Harbor), Moholy-Nagy was appointed to the Mayor's staff in charge of camouflage activities for the Chicago area. He was charged with helping conceal Chicago in case of an enemy aerial attack. Sibyl Moholy-Nagy recounted "long meetings with the local Office of Civilian Defense" (S. Moholy-Nagy 1950, 189). He took flights over the city in diverse weather conditions (S. Moholy-Nagy 1950, 183–84) to imagine creative ways to disguise buildings, conspicuous structures, and natural landmarks, to make them more difficult for enemy aircraft to recognize or use for navigation. Moholy-Nagy's attention and that of friend and fellow teacher György Kepes turned to exploring the psychology of light and color perception, and how various visual elements could be applied to camouflage techniques. In his 1946 article, "New Education: Organic Approach", Moholy-Nagy recalls finding inspiration for the camouflage project by adapting the principles of the European avant-gardists Mondrian, Malevich, and others. (Moholy-Nagy 1943, 6)

In January 1942, the School of Design became a certified school for camouflage personnel and, with sponsorship from the Office of Civilian Defense, Kepes led a Camouflage Workshop with students to produce and test a wide range of new camouflage techniques and concepts. The workshop served as both training for students, teachers, and volunteers in civilian and military camouflage techniques, as well as a laboratory to develop new camouflage ideas. "Camouflage is the art of deception", Kepes said in his opening lecture (Kepes 1942). He and Moholy-Nagy arranged a series of lectures covering topics ranging from: the fundamentals of visual perception; typical problems

in camouflage; study of camouflage inspiration from animals and natural landscape; and various camouflage applications (e.g., structural camouflage, surface coverings, smoke devices, and use of artificial light patterns) (Iguchi 2018).

In September 1942, Moholy-Nagy and Kepes co-wrote a series of articles in *Civilian Defense* magazine. In Part 3 of the series, entitled "Materials for the Camoufleur," they offered up techniques for putting camouflage into action, sharing their research and prototypes for disguising important structures and landmarks. In 1943, the pair also organized a well-received and widely promoted *Camouflage Exhibition* at the School of Design to display the workshop innovations (figs. 5–6).

The exhibition featured concepts for disguising airports; concealing the vast Lake Michigan with a simulated shoreline and floating islands; a technique for concealing a cylindrical target (like a silo or propane tank) using painted patterns that trick the eye from a distance (Campbell-Dollaghan 2013); and an application of disruptive painted patterns to urban buildings that would appear in enemy bombsights as a number of smaller innocuous objects rather than a single large structure of significance (S. Moholy-Nagy 1950, 183).

In 1943, Moholy-Nagy also produced a film, *Work of the Camouflage Class*, documenting examples of student work presented in the exhibition, including models of camouflaged buildings and aerial photographs of cities and residential complexes modified through abstract painting to appear invisible from the air. (Hiller 2019) The film features a bird's-eye view of a building that is painted with geometrical patterns

FIGURE 5. *School of Design student Barbara Jeanmaire presents at an exhibit of ideas generated in the camouflage course led by Moholy-Nagy and György Kepes. Photographer unknown. Courtesy of the University Archives and Special Collections, Paul V. Galvin Library, Illinois Institute of Technology*

FIGURE 6. *Moholy-Nagy's camouflage course at the School of Design generated numerous ideas for camouflage techniques inspired by animals and patterns in nature. Photographer unknown. Courtesy of the University Archives and Special Collections, Paul V. Galvin Library, Illinois Institute of Technology*

resembling streets on the ground, to make it impossible to identify the underlying structure of the building (fig. 6). This visual technique, using optical illusions to change human perception, was based on Gestalt psychology (Iguchi 2018).
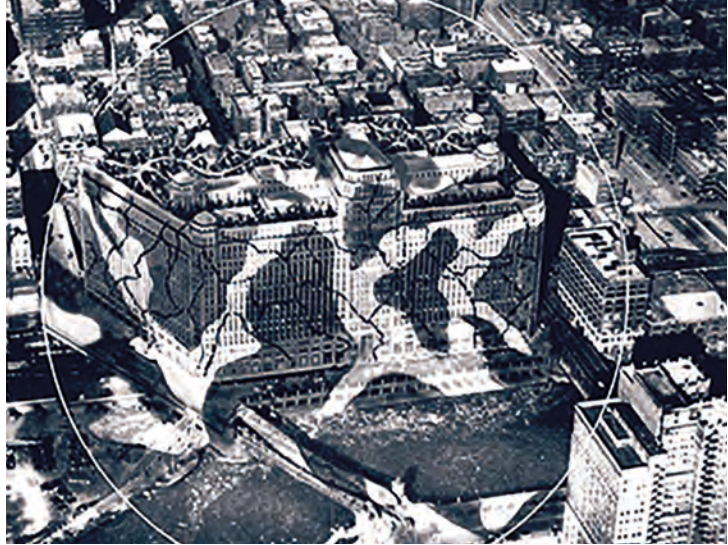
FIGURE 7. *Still from Moholy-Nagy's 1943 film* Work of the Camouflage Class. *Courtesy of the Moholy-Nagy Estate.*

Also included in the film are biomimetic camouflage patterns derived from the animal and plant world and applied to military vehicles and uniforms. The first article in Moholy-Nagy and Kepes's series for *Civilian Defense* magazine in June 1942 also showed examples of these nature-inspired camouflage patterns. In his 1944 book *Language of Vision*, Kepes references the nature-inspired camouflage innovations that emerged from the workshop: "The numerous optical devices which nature employs in the animal world to conceal animals from their enemies reveal the workings of this law [i.e., perceptual grouping] of visual organization." (Kepes 1945, 45)

These three cases alone do not fully demonstrate Moholy-Nagy's life-centered design blueprint. But collectively they do provide some insight into how elements of his life-centered vision manifested in his teaching and practice. All three cases were initiated by Moholy-Nagy to contribute to the war effort and are therefore strongly anchored within the socio-ecological level, aligned with his belief in a "new individuality where designers work in solidarity for the collective good (notwithstanding Moholy-Nagy's motivations were also somewhat self-serving as the School of Design's work in wartime was also intended to save the institution from decreasing enrollment and financial ruin). Individually, each case gives a snapshot of the life-centered vision as they traverse one or more of the three levels (individual, socio-ecological, and utopian) and one or more of the four systems (biological, social, natural, and cul-

tural). The Victory Springs project, for example, is more product-focused, involving transforming wood to mimic metal springs. The occupational therapy project proposed an entirely new approach to psychotherapy through sensory conditioning as well as a new proposal to transform the entire system of charity-based rehabilitation in the service of war veterans and injured workers. And the camouflage project utilized new visual techniques and technology, and psychology and biomimetic inspiration in service of the collective effort to deceive the enemy.

These individual cases also give insight into how Moholy-Nagy's broader vision for a "parliament of social design" might manifest in practice. In the closing of *Vision in Motion*, he proposes a laboratory campus of diverse experts and disciplines—including physics, chemistry, biology, botany, zoology, bacteriology, agriculture, and forestry alongside anthropology, economics, public health, political economy, and government, among others—"united and synthesized into a coherent purposeful unity focused on sociobiological aims" and working together in an "integrated system through cooperative action" to address a myriad of problems and to "prepare new, collective forms of cultural and social life for a coming generation." (Moholy-Nagy 1947b, 359, 361) This integrated laboratory system, he believed, "could serve as the intellectual trustee of a new age in finding a *new unity of purpose*; not a life of metaphysical haze but one based upon the biological justice to develop all creative capacities for individual and social fulfillment [...] It could translate Utopia into action." (361) What is unique about Moholy-Nagy's life-centered vision is not the individual inspirations or levels but rather the connections and integration he envisioned between and among them. This systemic view is what he saw as the differentiating opportunity for artists and designers:

The actual aim is sociobiological synthesis. This cannot be achieved without "laboratory experimentation [...] Although the 'research work' of the artist is rarely as 'systematic' as that of the scientist they both may deal with the whole of life, in terms of relationships, not of details. In fact, the artist today does so more consistently than the scientist, because with each of his works he faces the problem of the interrelated whole while only a few theoretical scientists are allowed this 'luxury' of a total vision." (Moholy-Nagy 1947b, 31)

CONCLUSION

As social design educators and practitioners look to the future for guidance on reimagining design education and practice to address the simultaneous crises of the global pandemic, a climate crisis, economic and racial inequities, and political divisiveness, the authors believe that looking to the past, and in particular to Moholy-Nagy's conception of "designing for life", provides a rich and relevant blueprint for the future. It also challenges us to question the anthropocentric view that domi-

nates design discourse, pedagogy, and practice today. The life-centered design vision outlined here was not presented by Moholy-Nagy himself in this exact form or with this exact terminology. But it draws directly from his own (and his family's) words, from his prolific writing and correspondence, from the myriad of influences that shaped his thinking, from his design teaching and pedagogy, and from cases of his work in practice. Collectively these reveal that Moholy-Nagy embraced life: the simplicity and beauty of living daily life, life as an individual and collective endeavor, the complexity of life, life as a guiding principle, life as creative inspiration, the majesty and diversity of all (not only human) life in nature. It reveals a holistic, integrated, and idealistic vision about the ethical and moral responsibility of designers to celebrate all life, to realize their own individual creative potentiality, to act with humility in solidarity with others and in alignment with the wisdom of nature. And it reveals a visionary approach, one that was ahead of its time with revolutionary, transformational, utopian ideas for new ways of thinking, doing, and seeing, and for reimagining social systems in harmony with nature.

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BIOS, LOBSTERS, PENGUINS:

MOHOLY-NAGY'S VITALIST THINKING FROM FRANCÉ TO LONDON ZOO

Edit Blaumann

ABSTRACT

In this essay I will examine how László Moholy-Nagy's relationship to biology evolved and how the beginnings of ecological design underlying the Bauhaus's modernity project were outlined in two movies shot during his London years. Two documentaries, the Lobsters *and* The New Architecture and the London Zoo *directly address the relation between animals and humans. The narrative of the documentaries, their camera work and the contemporary reception of them reveals a lot about the reconfiguration of Bauhaus ideology as a blueprint of ecological design during the emigration to the United States. We can trace Moholy-Nagy's approach to "design according to the laws of nature" back to the impact of Raoul Francé's concepts of* Biotechnik, *the notion of Bios and his monist beliefs, which were already present in his worldview during the Weimar years of the 1920s. The difference between the English edition of his design method and pedagogy book* New Vision (1938) *and the original* Von Material zu Architektur (1929) *clearly demonstrates the shift towards biological functionalism. Aiming to establish harmony between human life and the biological forces of nature and he asserted that a well-functioning biotic community is the precondition for a well-functioning human society. Even if he only indirectly argued for ecological protection in that early stage of ecological awareness, Moholy-Nagy wrote his name in the history of ecological design.*

#biocentrism, #biological functionalism, #ecological design, #vitalism, #London Zoo

In the work of the Bauhaus and Moholy-Nagy, biological thinking was never fully expressed in architecture as literal copying of nature, biomimicking, and curvilinear biomorphic forms and structures. Nevertheless, and as Oliver Botar has shown, through various influences biocentrism and the biofunctionalism permeated the thinking of all schools of the Bauhaus (Botar 2017, 17–51).[1] These tendencies were precursors of today's ecological thinking and design (Kallipoliti 2016). According to Peder Anker, besides the Central European influences of proto-environmentalism, Moholy-Nagy encountered different circles in London advocating environmental sensitivity after fleeing the Nazi's harassment. There, he created two documentaries directly linked to the animal kingdom, and which reflect his vitalist worldview. The search for biological harmony can be traced in his pedagogical program and in his writings. In this essay, I will track down the infiltration of biological thinking into Moholy-Nagy's life and oeuvre, and itspresence in his two London documentaries, *Lobsters* and *The New Architecture of the London Zoo*.

PROTO-ENVIRONMENTALISM

To have a clearer understanding of the early appearance of the environmental thought in the Bauhaus I will briefly trace its origins from the end of the nineteenth century until the 1920s when Moholy-Nagy first encounters it. This period is often described as the first stage of environmental thought, as proto-environmentalism or as "the awakening" (Jamison 2001, 82). As Bramwell argues, ecology has its roots in rational scientific movements as well as in the romantic anti-scientific, and anti-industrial movements. (Bramwell 1989, 37–63) Romanticism can also be understood as a reaction to the rationality of Enlightenment since romanticism "is widely associated with both the cult of nature and profound spirituality" (Bennett 1999, 124), and expresses enthusiasm for localism and the interest in vernacular culture. This is an area where scientific progress is accompanied by a moral and philosophical reconsideration of the relationship between man and nature (Bramwell 1989, 37–63). Here already, ecology has evolved from a life science into a political or ideological program.

[1] *Due to certain ties to National Socialism, this aspect has been largely overlooked by researchers. The school itself was decidedly on the anti-Nazi side, but there were some Nazis who supported the Bauhaus because it was a centre of biocentric thought (Botar 2017, 17). Besides Oliver Botar and Peder Anker only a few researchers recognize Moholy-Nagy's biocentrism, like Alain Findeli, who calls Moholy-Nagy's oeuvre a kind of organic, or vitalist functionalism (Findeli 1990, 10) or Andreas Haus, who was the first author to point out Moholy-Nagy's biocentrism, and who sees Moholy-Nagy shifting from a dialectical and revolutionary organicism towards one co-opted by John Dewey's concept of harmonious society (Haus 1983, 113–4). Alan Powers' recently published book* Bauhaus Goes West *also stresses the importance of Moholy-Nagy's biocentric worldview (Powers 2020).*

[2] *Monism rejects such dichotomies as mind vs. matter or reason vs. emotion, because they are not helpful in understanding complex systems as life. Monism is a framework for understanding the world as a single reality without the need for religion.*

ECOLOGY

The term "ecology" was coined by the German zoologist and philosopher Ernst Haeckel in 1866 to describe the "economies" of living forms (Bramwell 1989, 39). In his *Generelle Morphologie* (1866), he produces a revolutionary synthesis of Darwin's ideas with the German tradition of *Naturphilosophie* going back to Goethe and the progressive evolutionism of Lamarck. Beside his scientific career, Haeckel was an accomplished artist, and he developed an exquisitely detailed illustration method for his scientific findings. His work also provides an important link between ecology and aesthetic. His work directly informed the early manifestations of ecology in architecture, the art nouveau movement which made use of natural motifs and biological forms. His influence is clear in the form and the decoration of René Binet's Porte monumentale, which was designed for the 1900 Paris Exhibition. Binet was also influenced by Haeckel's Monism and cosmic synthesis unifying science, art, and religion (Proctor 2006, 148). Haeckel saw biology as a discipline that could be the foundation of a scientific religion (Haeckel, Breidbach, and Hartmann 1998, 24). In the early part of the twentieth century, Haeckel joined with others and formed the Monist League,[2] evidence he believed biological research is connected to political, social and spiritual questions. In his writings we can find collected the most important ecological themes of the epoch: naturalism: seeking truth in nature rather than human constructs and abstractions; vitalism: the idea of a life force; and holism: the belief that the universe and especially living nature should be understood in terms of interacting wholes that are more than the mere sum of elementary particles (Lewis 2019, 108–9). (Fig. 1)

BIOCENTRISM

Biozentrik (biocentric) is the German term that Botar adapted for the early twentieth century Central European worldview, which is based on Darwinism, neo-Lamarckism, biological determinism, Nietzscheanism, and a materialist romanticism of Nature, and which rejected anthropocentrism in favor of a monist, neo-vitalist, organicist/holist and ecological world view (Botar 1998, 7–9). Although the concepts and beliefs within these narratives are not identical, we can nevertheless recognize similarities between them. They all privilege biology as the source for the paradigmatic metaphor of science, society, and aesthetics, which we call biologism. Biologism is a consistent biological-based epistemology and even a psycho-biology that emphasizes the centrality of nature, life, and life-processes over culture. The above-mentioned narratives all share an anti-anthropocentric worldview; they believe in the self-directedness and unity of all life, in other words, in the cosmovital feeling of unity or *Vitalmystik* (vital-mysticism). They all accentuate change, diversity and variability in nature over permanence; and a concern for "whole-ness" as opposed to reduction (Botar 2017, 18).

FIGURE 1. *Plate no. 63 from the 1904 edition of Ernst Haeckel's* Kunstformen der Natur. *Leipzig: Verlag des Bibliographisches Instituts. Author's archive.*

The major German lifestyle and pedagogic movements of the epoch, such as the *Reformbewegung* or *Lebensreform*, the movement for life reform, or the (educational) reform movements were also permeated by the nature-centred ideas stemming from the abovementioned discourses. (Botar, 2016, 20)

The members of the Bauhaus were touched by these ubiquitous ideas of the time, and various threads link them to these movements. The school itself was more than the stronghold of rational, formalist, technocentric, anti-natural objective positivism. Biocentric attitudes—as well as esoteric ones during Itten's period—were inherent to it. Essential components of Biocentrism persisted throughout all the Bauhaus periods (this is clear in the case of some professors, such as, Oskar Schlemmer, Paul Klee, Wassily Kandinsky, Lothar Schreyer, and Herbert Bayer).

László Moholy-Nagy's first recorded encounter with Biocentrism was through his first wife Lucia Schulz (the future Lucia Moholy) who participated in the biocentric wing of the *Lebensreform*'s youth movement, until 1919. She and Moholy-Nagy spent summers together in the circles of prominent pedagogic leaders of the movement and made long term friendships with them. Arguably the most important source for Moholy-Nagy was his compatriot, Vienna-born, Budapest-raised biologist and popular philosopher Raoul (Rezső) Francé. After Haeckel's death in 1919, Francé became one of the most influential intellectuals professing a biologistic worldview in Central Europe. He invented the term *Biotechnik* (biotechnique), which we now call bionics or biomimetics. In his view, all technologies (natural and human) are based on the *Bios*, the world as the sum of our sensory perceptions. He suggested that humans should learn from the organic technology of nature and benefit from adapting it for their own purposes. He linked the biocentric attitude to techno-optimism. He saw technology as an integral part of nature and therefore as something that does not necessarily destroy it. In his popular book *Plants as Inventors* Francé methodically analyzed plants and the possibilities they offer to solve technical problems. He stressed that radical functionalism is innate in nature and its technologies: "All must have its best form, its 'optimum' which is also its nature at the same time [...] There is for everything, be it a concrete thing or a thought, only one form that corresponds to the nature of that thing." (Francé [1920] 1923, 11) (Fig. 2)

FIGURE 2. "Peridinae of the Sea as Natural Turbines" from page 30 of Raoul Francé' book Plants as Inventors. *1923 (1920) New York: Albert and Charles Boni. Author's archive.*
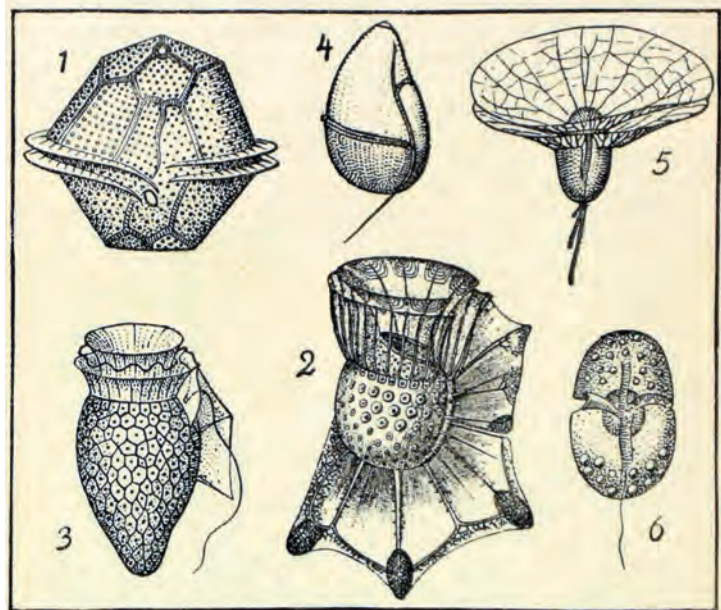
According to him, all forms of nature are organic because they are the product of selection (evolution) and a necessary consequence of the functions inherent to it, consequently, for any given biological problem there is a unique and optimal form that provides the solution.

Like El Lissitzky, Kurt Schwitters, Hannes Meyer, Werner Graef, Hans Richter, and Mies van der Rohe—all Berlin-based international constructivists of that time—Moholy-Nagy probably encountered Francé through the January 1923 publication of an excerpt from *The Plants as Inventors* in the art journal *Das Kunstblatt*.[3] Francé became a principal source of inspiration for biocentric Constructivism as Botar calls it (Botar 1998, iii). Francé's writings had a profound impact on Moholy-Nagy's understanding of function as the source of all form, shortly after Gropius hired him at the Bauhaus in the same year.

In Moholy-Nagy's *New Vision* we find traces of Francé's concept of *Bios*, "the message[s] of an inexhaustible cosmic energy he tried to decode" —"[h]e was Utopian, I a historian; he the vitalist and I the humanist" as Sibyl Moholy-Nagy recalled ([1950] 1969, xviii, xi).[4] His interest in technology and its creative possibilities has mostly been viewed as evidence of a purely technocentric approach. Even in 1996 Rainer Wick, the German art historian, states: "A half century after his death, the fascination with László Moholy-Nagy as the prototype of the progressive, avant-garde, techno-optimistic and media-optimistic artist is still unbroken." (Wick 1996, 61–62) But in light of *Bios* we may recognize Francé's influence on Moholy-Nagy's approach to technology and art:

> *Technical progress is a factor of life which develops organically. It stands in reciprocal relation to the increase of human beings in number. That is its organic justification [...] we can no longer think of life without such progress.* (Moholy-Nagy 1930, 12)

As for the question of *art*: similar to how Francé understands ecosystems as the optimal expression of interacting elements, Moholy-Nagy wrote that "art" is created when expression is at its optimum level, "when at its highest intensity it is rooted in biological law, purposeful, unambiguous, pure" (Moholy-Nagy [1925] 1969, 17). The appearance of the "biological law" marks the emergence of ecological thinking in Moholy-Nagy's approach to the world and to art, which will continue to evolve in the years to come. It is clear that his relationship with biology, which is henceforth linked to the notion of technology in the field of creation, continues to evolve. As a result of the above-mentioned influences, he moves step by step closer to the concept of ecology as we know it today, and to biodesign, which we need to incorporate into the design of today and tomorrow.

[3] *Francé never became an open supporter of the Bauhaus, but he did come into direct contact with it. In 1923 Francé not only visited the* Bauhaus Exhibition *but also spent an evening with Gropius, who explained to him the Bauhaus pedagogical principles. Francé had left Germany for Austria by 1924. (Botar, 2003–2004, 58).*

[4] *She also referred to her husband's sacrifice of his artistic career for his commitment to teaching, as dictated by "biological law," "because it was bios—the interaction of vital impulses, that stimulated man to work for his emotional fulfilment." (S. Moholy-Nagy, xviii)*
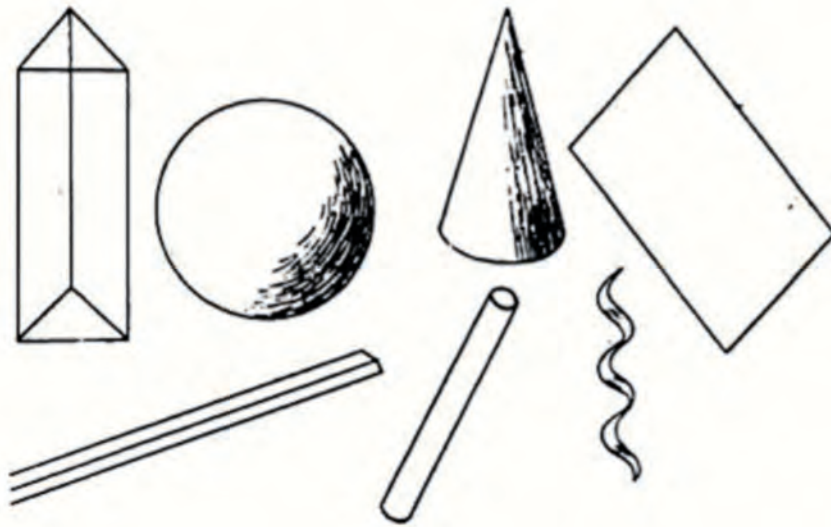
FIGURE 3. *Moholy-Nagy's drawing of the seven biotechnical elements after Francé: crystal, sphere, cone, plate, strip, rod, and spiral (screw) from page 46 of* The New Vision's *1947 edition (New York: Wittenborn, Schultz, Inc). Author's archive.*

Francé conceived of the world as an interlocking, interdependent ecosystem, aiming to find a balance, and what he called the "integrated harmony of nature" is a model that benefits both society and culture. Likewise find the same vitalist terminology in Moholy-Nagy, who seeks the unity of culture as opposed to its over-specialization:

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. (Moholy-Nagy [1927] 1969, 17).

Moholy-Nagy believed that while in the design of machines, man often accidentally found solutions that later turned out to have natural antecedents, it is still possible to create "organically functioning" works that have no such natural antecedents. The point is to follow the general principles of nature's methods, and this is the essence of the biotechnics (Steadman 1979, chap. 10) "In all fields of creation, workers are striving today to find purely functional solutions of a technical-biological kind: that is, to build up each piece of work solely from the elements which are required for its function." (Moholy-Nagy 1930, 54)

Moholy-Nagy also noted and illustrated how all processes in the world develop according to the following seven fundamental technical forms: the crystal, sphere, cone, plate, strip, rod, and spiral (screw),

making reference to the *Funktionsgesetz* (function law) aspect of the concept of *Biotechnik*: "The laws of the least resistance and economy of action force equal actions to lead to the same forms, and force all processes in the world to develop according to the law of the seven fundamental forms." (Francé [1920] 1923, 23) (Fig. 3) In the introduction to the American version of *The New Vision*, Moholy-Nagy inserted a new section entitled "Biological Needs".

> *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 […] The oncoming generation has to create a culture which […] strengthens the genuine biological function* (Moholy-Nagy 1938b, 13–14).

The importance of his ecological approach is further enhanced in this passage where the biological is equated with the basic laws of life. In addition, awareness and non-harm are emphasized. Moholy-Nagy also challenges future generations to create a healthy culture focused on biological functions.

THE LONDON YEARS

In this new introduction, the biological and related terms occur much more frequently than in the previous versions. After fleeing Germany to escape the Nazi harassment and before arriving in the United States, Gropius considered Britain as a potential new home for the school and having the best prospects for work. Gropius, Moholy-Nagy, Breuer and Bayer tried to re-establish the school in London between 1934 and 1937. They settled in the leafy London borough of Hampstead, at the time the heart of the avant-garde community of artists and intellectuals. Businessman Jack Pritchard offered his newly built "Lawn Road Flats" (later known as the "Isokon Flats") as a temporary, rent-free residence for them and a common room for the faculty. Gropius described the place as "a socially and technically exciting housing laboratory" where tenants, mainly intellectuals and designers, often gathered. Coates, the architect of the building, was at the heart of these gatherings, and he and other colleagues soon formed the MARS Group (Modern Architecture Research Group). Moholy-Nagy began collaborating with them on the design of the influential MARS exhibition of 1938 (Carullo 2017). In the exhibition's manifesto, MARS proclaimed environmental sensitivity: "There must be no antagonism between architecture and its natural setting" and "the architecture of the house embraces the garden. House and garden coalesce, a single unit in the landscape." Some of these architects were introduced to Bauhaus research methods through the English-language publication of *Von Material zu Arkitektur*, published in New York in 1930 under the title

The New Vision (Summerson 1957, 308). At the time American books did not cross the ocean as easily as they do today, as the journal *Shelf Appeal* noted "instructors and lecturers in Art Schools in this country have little likelihood of seeing it" (Anon 1935, 38). In late 1938, the publishing company Faber & Faber purchased 520 sets of printed pages from the American edition, and the book was published under its imprint the following spring. It was advertised as the first in a series of "New Bauhaus Books", but subsequent editions, and therefore more information about Moholy-Nagy's "New Bauhaus" in Chicago, never appeared (Powers 2020). In the journal *Scrutiny*, Storm Jameson wrote an in-depth and generally appreciative review (Jameson 1939, 81–88).

During his stay in London, Gropius often gave lectures and speeches, Moholy-Nagy less often. Leslie Martin invited Moholy-Nagy to lecture at his newly founded school of architecture in Hull, but at the time Martin had only four students and the location was far from the busy capital (Carolin and Dannatt 1996, 66). In *The New Vision*, the English audience encountered a focus on design that sought to harmonize the artificial and the natural such that human life would be enhanced while a balanced environment is maintained. This would have resonated with the values and ideas promoted by contemporary English environmentalists too. Their basic premise was that old-fashioned housing reinforces the unfortunate dualism between man and nature, while modern architecture promises to reunite man and nature through healthy living. It is also worth noting that the English botanist A. G. Tansley coined the word "ecosystem" in 1935, which represented a subtle but significant shift in thinking about the interaction of individual life forms.

It was also at this time that the crossover between scientists, creative artists and humanities scholars became fashionable. Peder Anker describes Gropius' large farewell party in 1937, before leaving for Harvard in the US (also the gathering of Bauhaus émigrés and British environmentalists, hosted by evolutionary biologist and zoologist Julian Huxley) as one of the first attempts to establish an environmental architecture (Anker 2010, 9). However, while Anker identifies some interesting relationships, there is little evidence in Sibyl Moholy-Nagy's biography of her husband that he was especially excited by the question (Lewis 2019, 109).

LONDON ZOO

Nevertheless, these connections lead Moholy-Nagy to participate in a movie connected to ecological issues and to make two shorts in which his biocentric thinking is evident. For the science fiction movie, *Things to Come*, based on H. G. Wells' vision of the future of architecture and the ecological possibilities for survival of the human race, Moholy-Nagy created some special effects, which were finally left out of the movie. Wells's chief source of inspiration regarding ecology was Julian Huxley, who was the director of London Zoo at that time. Huxley was also

FIGURE 4. *Lubetkin's Penguin Pool. Postcard (cropped), author's archive. Original photograph F. W. Bond.*
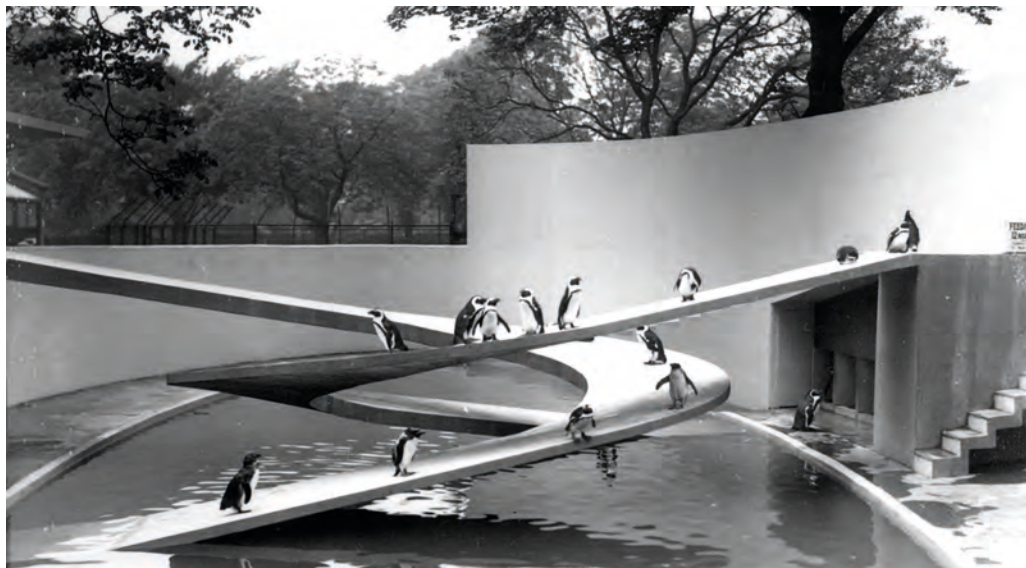
instrumental in bringing Berthold Lubetkin to design the new London Zoo buildings. Huxley and his colleagues used constructivist design to promote the idea behind Darwin's thesis, the evolution of the human species from the animal kingdom. The new zoo design was seen as an evolution from the animal house to the Bauhaus, offering health, well-being and peaceful relationships within humans and the natural worlds. Chalmers Mitchell, who served as secretary of the London Zoological Society from 1903 to 1935, saw evolutionary biology as a cooperative model of social behavior in which peaceful coexistence was the best survival strategy in both the human and animal worlds. He believed that all species could thrive and prosper in a peaceful and healthy environment. He argued that penguins are "the most unlikely animals seem to thrive under what would seem the most unnatural conditions," provided that they had "freedom from enemies, regular food and general hygiene." (Mitchell 1936, 362) The press also echoed this idea. *The Times* wrote of the penguin pool that "architectural unity and pleasing effect, and at the same time be thoroughly hygienic, give the birds what they require, and afford ample space for visitors." (Anon 1934, 7.) (Fig. 4)

The precursor to the evolutionary model was the mechanistic view of nature popularized by Haldane and Huxley in their book *Animal Biology*. (Haldane and Huxley 1927) Huxley saw the success of human society in a new, mechanistic and mathematical approach to biology, an orderly, mathematically inspired master plan that coincided with the architectural patterns of the Bauhaus. The geometric order of the zoo buildings is a visual representation of this turnaround: the mathematical approach to biology. The new Bauhaus dwellings thus reflected this new understanding of the order of nature (Huxley 1933, 85–86). The London Zoo has become a showroom for modernist design. It was also

meant to demonstrate that this type of architecture could provide more healthy homes with better air and more light for the English poor (Hurt 1939, 32). While still a place of pilgrimage for admirers of modernist architecture, the ensemble of buildings has been frequently and rightly criticized for showcasing modernist architecture to the masses rather than providing a healthy environment for animals and for not being particularly concerned with harmony between humans and animals (Anker 2010, 18–29).

In 1936, Moholy-Nagy was commissioned by the Museum of Modern Art in New York to make a documentary about this utopian piece of avant-garde architecture. Critical reception of the film *The New Architecture of the London Zoo* was tepid. As Botar declared, it is "cinematically among his least interesting" works. "Despite the experimental nature of the buildings, the film is rather anaemic." (Botar 2008, 462) Lubetkin also was clearly unsatisfied with Moholy-Nagy's work, having expected a much more epic documentation given his oeuvre's revolutionary potential. Even in 1971 Lubetkin still remembered it disparagingly: "I protested against such a naturalistic approach." (Senter 1975, 103). Although Moholy-Nagy used mostly pure, geometric shapes in artistic practice up to that point, because he believed they were the basic building blocks of nature, in this movie he turned to much more organic visual language. Lubetkin also reflected on this philosophical tension between his geometric or mechanistic biology, on which his design was based, and on the vitalism of Moholy-Nagy's film. However, some moments, such as the abstract camera movement and the dutch tilt which reveal the double helix of the famous Penguin Pond and display the possibility of an alliance between modernist architecture and modernist film-making practices. Lubetkin's strategy for presenting the animals was derived from theatre, or more precisely, the Russian circus heritage. In defense of his geometric approach he argued that "there are two possible methods of approach to the problem of zoo design; the first, which may be called the 'naturalistic' method, is typified in the Hamburg and Paris zoos, where an attempt is made, as far as possible, to reproduce the natural habitat of each animal; the second approach, which for want of a better word, we may call the 'geometric,' consists of designing architectural settings for the animals in such a way as to present them dramatically to the public, in an atmosphere comparable to that of a circus." (Allan 2012, 199) The strange camera angles, the abrupt cuts, shaky, handheld camera motions of Moholy-Nagy come across as an attempt to escape from the peek-a-boo stage conventions implied in Lubetkin's forms.

In this movie Moholy-Nagy shows the Zoo and its visitors from the animals' perspective too: looking sharply down from a roof at the human spectators, followed by a quick counter-shot looking at an African penguin high up on the canapé. The shifts between human and animal gaze express different biological experiences of space. Moholy-Nagy's narrative—that human vision evolves into something much greater

through photographic technology—is disrupted by the captive zoo animals' way of seeing (Hornsey, 2016). It destabilizes the hierarchy of species, encouraging us to step out of the anthropocentric norm. Before this film, Moholy-Nagy had frequently used perspectives other than the typical human one, achieved through the use of non-human eye level camera views, the "bird's-eye" or the "worm's-eye" perspective to show an object from above and below. Although, in 1936, he realized that this way of showing has the risk of becoming a mere stylistic play (Moholy-Nagy 1936, 18), barely a year later, a brand new metaphor: the "camera unleashed" gave new impetus to his quest for perceptual evolution (Moholy-Nagy 1937a, 25–28). The camera/eye is set free like a beast previously on a leash. This unpredictability and freedom of Moholy-Nagy's camera movement through this fifteen-minute, silent movie destabilizes the spectacular statement of Lubetkin's architectural framework, but fits well in Moholy-Nagy's worldview in which humans share space with nature. As he expresses this view through the posthumously published *Vision in Motion* which is "an attempt to add to the politico-social a biological 'bill of rights' for people to live in harmony with nature" (Moholy-Nagy 1947, 12). This idea is practically the foundation of more recent ecological thinking, for example, the idea of a natural contract proposed by Michel Serres (1990) half a century later, or in Donna Haraway's (2007) concept of multi-species coexistence.

LOBSTERS

In the November 1935 edition of the magazine *Shelf Appeal* there is a profile of Moholy-Nagy in which the following line on his current job can be found: "If you had been at Littlehampton towards the end of this summer, you might have seen one of the town's famous lobster boats setting out with an extra cargo—a man and motion-picture camera.'' (Anon 1935, 38) He worked on a movie at that time that was released in 1936 under the title *In the Cradle of the Deep*, later called *Lobsters*. This fifteen-minute nature film was co-created with John Mathias, a wealthy amateur, through his company Bury Films. He co-produced it with Moholy-Nagy's fellow Hungarian émigré Alexander Korda who also produced of the abovementioned *Things to Come*. *Lobster* is about the life cycle of the crustacean from baby to old age and beyond to the table of a seafood restaurant, and the Littlehampton fisherman's struggle to find them. The film style is analogous to The Private *Life of the Gannets*, a nature documentary made for London Films by Julian Huxley in 1934. Although its mood is closer to the French surrealist filmmaker Jean Painlevé's *Les Oursins* (1929). The result is an odd mix of the styles of Painlevé's nature study and the General Post Office Film Unit industry celebration.

Moholy-Nagy spent several weeks getting to know the fishermen and their families, who had a long history of fishing for lobsters. He filmed their work both at the harbor and out at sea which may have

[5] *In medical jargon biomimicry is bionics. The term bionics was first used by an American physician, Dr Jack E. Steele, in 1958. The term biomimicry appeared in 1982 and it was popularized by the scientist and author Janine Benyus in her 1997 book* Biomimicry: Innovation Inspired by Nature. *(1997) It means "a new discipline that studies models of nature and then imitates (or uses as a starting point) their structure and processes in solving human problems". Benyus' basic principle was that it is therefore worth learning from nature, because by exploiting its structural and functional regularities, human goals can be achieved with the least possible energy, and industry can become sustainable. The practical application of the principles of biomimicry goes back further: the Chinese used it 3000 years ago when they tried to produce artificial silk, and Leonardo used it to design flying structures by modelling the flight of birds, to name but a few examples.*

been a struggle for Moholy-Nagy who was prone to seasickness. The final film features members of the Burtenshaw and Kemp families, who fished the waters off Littlehampton, West Sussex since the 1700s. A member of the Burtenshaw family, Peter, who appeared as a tiny boy in the movie, is still alive. He remembers the everyday struggle of the fishermen: "There was no typical day, because every day was different. Sometimes you got caught out and you had to run for shelter […] generally it was hard" (Benette 2010). Moholy-Nagy uses an artificial storm, created with the help of film effects, to show how they are at the mercy of nature, never able to count on a good catch. Burtenshaw also mentions the importance of local communities: "I think it has made me realise how important local industry is. Everyday tasks become mundane until [this industry is] not there anymore." (Benette 2010) The introduction shows Moholy-Nagy's interest in local craft processes, he describes the fishermen's work in detail, how they make lobster pots from willow twigs and how they bait. The previously mentioned worm's-eye view, however, seems to place the viewer in a trap, giving him/her the opportunity to empathize with the lobster, who looks up at the fishermen through the cord. During the rest of the movie, Moholy-Nagy switches back and forth between the human and animal perspectives.

After the introduction, the film takes the form of a classic nature documentary of the time. We observe the lobster through a scientific lens. The film shows incredible underwater footage of lobsters in their "natural" habitat, filmed at Marine Biology Station at Port Erin on the Isle of Man (Powers 2020). *Lobsters* includes novel footage of a lobster casting its shell. Beside its relevance in terms of pioneering scientific observation, the film thus showed designers and architects how they could learn about form and function by observing animals like lobsters. A year later, Moholy-Nagy mentions the horseshoe crab, the lobster's marine neighbor, as a possible biofunctional inspiration in an article in American Architect and Architecture: a "prehistoric animal shell is constructed in such a wonderful way that we could immediately adapt it to a fine bakelite or other molded plastic form" (Moholy-Nagy 1937, 23). Moholy-Nagy's idea of using nature's forms in design in this way is one possible method of a current biodesign toolkit. His observation foreshadows the methodology of biomimicry[5], the translation of solutions developed in nature into design practice, which became a discipline in its own right in the decades since.

In addition to presenting the fishermen as the protagonists of the narrative, allowing the viewer to be part of their lives, and rooting for them to land safely, Moholy-Nagy often portrayed the lobsters as personified and shaped, anthropomorphized characters to make them more endearing to evoke sympathy and identification. Ultimately, he ends the film with the victory of the lobster. In the final frames, the lobster physically tears through the back of the restaurant menu, managing to escape and get away (Schouela 2019, 156–68). Yet, in his final view, lobsters are characters, or as we say nowadays, non-human

persons, as well as goods that help local communities survive. Focusing on localism and local economies is the basic idea of sustainability, according to contemporary ecologists. Treating animals and other non-human persons like this is a flagship concept of Anthropocene criticism or rather of a "Chthulucene" world view which draws attention to the need to achieve inter-species equity and multispecies ecojustice (Haraway 2015, 159–160). So, *Lobsters* can be also seen as an old school, post-Anthropocene movie.

CONCLUSION

Through his journey from Weimar to the United States Moholy-Nagy was one of the clearest advocates of biocentrism and the vitalist worldview. He stressed the importance of understanding "nature as a constructional model" (Moholy-Nagy 1930, 29) as a new kind of functionality. He developed his social responsibility program accordingly, with the aim of providing communities with informed planning that supports human and non-human biological needs. "The thesis on which the Bauhaus was built," he argued in the introduction to the first of series of monograph published by the Institute of Design, Chicago "is that art and architecture which fail to serve for the betterment of our environment are socially destructive by aggravating instead of healing the ills of an inequitable social system." (Gropius 1945). His pedagogic program is based on Francé's conception of *Bios* which relies on instinctive behavior, a pedagogy of maximum usage of our biological sensory capacities and their expansion. In his paper "Education and the Bauhaus", he presented the problem of the "whole man" in the context of the limits of technology:

> *Man, who if he but works from his biological center, when faced with all the material things of life, can again take his position with instinctive sureness, who does not allow himself to be intimidated by industry, the rush-tempo, external influences of an often misunderstood "machine-culture."* (Moholy-Nagy 1938a, 26)

He proposed instead a bio-technical utopia, an "ideal plane, where biological and technical functions meet", and he imagined a more balanced humanity living in harmony with its environment, rather than with technology occupying center stage (Moholy-Nagy [1927] 1969, 18). Learning from nature was thus at the heart of the Bauhaus program and the New Bauhaus program, which aimed to meet human biological and psychological needs by combining art, science, and technology. This is clearly in line with the objectives of contemporary ecological design and can arguably be seen as its precursor.

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"VISION IN MOTION":

LÁSZLÓ MOHOLY-NAGY AND THE GENESIS OF THE VISUAL BOOK

Sofia Leal Rodrigues

ABSTRACT

This essay aims to analyze the ways in which László Moholy-Nagy's concepts of "new typography" and "typophoto" were essential to the creation of a new typology of publications: visual books, which have a strong image component, resulting from the popularization of photography and cinema. New typography was defined in 1923 by László Moholy-Nagy in a short text for the catalog of the Bauhaus exhibition Staatliches Bauhaus in Weimar 1919–1923. *New typography resulted from a new graphical orientation by Bauhaus, influenced by the ideology of several avant-garde movements, such as De Stijl and Russian Constructivism, that celebrated simplification, geometrization and the advantages of modern technology to construct a visual language that could communicate clearly and in a universal manner. In Moholy-Nagy's text, new typography called for an analysis of the relation between form and content through the collapsing of the "classic model" (the "old typography") and the objective use of photography. In 1925, Moholy-Nagy introduced the notion of typophoto in* Painting, Photography, Film *to realize the "bioscopic book" of El Lissitzky, which is more visual than textual. In publications like the exhibition catalog* Staatliches Bauhaus in Weimar 1919–1923 *or the* Bauhausbücher *series, Moholy-Nagy puts both principles into practice, converting the book into a space of visual exploration, endowed with a cinematic dimension that comes close to his notion of "vision in motion". Through the use of a qualitative research methodology, and based on a critical review of literature and the direct observation of case studies, this essay aims to show how Moholy-Nagy's multidisciplinary legacy contributed to a paradigm shift in book design.*

#Bauhaus Books, #bioscopic book, #typography, #typophoto, #visual book

1. IN THE ANTECHAMBER OF DESIGN

Born in Bácsborsód, Hungary, László Moholy-Nagy (1895–1946) left his native country before Miklós Horthy's government came to power. After a brief stay in Vienna, Moholy-Nagy arrived in Berlin in the early 1920s, at the age of twenty-five, and having recently begun artistic activity.

This foray into the world of art was not his first choice. His initial desire to be a writer led him, in 1913, to enroll on a law course in Budapest, which he never got to complete. The practice of drawing, which he developed with greater intensity during First World War, when he was deployed in the Austro-Hungarian army, led him to attend night classes at a free art school of life drawing in Budapest after he was listed as a military reserve due to an injury to his left hand in 1917. Whilst writing her biography of her father's life, Hattula Moholy-Nagy established the beginning of his artistic career at around the time of 1918, at the age of twenty-three (H. Moholy-Nagy, n.d.).

Two years later, when Moholy-Nagy arrived in Berlin, his portraits and landscapes bear the traces of expressionist and cubist influences. In a letter addressed to Antal Németh on July 18, 1924, Moholy-Nagy acknowledges that, until 1920, his works "were experimentations under the influence of the *MA*" (Moholy-Nagy [1920] 1985a, 396). Moholy-Nagy was referring to Hungarian Activism, a movement led by Lajos Kassák that was primarily based on the *A Tett* (The Deed or The Action) magazine, founded in 1915 "as a forum for a group of young anti-war activists, writers and artists" (Botar 2002, 393). Inspired by the anti-militarist character of the left-wing magazine *Die Aktion*, published in Berlin by the writer Franz Pfemfert, *A Tett* would eventually be discontinued in 1916 for political reasons. Shortly thereafter, a new publication appeared, *Ma* (Today, often stylized as *MA*), which aimed to strategically deepen artistic themes and disseminate international modernist trends. The magazine also established itself as a driving center of avant-garde artistic activity, "partly due to Kassák's establishment of an exhibition gallery in connection with the *MA* editorial office in 1917" (Tóth 2010, 4). Krisztina Passuth in her extensive study of Moholy-Nagy, characterizes the artistic posture of the *Ma* group in these terms:

> *But what did avant-garde art mean to them? Principally the artistic equivalent of internationalism, namely Synthetism. The term "Synthetism" implies that the artists around* MA *had assimilated*

the teachings of several schools with the purpose of creating a new style. Only by distorting the general picture can specific Futurist, Cubist and Expressionist features be discerned in the work of Hungarian Activists. When interpreting their activity, we must keep in mind that it was not form but a world view of ethics and behaviour that stood at the centre of their conception of art, which represented a summary of the various "isms". (Passuth 1985, 12)

In the initial phase of Moholy-Nagy's artistic development, his search for a style would translate into an exploratory synthesis of various influences. His stay in Berlin would have been a determining factor in the experimentation and construction of his own visual language. At the time, Berlin was a center of Dadaism and Constructivism in Europe, or, as Moholy-Nagy put it: "Berlin was for a while the hub of the artistic efforts of Europe" (Moholy-Nagy 2005b, 224). The economic, social, and political crisis that hit the Weimar Republic in the aftermath of the First World War proved to be fertile ground for the maintenance of the Dadaist invectives. Publications such as *Der Dada*, edited by Raoul Hausmann, John Heartfield, and George Grosz, or *Dada Almanac*, published by Club Dada founder, Richard Huelsenbeck, underline the fierce political tone of Berlin's Dadaist faction. In the pages of *Der Dada*, the expressiveness of photomontage was rehearsed, a new genre of visual communication, a genuine fruit of its time, which fought against the lack of objectivity in expressionism and the idea of "art-for-art's sake" defended by Zurich's Dadaist center. Hausmann, one of the authors who would come to explore the potentialities of photomontage, defined his aim as follows:

The Dadaists, who had "invented" the static, the simultaneous, and the purely phonetic poem, applied these same principles to pictorial expression. They were the first to use the material of photography to combine heterogeneous, often contradictory structures, figurative and spatial, into a new whole that was in effect a mirror image wrenched from the chaos of war and revolution, as new to the eye as it was to the mind. (Hausmann [1931] 2012, 115)

For Huelsenbeck, the principle of "simultaneity" applied to pictorial representation, which was inaugurated by Picasso in his collages, "points to the absolutely self-evident that is within reach of our hands, to the natural and naive, to action"; "it participates in life itself" (Huelsenbeck [1920] 1981, 36–37). Photomontage was based on the same principle. Between 1920 and 1921, Moholy-Nagy, inspired by the plethora of points of view of photomontages and unusual Dadaist assemblages, created essentially nonfigurative collages and compositions, marked by details of structures and various mechanisms (*IK 33*, *Dada Composition* or *The Great Wheel*), sometimes in a clear rapprochement to the Merz spirit of Kurt Schwitters' work

(*Construction with h*). The somewhat futuristic fascination with big cities, technological and industrial evolution, the machine, movement, and the love of speed results, with Moholy-Nagy, in abstract dynamic compositions that refer to a specific universe through the description of their titles, such as *Bridges*, *Railway Painting* or *The Tower*. The dadaism-cubism synthesis is present through the insertion of letters and numbers assumed only as visual forms. In 1921, some of these works were printed in the number 2 issue of *Ma*'s album series, titled *Horizont* (Horizon).

The principal aim of the manifesto "What is dadaism and what does it want in Germany?" ("Was ist der Dadaismus und was will er in Deutschland"), signed by Huelsenbeck and Hausmann, was to demand the assembly of "The international revolutionary union of all creative and intellectual men and women on the basis of radical Communism" (Huelsenbeck [1920] 1981, 41–42; 41). According to Huelsenbeck, "Dada is German Bolshevism" (44). The accession of some Dadaists to the German Communist Party focused attention on the situation in Russia, namely, the revolution of 1917, which many saw as an example for raising the German nation from the debris of war. The Dadaists' empathy for utopian communism and the establishment in Berlin of a wave of artists who emigrated from Russia, such as El Lissitzky and the brothers, Naum Gabo and Antoine Pevsner, gradually converted Germany into a "centre of Constructivist thought" (Eskilson 2007, 224).

Another key author in the establishment of Constructivism in Germany was the Dutch painter Theo van Doesburg, founder of the De Stijl movement and the homonymous magazine. With the pretense of disseminating De Stijl's ideals throughout Europe, Van Doesburg travelled to Berlin in 1920 and settled in Weimar in 1921, hoping to establish a close relationship with the director of the Bauhaus, Walter Gropius. According to Victor Margolin, "He began to articulate the premises for a Constructivist ideology in the pages of *De Stijl*, which he edited in Weimar between 1921 and 1923" (Margolin 1997, 48). In this magazine, Van Doesburg defends the creation of a universal art, based on simplicity, sobriety, and the purism of abstract geometry, without discard ing the adoption of the machine. In 1922, Van Doesburg would organize the International Dada-Constructivist Congress in Weimar, which would take place on September 25 and 26. In the photographs that remain of the event, it is possible to see Moholy-Nagy alongside other avant-garde artists such as Alfréd Kemény, Max Burchartz, Tristan Tzara, Lissitzky, Hans Arp or Schwitters, and others.

Between 1921 and 1922, the work of Moholy-Nagy took a new direction. In 1921, Moholy-Nagy, together with Hausmann, Arp and the Russian artist, Ivan Puni, signs the manifesto "A Call for Elementarist Art" ("Aufruf zur elementaren Kunst") in *De Stijl*. The authors called for an artistic regeneration whose primary objective was to produce art that is "the expression of our own time", an art based on the understanding that art is always born anew and does

not remain content with the expression of the past". This art should be "elemental", "because it is built up of its own elements alone. The manifesto followed the principles advocated by Van Doesburg, by encouraging a release "from the styles to reach the STYLE. Style is never plagiarism". Ultimately, as Hausmann, Arp, Puni and Moholy-Nagy declare, "elemental art" takes on the part of being "something pure, liberated from usefulness and beauty" (Hausmann et al. [1921] 1974, 52).

In his "Abstract of an Artist" (written in 1944) Moholy-Nagy describes the process of simplification, abstraction, and reduction of forms to an essence (also elementary) that, at one point, dominated his work:

One day I found that my sketch for an oil painting did not carry out my intention. There were too many shapes pressed into a chaotic arrangement. I took scissors. Cutting away some parts of the drawing, and turning it at an angle of ninety degrees, I was satisfied. When the remnants were pasted on a new sheet, the whole had little similarity to the still life which I had chosen as the point of departure. […] With this revelation I deliberately changed the color schemes of my "still lifes," and even went one step further. I eliminated the perspective employed in my former paintings. I simplified everything to geometrical shapes, flat unbroken colors, lemon yellow, vermilion, black, white—polar contrasts. This event marked a turning point in my existence as a painter. That day I sensed more clearly than I can tell that I was on the way to solve the problem of painting with my own means. (Moholy-Nagy 2005b, 215)

His drawings and paintings become completely abstract and dictated by geometric figures. Similarly to what happens in the plastic language of Neoplasticism, Suprematism and Constructivism, the emphasis is placed on form, color and structure of the plane. Initially, this period of his work explores the domain of vertical and horizontal lines, respecting the orthogonality dear to Neoplasticism (*Red Cross with White Spheres, Red Collage, Grey-black-blue, Construction with Cross*). The compositions are stabilized and tend to concentrate the "visual weight" (Arnheim [1954] 1974, 23) on the base (*C VIII, Composition CXII*). Moholy-Nagy begins to study the pictorial representation of light effects and to explore the issue of transparency. Accordingly, this is when his "Glass Architecture" paintings, his interest in"painting-with-light" and his first experiments with photograms appear.

The hypothesis of exploring a cinematographic vision on the screen leads him to complexify his compositions through the multiplication of forms suspended in space, which experiment a new dynamism altogether. This intention is clearly expressed in the manifesto "Dynamic-Constructive System of Forces" ("Dynamisch-konstruktives Kraft-system"), signed by Moholy-Nagy and Alfréd Kemény in the *Der*

Sturm magazine in 1922. The text argues for the replacement of the static composition, based on the horizontal, vertical and diagonal layout of the elements, characteristic of the De Stijl movement, with a dynamic, "open", "eccentric (centrifugal)" construction, which reveals "the tensions of forms and of space, without, however, resolving them" (Moholy-Nagy [1922] 1985a, 290). Kemény and Moholy-Nagy gathered influences from "The Realistic Manifesto" ("Realisticheskii manifest"), by Gabo and Pevsner, which demanded "the kinetic rhythms as the basic forms of our perception of real time" (Gabo [1920] 1974, 10).

Some of Moholy-Nagy's works of 1923 synthesize the rhythmic disposition of Malevich's Suprematism and the spatiality of Lissitzky's *Prouns* (*C XVI*, *Composition A VIII*, *K XVIII*). However, the ever-present goal of achieving clarity and objectivity led his work in one unequivocal direction. Moholy-Nagy explains this process, which is not unrelated to the spirit of the "artist-constructor-engineer" advanced by Gabo and Pevsner:

> *This is the place where I may state paradoxically that, in contemporary art, often the most valuable part is not that which presents something new, but that which is missing. In other words, the spectator's delight may be derived partly from the artist's effort to eliminate the obsolete solutions of his predecessors. My desire was to go beyond vanity into the realm of objective validity, serving the public as an anonymous agent. An airbrush and spray gun, for example, can produce a smooth and impersonal surface treatment that is beyond the skill of the hand. I was not afraid to employ such tools in order to achieve machine-like perfection. I was not at all afraid of losing the "personal touch", so highly valued in previous paintings. On the contrary, I even gave up signing my paintings.* (Moholy-Nagy 2005b, 223)

This paved the way for his "telephone pictures", which were industrially produced in porcelain enamel according to instructions the artist placed via telephone. However, it would not be his paintings that would determine the course of his professional future. In the collective exhibition that he held with László Péri, in 1922, in the facilities of the *Der Sturm* magazine in Berlin, it was his sculptures, such as the paradigmatic *Nickel Construction*, that would consecrate him as a constructivist. Although the sculpture shows some analogies to the drawing signed by Francis Picabia for the cover of the "Dadaphone" issue of the magazine *Dada*, published in March 1920 in Paris, it formally adopts the principles for sculptural production expressed in "The Realistic Manifesto", such as the renunciation of mass volumetry in favor of line depth. According to Krisztina Passuth, it was the metal sculptures in the *Der Sturm* exhibition that would earn Moholy-Nagy the invitation by Walter Gropius to direct the Bauhaus Metal Workshop (Passuth 1985, 30).

2. THE BIRTH OF THE "NEW TYPOGRAPHY" AND THE "TYPOPHOTO"

When Moholy-Nagy joined the Bauhaus in April 1923, his activity as a graphic designer was practically non-existent. He had made only a few sporadic initiatives in this area, such as the cover of the *Buch Neuer Künstler* (Book of new artists), with Lajos Kassák in 1922.

With the resignation of Johannes Itten, who was responsible for the Preliminary Course, in March 1923, Moholy-Nagy inherited his responsibilities, together with the direction of the Metal Workshop. Moholy-Nagy joined the Bauhaus precisely in the year in which the school was urged by the Thuringian state government to hold an exhibition to show results of the last four years of work and justify investment in the institution. The exhibition that took place in Weimar between August 15 and September 30, 1923, was an opportunity to exhibit the results of the post-expressionist pedagogical orientation, which aimed at bringing art and industrial production closer together. Gropius expressed this intent when addressing the school's objectives in the publication that resulted from the exhibition: "The Bauhaus regards the machine as our most modern medium of design and seeks to come to terms with it" (Gropius [1923] 2019, 14). In turn, in the book *The New Vision*, Moholy-Nagy justified the philosophy that guided the Bauhaus in the integration of technology in the artistic process: "The multiplication of mechanical appliances required a new intellectual orientation, a fusion into a single meaning of clarity, conciseness, precision" (Moholy-Nagy 2005a, 20).

The Bauhaus exhibition was a great catalyst for Moholy-Nagy's graphic output. In addition to the graphic design of the core of the catalog *Staatliches Bauhaus in Weimar 1919–1923* (*State Bauhaus in Weimar 1919–1923*), Moholy-Nagy created other graphic objects, such as the prospectus for its subscription and the logo of the publication's publisher, Bauhausverlag.

Inside the catalog, Moholy-Nagy signs a short text entitled "The New Typography" ("Die Neue Typographie"), in which he outlines the foundations of an authentic program for graphic design, of which the catalog *Staatliches Bauhaus in Weimar* was a good example. Moholy-Nagy begins this text by stating that typography, as a communication tool, must be absolutely clear, from the choice of typeface to its composition. Therefore, the readability of the message should never be sacrificed to an "a priori aesthetic", nor to a pre-established shape, such as, for example, a square (Moholy-Nagy [1923] 1999, 21).

Moholy-Nagy argued that "'form and content' are indissoluble" (Moholy-Nagy [1922] 1985b, 287), thus, in the "new typography", the content will determine the visual effect of the form. This design process conceded the use of "all fonts, type sizes, geometric shapes, colours, etc." (Moholy-Nagy [1923] 1999, 21). Like the principles set out in the "Dynamic-Constructive System of Forces" manifesto, Moholy-Nagy encourages an exploration of the compositional space

that is not limited to the normativity of the orthogonal grid. Basically, Moholy-Nagy calls for a freedom on the level of graphic design that subverts certain conventions of the classic model, such as the materialization of the text into rectangular layouts and the subjecting of the elements to a symmetrical balance, in force in the composition of the book, roughly since the Gutenberg press.

The author also anticipated what the concept of "typophoto" would become when he defended the added value of introducing the objectivity of photography into the typographic plan: "The objectivity of photography liberates the receptive reader from the crutches of the author's personal idiosyncrasies and forces him into the formation of his own opinion (Moholy-Nagy [1923] 1999, 21–22).

Moholy-Nagy defined the concept of typophoto in the book *Painting*, *Photography*, *Film* (*Malerei*, *Photographie*, *Film*), compiled in the summer of 1924, but only published in 1925, in the Bauhausbücher series, due to technical difficulties. In the subchapter "Typography", Moholy-Nagy reveals the preponderance that photography can have within the context of design, by deepening what he understands by the "objectivity" of photography:

Thus, in the photographic camera we have the most reliable aid to a beginning of objective vision. Everyone will be compelled to see that which is optically true, is explicable in its own terms, is objective, before he can arrive at any possible subjective position. This will abolish that pictorial and imaginative association pattern which has remained unsuperseded for centuries and which has been stamped upon our vision by great individual painters. (Moholy-Nagy [1925] 1969a, 28)

Moholy-Nagy's thought is, once again, influenced by the notions of clarity and universality promoted by Van Doesburg in the De Stijl movement, although it equally incorporates the idea of rejection of the artificial and the accessory that Gabo and Pevsner allude to, when they state the following: "We renounce in a line, its descriptive value; in real life there are no descriptive lines, description is an accidental trade of a man on things. [...] Descriptiveness is an element of graphic illustration and decoration" (Gabo [1920] 1974, 10). Drawing, illustration, and painting were hopelessly contaminated by the human hand and its subjective perspective of the world. Although photography also includes an authorial subjectivity, in Moholy-Nagy's understanding, it is closer to the genuine process of visual perception.

Moholy-Nagy anticipates Marshall McLuhan's idea of technology as an "extension of man". He contends that the camera works like an optimized extension of the human eye, since it can complement what we see. Due to the way it simultaneously incorporates unusual perspectives and effects such as enlargements and distortions, photography became a means of representation of enormous plasticity.

Thus, the typophoto, or the synthesis of typography and the photographic image, could be summarized as: "the visually most exact rendering of communication" (Moholy-Nagy [1925] 1969a, 39). The typophoto was, par excellence, a modern graphic strategy, designed to streamline the communication process at a time marked by the rise of modern forms of visual media, such as cinema. Its implementation made the letterpress printing process almost obsolete, and required photomechanical means of production and a new kind of typographer: the typophotographer (Moholy-Nagy [1925] 1969a, 40). Therefore, the typophoto was suited to technologies such as zincography or electrotyping, which facilitated breaking the linearity of the "classic model" through the fusion of the photographic image with text, and the exploration of the graphic qualities of typographic elements to significantly support the content. The typophoto should be geared, above all, to communicational immediacy through the creation of "optical and associative relationships" that result in a visual and functional synthesis. Moholy-Nagy concluded: "The typophoto governs the new tempo of the new visual literature (Moholy-Nagy [1925] 1969a, 40).In a way, the typophoto or the new typography—both concepts coexist and are inseparable—is essential to the "bioscopic book" by Lissitzky, whose 1923 manifesto "Topography of Typography" ("Topographie der Typographie") would already declare: "Economy of expression: optics not phonetics" (Lissitzky [1923] 1999, 23). In the text Contemporary Typography—Aims, Practice, Criticism" ("Zeitgemässe Typographie—Ziele, Praxis, Kritik"), published in 1925 in the *Gutenberg Festschrift zur Feier des 25 jährigen Bestehens des Gutenbergmuseum in Mainz* (Gutenberg festschrift for the celebration of the 25 year existence of the Gutenberg Museum in Mainz), Moholy-Nagy made a series of recommendations on the use of typographic resources in the materialization of contemporary graphic objects. In addition to underlining the relevance of exploring contrasts (between weights, colors, shapes, etc.) to reinforce the visual effect of the composition and help the hierarchy of information, Moholy-Nagy makes a decisive observation about the direction of the new typography:

We need, for instance, a standard way of writing, without lowercase and capital letters; letters standard not only in size but also in form. At present time we do not even possess a typeface that is correct in size, is clearly legible and lacking in individual features and that is based on a functional form of visual appearance without distortions and curlicues. (Moholy-Nagy [1925] 1985d, 295)

Usually laconic with regard to typographic choices, the author launched the discussion on the development of a more economical alphabet with regard to the number of characters and with a universal propensity, an objective that Herbert Bayer would fulfil with his "Sturm Blond" in

1925. Moholy-Nagy also highlighted a preference for a formally simple letter, which would later lead authors, such as Jan Tschichold, to defend sans serif typefaces, in the spirit of the new typography.

Nagy would address the issue of the new typography once again at the exhibition *Neue Typographie* by the Circle of New Advertising Designers (Ring neue Werbegestalter), in the atrium of the Staatliche Kunstbibliothek Berlin, from April 20 to May 20, 1929, at the then Kunstgewerbemuseum.

Moholy-Nagy was responsible for curating a section of the exhibition entitled "Wohin geht die typografische Entwicklung?" ("Where is typography headed?"), composed of seventy-eight panels, eight with texts of his own and the rest with images. Interestingly, Moholy-Nagy never uses the expression "new typography", although most of the examples that illustrate his text belong to this movement. Moholy-Nagy points out some remarkable data for the typographic progress achieved to date and, in a way, the new typography is the result of that progress. The author adds some novelties regarding the texts of 1923 and 1925, namely, he recalls the pioneering spirit of Guillaume Apollinaire and Filippo Tommaso Marinetti who abolished the conventions of the classic model in favor of typographic expressiveness. In the book *Vision in Motion*, Moholy-Nagy reiterates the importance of these authors: "Apollinaire's ideograms and Marinetti's poems served, perhaps, notso much as models, but as tradition-breakers which freed experiments to create a quick, simultaneous communication of several messages" (Moholy-Nagy [1947] 1969b, 306). Despite not particularly admiring Marinetti, who he described as "the literary rebel and the political fascist—synthetized into a superbly gifted clown" (303), Moholy-Nagy showed some reverence for the work of the leader of Italian futurism On this point, Moholy-Nagy held a similar view to Jan Tschichold, who, in the book *The New Typography*, credited Marinetti with putting an end to the "old typography" by using typography as a functional expression of content (Tschichold [1928] 1998, 56).

Although Moholy-Nagy always cites Apollinaire's work for its visual contrasts and its ability to imbue the written word with qualities of sound, in reality, the futurists were the first to demand and put into practice a "typographic revolution" which had the objective of giving material shape to a freedom of thought and communication that is not consistent with the static and inexpressive classic model. Marinetti's manifesto "Distruzione della sintassi—Immaginazione senza fili—Parole in libertà" (Destruction of syntax—imagination without strings—words-in-freedom) of 1913, articulates this demand.

In his historical retrospective of the new typography in *Vision in Motion*, Moholy-Nagy underlines the role of Constructivism in the development of a functional typography. Both in this work as in the text of "Where is typography headed?" the author acknowledges that the abusive misappropriation of constructivist graphic solutions, often supported by geometric elements designed to organize

the text and facilitate the reading process (lines, dots, squares, etc.), quickly subverted functionalism into decorativism. Walter Dexel expressed a similar opinion in the article "What is new typography?" in 1927:

> There is no doubt that today there is a misuse of lines set at various angles, arrows, squares, and strokes. These serve as crutches and are "modern gestures" which should be rejected as preventing legibility. Used merely decoratively, as happens only too often, these forms are no better than the ornamental borders and the vignettes found at the end of the program of a small-town glee club. (Dexel [1927] 1999, 34)

Like Dexel, Moholy-Nagy appeals to the reduction of typography to the elementary: letters with their different sizes and weights. Like Tschichold, he mentions the benefits of the standardization imposed by the DIN system (Moholy-Nagy [1929] 2019, 82).

For Moholy-Nagy, the new typography inevitably depended on the exploration of new means of production. By integrating the machine and the emerging technologies, the new typography followed a premise that was common to several avant-garde movements, such as Constructivism, of creating a truly modern art, an intention that Moholy-Nagy himself had defended in the manifesto "A Call for Elementarist Art".

In the exhibition text and also in *Vision in Motion*, Moholy-Nagy refers to the importance that newspapers and magazines had in the creation of the new typography, not only for presenting "a simultaneous quality of type and illustration" (Moholy-Nagy [1947] 1969b, 308)—basically, the typophoto—but also because they promoted methods of photographic reproduction that were more plastic and versatile than the traditional typography with lead types. In Moholy-Nagy's understanding, the future of typography resided in the use of production technologies that were dependent on photographic methods, such as photoengraving, as they facilitated the fusion of all kinds of textual and imagistic elements. From this perspective, the typographer gives way to a new typographer, or a "typographic modeler" and typography or, if you like, graphic design, truly becomes the "typographic counterpart of vision in motion" (Moholy-Nagy [1947] 1969b, 308).

3. "VISION IN MOTION" AND THE VISUAL BOOK

"vision in motion is simultaneous grasp. simultaneous grasp is creative performance—seeing, feeling, and thinking in relationship and not as a series of isolated phenomena. it instantaneously integrates and transmutes single elements into a coherent whole. This is valid for physical vision as well as for the abstract. vision in motion is a synonym for simultaneity and space-time; a means to comprehend the new dimension. vision in motion is seeing while moving. vision in motion is seeing moving objects either in reality or in forms of visual representation as

in cubism and futurism. In the latter case the spectator, stimulated by the specific means of rendering, recreates mentally and emotionally the original motion. vision in motion also signifies planning, the projective dynamics of our visionary faculties". (Moholy-Nagy [1947] 1969b, 12; lowercase in original)

3.1 STAATLICHES BAUHAUS IN WEIMAR 1919–1923

Due to the meager reference it makes to the exhibition, *Staatliches Bauhaus in Weimar 1919–1923* (henceforth Staatliches Bauhaus) is more a book than a catalog—the only testimony within is a photograph of a poster of the event, posted on the wall at the Belvedere entrance of the Bauhaus. As such, takes on the aspect of an autonomous object, destined to document the school, its teaching philosophy and the results of its artistic production.

The book is also an opportunity for Moholy-Nagy to put the principles of the new typography into practice. The format, close to a perfect square (24.8 × 25.4 cm), is striking and signals an object to be contemplated. In the post-new typography phase, one of the arguments Tschichold uses to reject the quadrangular books "is simply handiness", as he explains: "It is difficult for an unsupported hand to master a square book" (Tschichold [1975] 1991, 167). Despite the quadrangular format being more difficult to handle and not favoring a closer relationship with the reader, Moholy-Nagy uses it deliberately to give his book the character of an album.

In turn, the square, an elementary geometric figure, is part of the idea of a formal synthesis defended by the De Stijl movement and by Constructivism. The logo that Moholy-Nagy created for Bauhausverlag with its three elementary shapes—a square and an equilateral triangle inscribed in a circle—refers to the basic geometric shapes which constitute the foundation of all artistic creation. Kandinsky's text "Basic Elements of Form" ("Die Grundelemente der Form"), published in the *Staatliches Bauhaus*, and the attempt to establish a visual language grammar in *Point and Line to Plane (Punkt und Linie zu Fläche)*, from the Bauhausbücher series, consolidates the preponderance of these thematics in the pedagogical orientation of the Bauhaus.

Under Moholy-Nagy's supervision, Herbert Bayer, still a student, drew a typographed book cover, with asymmetric and dynamic blue and red contrasts on a dark background, where the simplicity and communicational clarity of sans serif typefaces stand out as the hallmark of the new typography (fig.1).

The choice of sans serif typefaces of a geometric structure is visually striking and is used throughout the book for short texts, such as titles or captions. Moholy-Nagy chooses to draw or use sans serif characters with elementary shapes and without modulations, such as the "grotesque" or "block letters", faithful to the compact structure of

FIGURE 1. Staatliches Bauhaus in Weimar 1919–1923, *cover by Herbert Bayer. Photo by Tobias Adam / Unibib Weimar, licenced under CC-BY-SA-4.0, https://commons.wikimedia.org/wiki/File:StaatlichesBauhaus_Vorderdeckel.jpg.*

the first nineteenth-century sans serif. The use of these types of letters is in perfect accordance with the message of his article "Contemporary Typography: Aims, Practice, Criticism":

> *On the other hand, there exist suitable typefaces for labels and headlines, such as Venus Grotesque and Lapidar, the geometric and phonetic archetypes of which—such as the square and circle—come in to display without distortion. Combined with any kind of grey standard type, they are—by their dark character—most suitable even today for producing chiaroscuro contrasts.* (Moholy-Nagy [1925] 1985d, 295)

For texts, Moholy-Nagy chose an old-style typeface. In the manifesto "The New Typography" ("Die neue Typographie"), published in the magazine *Kulturschau*, in October 1925, Tschichold also admitted the possibility of choosing an old-style Roman typeface for continuous texts, for the sake of readability (Tschichold 1925). Although his apology for sans serif letters is more radical in his book *The New Typography*, the author occasionally consented to the use of serif typefaces when sans serif typographic choices did not abound. In these cases, he suggested three options, due to his "unpretentious" character: Sorbonne, Nordische Antiqua and Französische Antiqua (Tschichold [1928] 1998, 76). Moholy-Nagy uses a typographic choice close to Nordische Antiqua.

In the composition of the texts, Moholy-Nagy challenges the limits of acceptable margins (and legibility), in a squared, justified shape, without indentations. By converting the block of text into a square, the author gives it an imagistic quality. Although in a more subtle way, Moholy-Nagy followed the same principle as the pioneers of the new typography, for whom "the typeset page was not a means of reproducing text, but of arranging text in an imagelike way" (Moholy-Nagy [1929] 2019, 81). Moholy-Nagy's design also had another intention: to establish a clear distinction between what should be read (texts) and what should be seen (images).

Moholy-Nagy chooses to assemble the images in booklets that are exclusively dedicated to them. The division between sections of text and images is made with different types of paper to provide differentiation in tactile experience. Furthermore, Moholy-Nagy began the Preliminary Course precisely with "sensory training", which was aimed at "enriching the desire for sensation and expression" (Moholy-Nagy 2005a, 27). In the sections of *Staatliches Bauhaus* that function as an album, the images are arranged to exert contrasts in position, size, and color; the captions and page numbers do not have a static position and change from page to page, to reinforce the notion of dynamism, or "vision in motion".

However, one of the most important aspects of the new typography, and arguably in the notion of vision in motion, resides in the concept of simultaneity. Present in advertisements, magazines and newspapers, the principle of simultaneity consists in a composite of graphic elements that provides the "simultaneous organization of the numerous messages which have to be transmitted to the reader" (Moholy-Nagy [1947] 1969b, 308). The objective of this experience is to summon the vision in motion, in other words, to allow the information to be assimilated at a glance. This is where Moholy-Nagy's thought reveals a certain analogy with that of the Symbolist poet Stéphane Mallarmé, who, in the text "Le livre, instrument spirituel" (The book, spiritual instrument), compared to an "electric fire" the way in which simultaneous information on a newspaper page demands the reader's attention (Mallarmé, [1897] 1984, 379). Given the multiple reading paths present in the newspaper, the book, "total expansion of the letter", should follow its example and "establish a game" (Mallarmé [1897] 1984, 380). Mallarmé would implement this playful character, of a search for meaning and signification, by dispersing throughout the pages, the words of his poem "Un coup de dés jamais n'abolira le hasard" (A throw of the dice will never abolish chance). Although in different ways, both authors used the book to test the reading logics that subvert the linearity of Gutenberg's typography.

In *Staatliches Bauhaus*, the idea of simultaneity or vision in motion is accentuated by the freer and more expressive exploration of typography in elements such as the frontispiece, the index, the titles and the chapter breakers.

FIGURE 2. Staatliches Bauhaus in Weimar 1919–1923, *frontispiece by László Moholy-Nagy. Image from the 2019 facsimile edition, Zurich: Lars Müller Publishers.*

FIGURE 3. Staatliches Bauhaus in Weimar 1919–1923, *chapter breaker by László Moholy-Nagy. Image from the 2019 facsimile edition, Zurich: Lars Müller Publishers.*

On the frontispiece, Moholy-Nagy breaks the classic model into a quadrangular structure, with the text in capital letters arranged horizontally and vertically (fig. 2). The author plays with contrasts in color, size, texture, and disposition to organize the hierarchy of information and explore the notions of rhythm and spatiality. Splitting the title into several reading layers evokes some Futurist and Dadaist strategies, evident in examples such as the cover of the 1919 *Les mots en liberté futuristes* (Futurist words in freedom), by Marinetti, or the 1920 "Bulletin Dada" issue, of the *Dada* magazine.

The titles, always in capital letters, follow the frontispiece's strategy of exploring contrasts in color, size, and layout. The chapter breakers and titles of the picture booklets are marked by the presence of words and phrases that are topped along their entire length by medium-thick, red bars. Here, the bar acts as an underline, precisely in the reverse position; it illuminates and emphasizes information, while speeding up its communication, due to its strong color contrast and accentuated horizontality. The bar is a graphic notation that materializes vision in motion (fig. 3).

In *Staatliches Bauhaus*, Moholy-Nagy starts by using black bars in the index (fig. 4). On the first page, the bar is an oversized version of the first letter of the word "inhaltsverzeichnis" (table of contents). On the following pages, it is a number that represents and divides each part of the book (both vertically and horizontally). The numbers on the chapter breakers are made up of black bars that follow in the same logic. This numbering strategy is close to that used on the first covers of the Czechoslovakian magazine *Stavba* (Building), designed by Karel Teige. Gropius knew the magazine and used it as a pretext to make the acquaintance of Teige and ensure his contribution to the selection of examples of contemporary Czech architecture for the Bauhaus exhibition (Forbes 2016, 294). Moholy-Nagy would include an image of one of Teige's covers in "Where is typography headed?"

FIGURE 4. Staatliches Bauhaus in Weimar 1919–1923, *imprint and first page of the table of contents by László Moholy-Nagy. Image from the 2019 facsimile edition, Zurich: Lars Müller Publishers.*

3.2 THE BAUHAUSBÜCHER SERIES

In 1923, Gropius and Moholy-Nagy decided to create the *Bauhausbücher* series, dedicated to the contemporary theoretical production in the most diverse areas.

Due to financial difficulties, of the initially planned fifty-four titles, the first eight were only published in 1925 by Albert Langen Verlag in Munich: number 1, *International Architecture* (*Internationale Architektur*) by Gropius; number 2, *Pedagogical Sketchbook* (*Pädagogisches Skizzenbuch*) by Paul Klee; number 3, *A Bauhaus Experimental House* (*Ein Versuchshaus des Bauhauses*) by Adolf Meyer; number 4, *The Theater of the Bauhaus* (*Die Bühne im Bauhaus*) by Oskar Schlemmer; number 5, *New Design: Neoplasticism* (*Neue Gestaltung: Neoplastizismus*) by Piet Mondrian; number 6, *Principles of Neo-Plastic Art* (*Grundbegriffe der neuen gestaltenden Kunst*) by Van Doesburg; number 7, *New Works from the Bauhaus Workshops* (*Neue Arbeiten der Bauhauswerkstätten*) by Gropius and number 8, *Painting, Photography, Film.*

By 1928—the year Gropius and Moholy-Nagy resigned from the Bauhaus—four more titles were published: issues number 9, *Point and Line to Plane* by Kandinsky and 10, *Dutch Architecture* (*Holländische Architektur*) by J.J.P. Oud in 1926; number 11, *The Non-objective World* (*Die gegenstandslose Welt*) by Kasimir Malevich in 1927; and number 13, *Cubism* (*Kubismus*) by Albert Gleizes in 1928. Still edited by Gropius and Moholy-Nagy, issue 14 *From Material to Architecture* (*Von Material zu Architektur*) by Moholy-Nagy was published in 1929, and number 12, *Bauhaus Buildings, Dessau* (*Bauhausbauten Dessau*) by Gropius in 1930. The *Bauhausbücher* series would end here.

Moholy-Nagy was responsible for the design of twelve of the books (the design of number 3 was by Adolf Meyer, and number 9 by Herbert Bayer), of which he designed nine dust jackets (the dust jacket of number 1 was designed by Farkas Molnár, number 4 by Schlemmer, and number 6 by Van Doesburg).

Committed to ending to the greyness of the modern book, with *Staatliches Bauhaus* Moholy-Nagy rehearsed what he would go on to do with in the *Bauhausbücher* series. Similar to *Staatliches Bauhaus*, the books in the series explore the visuality and materiality of the book in order to provide a differentiating reading experience, based on the notion of more efficient and functional communication.

Due to its dimensions, *Staatliches Bauhaus* is an invitation to immersion. In turn, the books in the series, printed in paperback and linen bound, measuring around 18 × 23 cm, call for a more intimate experience, due to their maneuverability and portability. In linen bound editions, the book cover is bound in a yellow fabric, with the name of the series and the book number printed in red, and set in a simplified geometric weave, constituted by a vertical bar and two horizontal lines. By using two primary colors and geometric elements, Moholy-Nagy maintains coherence with the principles of simplicity and elementality that the Bauhausverlag publishing house logo conveys. The vast majority of his dust jackets take the same approach.

Like *Staatliches Bauhaus*, the books in the series present, with few exceptions, a hegemony of the image over the text. At the same time, they bet, in a more incisive way, on exploring the visual qualities of typography. The visuality of the books in the *Bauhausbücher* series results from the combination of these two factors.

The most experimental aspect of the typography is visible in the initial spread of the books, which replace the classic frontispiece for a continuous layout. Moholy-Nagy establishes an interaction between the odd and even pages to present the work throughout the series. Composed in almost all books with sans serif type, with variations in weight and size, this double-page frontispiece is developed in asymmetric structures, in a dynamic balance, usually intersected by horizontal and/or vertical lines, of various thicknesses and densities of black. Moholy-Nagy chooses to differentiate each introductory spread without detracting from the visual coherence it imposes on the series. By assigning a unique identity to each book, the author explores the diversity within the unit.

The pages dedicated to the text continue to implement the contrast theory defended by Moholy-Nagy. The author believed that "the reader grows tired much faster than he would looking at a layout made up of contrasting color and light values" (Moholy-Nagy [1925] 1985d, 294). Thus, he established pairs of oppositions, such as "light-dark", present, for example, on pages that articulate heavy sans serif typefaces in the titles and old style serif letters in the remaining texts.

Regarding the idea of vision in motion to streamline the communication process, Moholy-Nagy organizes the text sections with typographic elements that play the role of reading "accelerators". Unlike *Staatliches Bauhaus*, which displays uninterrupted rectangular layouts of text, in the books of the series, the justified texts are constantly interrupted by visual notations which ease the perception of the message. Therefore, the texts may contain words and phrases in bold fonts with and without serifs (number 1 and 2), in capital letters (number 1, 4, and 6), underlined expressions (number 1 and 2), graphic schemes with arrows (number 8), vertical bars flanking the most prominent information (number 7 and 8), and dots dividing blocks of text (number 4, 7, 8, 10, 11, 12) (fig. 5.). Furthermore, Moholy-Nagy also frequently employs black bars that separate the text from the footnotes and replaces the note numbers with dots for faster identification and reading, a solution that Tschichold followed in the design of *The New Typography*. Regarding the use of these kinds of typographic resources, Moholy-Nagy states: "There are quite a number of forms and techniques contributing to the precision and clarity of the visual image: dots, lines, geometrical forms, the whole range of photo-engraving techniques" (Moholy-Nagy [1925] 1985d, 294).

The exploration of typography allowed the author to establish a hierarchy of information, in which the "eye is gradually led from one point to another, without losing sight of the interdependence of the details" (Moholy-Nagy [1925] 1985d, 295). This was one of the biggest arguments of the new typography provided for break the symmetrical layout of the classic model. To enhance the optical effect of the images and bring them closer to cinematographic dynamics, Moholy-Nagy separates the textual component of the book from the imagistic. While in *Staatliches Bauhaus* the text booklets are converted into small islands surrounded by images, in most of the books in the series the text precedes the images, as an introductory, explanatory note, which guides the reading process without conditioning it. This is the justification that Moholy-Nagy gives in *Painting, Photography, Film* when he says: "I have placed the illustrative material separately following the text because continuity in the illustrations will make the problems raised in the text VISUALLY clear" (Moholy-Nagy [1925] 1969a, 47).

Once again, the author tries to expand the reading experience, by introducing different papers to divide the text sections from those of the images. In some books, such as Schlemmer's *The Theater of the Bauhaus*, Moholy-Nagy adds fold-out sheets that require yet another interaction with the object. In this case, it is possible to visualize a drawing by Moholy-Nagy himself, of the project for a multi-sensory and immersive stage that he calls *Score Sketch for a Mechanized Eccentric*.

In the image sections, the space is shared by the image and an explanatory caption. Moholy-Nagy uses the succession of pages and the temporality associated with page turning to create sequences
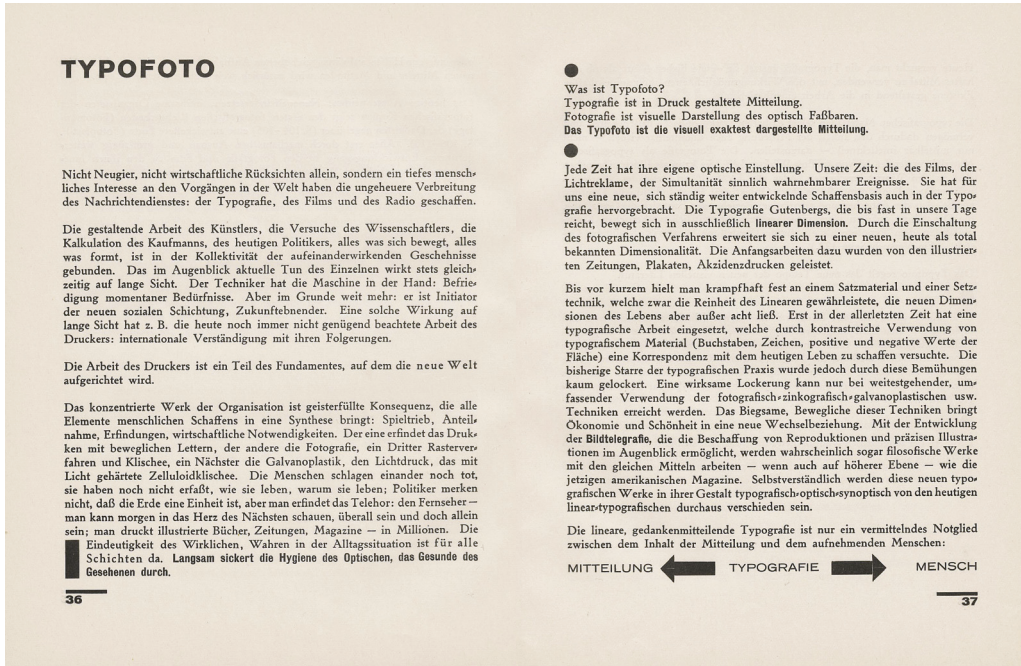
TYPOFOTO

Nicht Neugier, nicht wirtschaftliche Rücksichten allein, sondern ein tiefes mensch‚ liches Interesse an den Vorgängen in der Welt haben die ungeheuere Verbreitung des Nachrichtendienstes: der Typografie, des Films und des Radio geschaffen.

Die gestaltende Arbeit des Künstlers, die Versuche des Wissenschaftlers, die Kalkulation des Kaufmanns, des heutigen Politikers, alles was sich bewegt, alles was formt, ist in der Kollektivität der aufeinanderwirkenden Geschehnisse gebunden. Das im Augenblick aktuelle Tun des Einzelnen wirkt stets gleich‚ zeitig auf lange Sicht. Der Techniker hat die Maschine in der Hand: Befrie‚ digung momentaner Bedürfnisse. Aber im Grunde weit mehr: er ist Initiator der neuen sozialen Schichtung, Zukunftebender. Eine solche Wirkung auf lange Sicht hat z. B. die heute noch immer nicht genügend beachtete Arbeit des Druckers: internationale Verständigung mit ihren Folgerungen.

Die Arbeit des Druckers ist ein Teil des Fundamentes, auf dem die n e u e W e l t aufgerichtet wird.

Das konzentrierte Werk der Organisation ist geisterfüllte Konsequenz, die alle Elemente menschlichen Schaffens in eine Synthese bringt: Spieltrieb, Anteil‚ nahme, Erfindung, wirtschaftliche Notwendigkeiten. Der eine erfindet das Druk‚ ken mit beweglichen Lettern, der andere die Fotografie, ein Dritter Rasterver‚ fahren und Klischee, ein Nächster die Galvanoplastik, den Lichtdruck, das mit Licht gehärtete Zelluloidklischee. Die Menschen schlagen einander noch tot, sie haben noch nicht erfaßt, wie sie leben, warum sie leben; Politiker merken nicht, daß die Erde eine Einheit ist, aber man erfindet das Telehor: den Fernseher — man kann morgen in das Herz des Nächsten schauen, überall sein und doch allein sein; man druckt illustrierte Bücher, Zeitungen, Magazine — in Millionen. Die Eindeutigkeit des Wirklichen, Wahren in der Alltagssituation ist für alle Schichten da. **Langsam sickert die Hygiene des Optischen, das Gesunde des Gesehenen durch.**

36

Was ist Typofoto?
Typografie ist in Druck gestaltete Mitteilung.
Fotografie ist visuelle Darstellung des optisch Faßbaren.
Das Typofoto ist die visuell exaktest dargestellte Mitteilung.

Jede Zeit hat ihre eigene optische Einstellung. Unsere Zeit: die des Films, der Lichtreklame, der Simultanität sinnlich wahrnehmbarer Ereignisse. Sie hat für uns eine neue, sich ständig weiter entwickelnde Schaffensbasis auch in der Typo‚ grafie hervorgebracht. Die Typografie Gutenbergs, die bis fast in unsere Tage reicht, bewegt sich in ausschließlich **linearer Dimension.** Durch die Einschaltung des fotografischen Verfahrens erweitert sie sich zu einer neuen, heute als total bekannten Dimension. Die Anfangsarbeiten dazu wurden von den illustrier‚ ten Zeitungen, Plakaten, Akzidenzdrucken geleistet.

Bis vor kurzem hielt man krampfhaft fest an einem Satzmaterial und einer Setz‚ technik, welche zwar die Reinheit des Linearen gewährleistete, die neuen Dimen‚ sionen des Lebens aber außer acht ließ. Erst in der allerletzten Zeit hat eine typografische Arbeit eingesetzt, welche durch kontrastreiche Verwendung von typografischem Material (Buchstaben, Zeichen, positive und negative Werte der Fläche) eine Korrespondenz mit dem heutigen Leben zu schaffen versuchte. Die bisherige Starre des typografischen Praxis wurde jedoch durch diese Bemühungen kaum gelockert. Eine wirksame Lockerung kann nur bei weitestgehender, um‚ fassender Verwendung der fotografisch‚zinkografisch‚galvanoplastischen usw. Techniken erreicht werden. Das Biegsame, Bewegliche dieser Techniken bringt Ökonomie und Schönheit in eine neue Wechselbeziehung. Mit der Entwicklung der **Bildtelegrafie,** die die Beschaffung von Reproduktionen und präzisen Illustra‚ tionen im Augenblick ermöglicht, werden wahrscheinlich sogar filosofische Werke mit den gleichen Mitteln arbeiten — wenn auch auf höherer Ebene — wie die jetzigen amerikanischen Magazine. Selbstverständlich werden diese neuen typo‚ grafischen Werke in ihrer Gestalt typografisch‚optisch‚synoptisch von den heutigen linear‚typografischen durchaus verschieden sein.

Die lineare, gedankenmitteilende Typografie ist nur ein vermittelndes Notglied zwischen dem Inhalt der Mitteilung und dem aufnehmenden Menschen:

MITTEILUNG ⬅ TYPOGRAFIE ➡ MENSCH

37

FIGURE 5. *Facing pages from the revised and enlarged second edition of László Moholy-Nagy's* Malerei, Photographie, Film *(1925), published as* Malerei, Fotografie, Film. *1927. Munich: Albert Langen Verlag.*

that come close to a cinematic vision. To enhance readability and vi‐sual effect, the images are arranged both high and low on the page, de‐pending on their format. This somewhat Dadaist approach requires ac‐tive participation by the reader, who has to continuously rotate the book to fully enjoy its content. In most of the books, picture booklets are filled with photographs, although they may include other artistic genres such as photomontages (number 4, 8), drawings or illustrations (number 2, 4, 6).

Arguably the most paradigmatic book of the series is *Painting, Photography, Film*. In this book there is clearly the intimate harmony between content and its expression that the author demanded of the new typography. Moholy-Nagy not only elevates the expressive quality of the typography, but also ensures that images function as a "photo-text": a substitute for text. The images are consistent with the content covered, however they are not reduced to mere illustrations. Thus, the author selects and archives a heterogeneous sample of images (from newspaper photographs, film details, photograms, x-rays, examples of photomontages, such as his "photoplastics", etc.) that have as much weight as the text.

The added value of his book is the materialization of an example of typophoto, "Dynamic of the Metropolis" ("Dynamik der Gross-Stadt") (fig 6.). In this "sketch of a manuscript for a film", Moholy-Nagy uses the principle of simultaneity to represent a succession of events, through a mixture of graphic elements. The action takes place in an orthogonal structure in constant mutation, populated by small images, synoptic

L. MOHOLY-NAGY:
DYNAMIK DER GROSS-STADT

SKIZZE ZU EINEM
FILMMANUSKRIPT
Geschrieben
im Jahre 1921·22

Entstehen einer Me-
tallkonstruktion

Kran bei Hausbau
in Bewegung
Aufnahmen:
von unten
von oben

schräg

122

Ziegelaufzug
Wieder Kran: in Kreisbe-
wegung

Alle Rechte, insbesondere das
Recht der Verfilmung und Über-
setzung, behalten Autor und
Verlag sich vor.

ErstTricktischaufnahme von sich be-
wegenden Punkten, Linien, welche
in ihrer Gesamtheit in einen Zeppe-
linbau(Naturaufnahme)übergehen.

Großaufnahme.
Die Bewegung setzt sich in einem Auto fort, das nach links
saust. Man sieht ein und dasselbe Haus dem Auto gegen-
über in der Bildmitte (das Haus wird immer von rechts in die
Mitte zurückgezogen; dies ergibt eine starre, ruckartige Bewe-
gung). Ein anderes Auto erscheint. Dieses fährt gleichzeitig
entgegengesetzt, nach rechts.

Ein Tiger kreist wütend in seinem
Käfig

TEMPO TEMPO TEMPO

Ganz klar — oben hoch — Bahn-
zeichen:

(Großaufnahme.)

Alle automatisch, au-to-ma-tisch in
Bewegung

auf   auf
         ab   ab

AUF   Auf   AB   Ab   ab

Rangierbahnhof.
Ausweichestellen.

Häuserreihe auf der
einen Seite der Straße,
durchscheinend, rast
rechts durch das erste
Haus. Häuserreihe
läuft rechts weg und
kommtvonrechtsnach
links wieder. Einander
gegenüber liegende
Häuserreihen, durch-
scheinend, in entge-
gengesetzter Rich-
tung rasend, und die
Autos immer rascher,
so daß bald ein FLIM-
MERN entsteht.

TEMPO
TEMPO
TEMPO
TEMPO

Diese Stelle als brutale Ein-
führung in das atemlose Rennen,
das Tohuwabohu der Stadt.

Der hier harte Rhythmus lockert
sich langsam im Laufe des Spiels.

Der Tiger:
Kontrast des offenen, unbehinder-
ten Rennens zur Bedrängung, Be-
engtheit. Um das Publikum schon
anfangs an Überraschungen und
Alogik zu gewöhnen.

1   2   3   4   5
1   2   3   4   5
1   2   3   4   5

1   2   3   4   5

texts, numbers, highlighted letters and words, arrows in various direc-
tions and the constant repetition of the word "tempo".

In this typophoto, Moholy-Nagy expands the application of the
black bar, which is transversal to his books. The use of fillets and typo-
graphic lines to help organize information is a solution explored by fu-
turists in various publications, such as the magazine *Lacerba*. Dadaists
use this graphic element to guide the reader through the typographic
chaos of their publications, and this can be seen in some issues of the
Der Dada, *Dada* or *391* magazines. The conversion of the line or fillet
into a bar with a greater visual weight is obvious in publications such
as the *Mécano* magazine by Van Doesburg (under his Dadaist pseudo-
nym, I. K. Bonset), in *Veshch/Gegenstand/Objet* (Object), published by
Lissitzky and Ilya Ehrenburg, and later in *Merz*, edited by Schwitters.
In *Mécano* and *Veshch/Gegenstand/Objet*, black bars are used to
separate blocks of text, underline information and, at the same time,
structure the publication. In *Merz*, the black bar is often used to flank
the text, a way of highlighting information, which Moholy-Nagy uses
in Bauhaus publications.

In the *Bauhausbücher* series, Moholy-Nagy begins to use the
bar in a more structuring manner in several opening spreads and in
New Works from the Bauhaus Workshops, throughout the book. In
"Dynamic of the Metropolis", Moholy-Nagy also makes use of the bars
to suggest the idea of the grid (the basis of the publication), which is
clearly adopted, for example, in the book *The Isms of Art* (*Die Kunst-
ismen*) *1914–1924*, by Lissitzky and Arp.

FIGURE 6. *Facing pages
from the revised and
enlarged second edition
of László Moholy-Nagy's*
Malerei, Photographie,
Film *(1925), published
as* Malerei, Fotografie,
Film. *1927. Munich: Albert
Langen Verlag.*

Curiously, in the typophoto that he creates for his book, the mesh of black bars is closer to the graphic solution of the number 11 of the *Merz* magazine, designed by Lissitzky and dedicated to "Typo Reklame". The maturity of the grid's application, much appreciated in the "Swiss Style", a graphic design movement that replaced the new typography, is evident in one of the last books in the series, the *Bauhausbauten Dessau* by Walter Gropius. Composed entirely of sans serif typefaces and demonstrating a mastery in the arrangement of photographs as well as in the text-image relationship, Walter Gropius's book elevates Moholy-Nagy's design to the much sought-after communicational functionalism of the new typography and the typophoto, which the Swiss Style will quickly adopt.

4. CONCLUSION

Although Moholy-Nagy started his artistic career in the plastic arts, many of the principles that guided his paintings and sculptures are also present in his activity as a designer. His time in Berlin would be a decisive opportunity to explore and synthesize the trends of various avant-garde movements, such as Dadaism, the De Stijl movement, Suprematism and Constructivism in the defining of a style and a language of his own. The initial fascination with the Dadaist freedom of expression would progressively give way to an exercise in abstraction and formal purification which is used in constructivist ideology. Furthermore, it was his commitment to constructivism that would lead him to teach at the Bauhaus.

Nagy's entry into the Bauhaus coincides with his awakening as a designer which, in a way, is in keeping with the multidisciplinary character of the constructivist "artist-constructer-engineer". The new typography is a logical consequence of a Bauhaus committed to implementing a new pedagogical philosophy, based on the connection between art and industry. Similar to the development of Moholy-Nagy's pictorial and photographic practice, the new typography was also a way of testing and overcoming the existing conventions in graphic design, in the sense of creating a "new vision". In the text "Production—Reproduction" ("Produktion—Reproduktion"), Moholy-Nagy called for the creative—and productive—use of means that have been used "solely for purposes of reproduction" (Moholy-Nagy [1925] 1969a, 30). He uses photography as one of the examples, although the idea can also be extended to typography. With the new typography, typography is no longer a mere reproduction system but one that should be converted into a process of creation.

Moholy-Nagy was aware that creative freedom in terms of design would only be possible by abandoning Gutenberg's classic typography and by adopting new, more practical and versatile means of production in the composition of typographic elements such as those based on photographic technologies. Therefore, the essence of the

new typography stems from a fundamental premise: the content of the message will dictate its graphic form. This idea, later explored by Tschichold, prompts the breaking of the conventions of the classic model or the old typography where, regardless of the content, any message is rendered in a rectangular layout, in a symmetrical balance. Here, Moholy-Nagy returns to the goal of materializing compositions in a dynamic-eccentric balance, which he stated in the manifesto "Dynamic-Constructive System of Forces".

In a clear echo of the manifesto "A Call for Elementarist Art", the new typography should also be reduced to something elementary: typographic elements. The typophoto, the combination of the photographic image with the typography, made the new typography more functional, clear, and objective in terms of communication. Simultaneously, photography advanced the graphic object closer to the visual language of modern mediums such as cinema.

The need to break the old typography conventions leads Moholy-Nagy to equate new graphic composition strategies that help the reading process. As a starting point, Moholy-Nagy takes the example of newspapers and advertising which combine a multiplicity of messages that need to be rapidly communicated to the reader. The concept of vision in motion is born from that need to assimilate information at a glance.

In the design of the book-album *Staatliches Bauhaus in Weimar 1919—1923* and in the books of the *Bauhausbücher* series, Moholy-Nagy uses the new typography to accomplish the notion of vision in motion. This notion is achieved by exploring the visual dimension of the book, in terms of imagery and typography. Thus, Moholy-Nagy's books are converted into visual books due to the preponderance of the image that is not subordinate to the text but equivalent to it, and the exploration of typography, in graphic notations designed to guide the reader's gaze and optimize the reading process. In response to the communication imperatives of modernity, Moholy-Nagy rethought the conventions of the book to improve its aesthetics and functionality.

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COMMUNAL RESPONSE(S):
DESIGNING A SOCIALLY ENGAGED NATURE RECOVERY NETWORK

Rob Phillips

ABSTRACT

The 1940s New Bauhaus professor Moholy-Nagy was the pioneer of the concept "design for life", promoting communal methodologies and technological alliances. He also fostered empathy and new models of citizenship. Today industrial and individual actions are the cause of dramatic environmental consequences, which require us to transition to sustainable, communal, ethical, and circular designed interventions: interventions which consider their own end of life, repair, and circularity. Authors typically interpret Moholy-Nagy's "design for life" metaphorically in "life around us" and create design interventions which foster new behaviors and communal approaches. Distributed design approaches enable communities to have agency over environmental challenges that impact them, meeting their contextual needs. Communal Response(s) (that is when a community responds to something it affects it) presents and discusses a design-led vision, coalescing Open Design, Engaging Design, Nature and Ecological Citizenship. Communal Response(s) collectively empower societies as digitally amassing environmental data will become more commonplace. These "public interest technologies", which accrue data/evidence, are known as Citizen Science (CS). We present projects, literature, and conceptual practice(s) to signpost scalable and communal opportunities. The article consolidates "preferable future(s)" through narratives, and is validated by leading wildlife experts. This design-led and "socially engaged" Nature Recovery Network seeks to empower dispersed communities through their alignment in a design space. The "design space" moves beyond conventional models, delivering communal design(s). The narrative proposition(s) empower local environmental and cooperative responses, with the potential to scale. The construct presents an embedded vision of socially engaged design in relation to Moholy-Nagy's "design for life", with legacies that impact the natural world. Its audiences are design agents, ecological parties, communities, and strategists who are committed to "communal design for transition" to sustainable practices.

#Communal Legacies, #Socially Engaged Design, #Design Ecologies, #Ecological Citizenship

INTRODUCTION

This article occupies a unique design space, one which unites disciplines that are building toward "communal design" legacies. We will introduce contemporary subthemes and their inter-operability into design practice. The design space is inherently valuable as (over time) it will proliferate/benefit communities/the public realm through grassroots initiatives. As public access to technologies, resources and design tools becomes more available, so too will this typology of "communal design" become more popular. Communal Response(s) unite communities to respond to their contextual needs and requirements through design tools and materials. The article perceives scenarios, narratives and trajectories scoping Communal Response(s) developed out of the Bauhaus's constructivist approach.

  When the New Bauhaus was founded (1937), Industrial Design was referred to as a "new profession" (Malherek 2018, 52). László Moholy-Nagy insisted designers "should be visionary, socially conscious leaders rather than mere consultants serving industry" (Malherek 2018, 52). The New Bauhaus's approach "develop[ed] new skills in unemployed craftsmen through the production of useful equipment and environments" (Mavigliano 1987, 34). Moholy-Nagy advocated for empathic design approaches as "technical skills could quickly be rendered obsolete. The education of designer[s] developed fundamental attitudes and emotional capacities that could be applied to new social and technological contexts" (Malherek 2018, 52). This unified a pedagogy of *design for life* and influenced entire cultures to enhance quality of life (Findeli 1990). Bauhaus approaches united art, technology, and design, in a foundational approach, which is known as *Vorkurs-style* education (Lerner 2005). Moholy-Nagy used photography, at the time the most modern technology available to their "pedagogy and artistic outputs" (Stetler 2008), because photography "is a servant of the sciences and the arts" (Botar 2004, 525). Moholy-Nagy was a constructivist and felt a "good art environment could promote good individual and communal values" (H, Moholy-Nagy, n.d.). Moholy-Nagy's documentary *Lobsters* (1936) provides information about "the lobster" and its biological development and chronicles the adventures of a fishing crew. *Lobsters* is a technological foray into documenting the natural world (Schoula 2019). Moholy-Nagy's photography and technologically oriented constructivism has been referred to as the "Bauhaus image" (Tóth 2013).

[2] *Open Design provides legacies that live beyond the designer and the object. They are often repairable and or get translated into other outputs over time.*
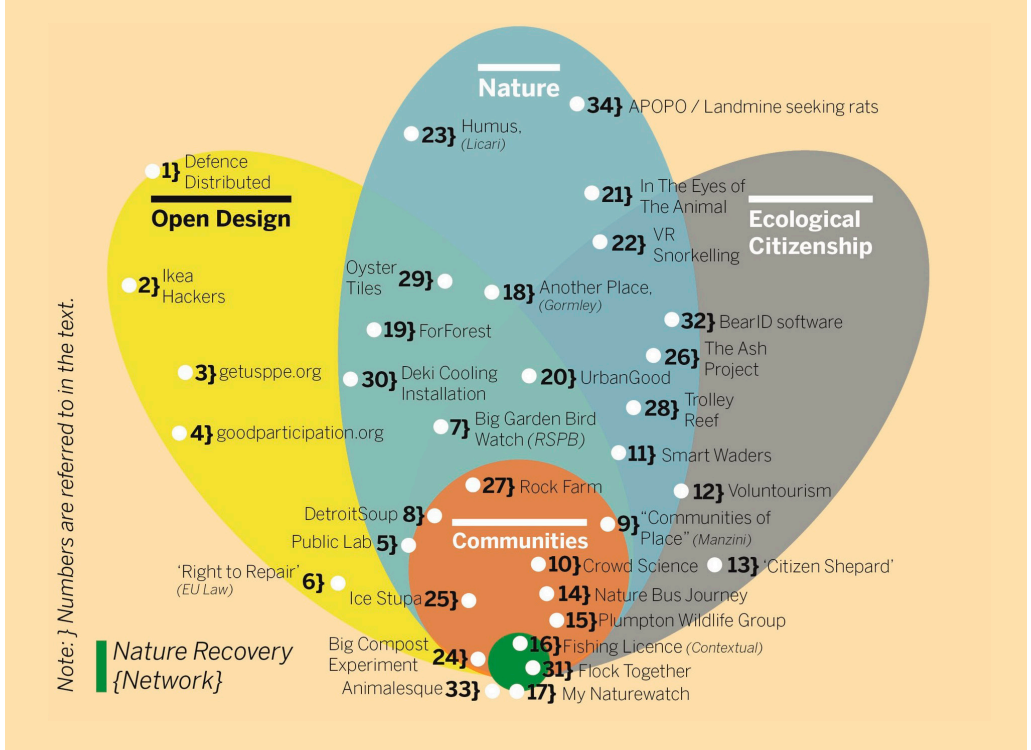
[3] *Throughout the text numbers in {...} brackets refer to projects presented in FIGURE 1.*

We see Moholy-Nagy's "technological constructivism" as akin to modern-day "open-source" principles and means, which provide legacies[2] and accessible approaches. Moholy-Nagy's theories and practises are truly revolutionary. For example, the "new media of light" is comparable with modern virtual reality in its transformation of "design practices" (Iskin 2004). Recent design contemporaries (Bason et al. 2021) published a "New Bauhaus for a Green Deal", stating we have the technologies we need for "the Green Deal", however, "our core challenges are behavioral, cultural, political, and economic" (Bason et al. 2021, 2). In other words, we need to design with and for people. The process in which Moholy-Nagy explored artistic territories—which historians have called "The Future of the Past"—was radical, experimental, and truly inter-disciplinary (S. Moholy-Nagy 1961). His influence as a teacher has remained legendary, with recent "renewed enthusiasm for Moholy's near-scientific inquiries into visual perception has led to a resurgence of interest in his laboratory-like practices" (Miller 2019, 128). For example, the meticulous process of exploration, and attention to detail and new mediums (within design practice). Moholy-Nagy's approaches have also been referred to as "Artistic Adventurism" (Kostelanetz 1969) and "schooling the senses" bringing the most contemporary approaches to the Bauhaus workshops (Otto 2009). Finally, there is an imperative construct to the "new visual literature" that Moholy-Nagy brought into the work of their students and communities (Otto 2009). These collective elements were born out of ages of austerity, oppression, chaos, and turmoil. These situations are comparable to the more contemporary challenges we currently face, after the Covid-19 pandemic. The active role of his teaching in society, nature, and communities reflects the importance of Moholy-Nagy's teaching within our contemporary lives, regardless of the change in materials and/or technologies.

We interpret Moholy-Nagy's "design for life" both metaphorically as "life around us" and as the creation of design interventions to foster new sustainable behaviors. We consider "Ecological Citizenship" a future life skill, carefully mitigating human impact(s). Finally, "communal values" are also present in Open Design practice, where tools help non-expert audiences alter designs for bespoke requirements. This article unites "Engaging Design" (Phillips and Gant 2020), "Communities of Place" {9}[3] (Manzini 2019), "Open Design" (Abel et al. 2011), "Ecological Citizenship" (Phillips et al. 2020) and "Nature Recovery Network" (UK Government 2020b). This article's 'design space' addresses contemporary design practice, biodiversity loss, climate change and redefines Moholy-Nagy's communal design legacy. Moholy-Nagy's documentary *Lobsters* can be seen as a version of this contemporary convergence. Lobsters provided information, culture, and artistic endeavor united around "communities" (Schouela 2019). The design space of this article (introduced in Fig. 1) shows the overlapping territories of Engaging Design, Open Design, Nature, and Ecological

Citizenship. The unifying factors are Moholy-Nagy's communal design values, and the potential for communities to solve their own challenges. We will introduce each territory and summarize the contextual "potential" for clarity.

FIGURE 1. *Design Space Convergence Map*

Note: } Numbers are referred to in the text.

Nature

34} APOPO / Landmine seeking rats

23} Humus, *(Licari)*

1} Defence Distributed

Open Design

21} In The Eyes of The Animal

22} VR Snorkelling

Ecological Citizenship

2} Ikea Hackers

Oyster Tiles 29}

18} Another Place, *(Gormley)*

32} BearID software

19} ForForest

26} The Ash Project

3} getusppe.org

30} Deki Cooling Installation

20} UrbanGood

28} Trolley Reef

4} goodparticipation.org

7} Big Garden Bird Watch *(RSPB)*

11} Smart Waders

27} Rock Farm

12} Voluntourism

DetroitSoup 8}

Communities

9} "Communities of Place" *(Manzini)*

Public Lab 5}

10} Crowd Science

13} 'Citizen Shepard'

'Right to Repair' *(EU Law)* 6}

Ice Stupa 25}

14} Nature Bus Journey

15} Plumpton Wildlife Group

Big Compost Experiment 24}

16} Fishing Licence *(Contextual)*

31} Flock Together

Animalesque 33}

17} My Naturewatch

Nature Recovery {Network}

ENGAGING DESIGN

Engaging Design (ED) showcases creative material, models and methods for transformative engagement(s). Sustainability is arguably a human construct born from the necessity to readdress our relationship to a range of issues associated with our biosphere dependency. Engaging Design "borrows from design traditions and emergent design disciplines; to engage design (verb) as a tool (for change), to design in ways that engage" (Phillips and Gant). ED is a process that recognizes its own capacity as a form of 'material'[4] and is a cultural language that places value on supporting interactions, especially ones that deal with the critical issues of our time. ED is used by NGO's, design agents, communities and government organizations. It requires appropriate health caveats for the space, environment, scale and communities it operates within. The definition of "Engaging Design" (Phillips and Gant 2020), is validated by projects and evident in recent Governmental calls "for a new era of community power", supported by extensive funding (Cabinet office 2020).

[4] *We are proposing that engagement and the act of engagement is a material like wood, metal, plastic, etc.*

Engaged (Bucher 2019) highlights the importance to remember that "people are different (there will rarely be a one-size-fits-all solution), context matters (nothing happens in a vacuum) and things change users' needs will change over time". In *Ruined by Design*, Monteiro states "we need to measure more than profit. We need to measure impact on the people whose lives we're affecting" (2019, 26). In the "age of engagement", it speaks volumes that the leading consultancy company IDEO produces *goodparticipation.org* tool-kit {4} (IDEO 2020). With the international proliferation of digital systems, "it's important to consider how systems will affect citizens" (IDEO 2020). For progressive ED we must adopt wider perspectives. We need to give "engaged parties" the responsibility and authorship to transform their local environments into ones that benefit their communities, based on local needs. An ED exemplar is Detroit Soup {8} a "social crowd funding innovation that directly affects the local community" (Detroit SOUP 2020). Participants pay a door fee and attendees present local community projects. Over a meal, diners vote on favorites, with the winners awarded finance to use for their venture. ED aims to enable participants to transition beyond consequence mitigation and become proactive and engaged. We will provide a summary which considers where and how they help parties "engage beyond participation".

COMMUNITIES

Moholy-Nagy describes designing as "a complex and intricate task. It is integration of technological, social and economic requirements, biological necessities, and the psychophysical effects of materials, shape, color, volume, and space" (Moholy-Nagy 1947, 42). We will interpret Moholy-Nagy's values into positive legacies that influence thinking, meaning and establish principles, such as, the community and context are critical in design. In *You Are Not a Gadget*, Lanier clarifies the "important thing about a technology is how it changes people" (Lanier 2010, 4). Lanier remarks, small changes of digital designs can have profound unforeseen effects on human experiences (4). These elements have redefined communities as they have profoundly changed in the last twenty years. For example, telecommunication transforms our "communicat[ion] irrespective of distance, communities refer to places that are not necessarily physical" (Manzini 2019, 20). The author of this article views communities as parties who "live in the current technological environment, have become connected individuals, connected by social media and the internet" (Manzini 2019, 21). In *Community Technology* Hess states that without community, technology cannot function (1979). Hess famously created "project champions", establishing networks and legacies for projects through communities. In *Get Together*, Richardson, Sotto, and Huynh highlight foundational values; "approach community-building as progressive acts of collaboration, doing more with others [at] every step" (2019, 14). They believe communities should be purposeful,

fully participatory and repeatable, i.e., functioning around a core theme and scalable (42). In "Diversifying Environmental Volunteers…" Winch et al. state that by "[m]odifying nature volunteering projects where possible to [match] interests will enable conservation organizations to […] harness online search methods to recruit new pools of volunteers" (2020, 29). In summary, to foster and encourage community driven activities, it is imperative to align objectives and motivations, foster creation, and encourage communities to be self-sustainable.

OPEN DESIGN

Open Design (OD) empowers communities with accessible technologies. OD is a "catchall term for various on-and offline design and making activities, used to describe a design process that allows for (is open to) the participation of anybody (novice or professional) in the collaborative development of something" (Tooze et al. 2014, 538). OD builds on digital and analogue "crafts" exploiting off-the-shelf technologies so users can create technical things. The design process democratizes access to construction information in a post-industrial world, presenting opportunities for communities to sustainably respond to bespoke needs. OD also unlocks local manufacture, repair, economies, distribution, and material reclaim/reduction. OD is an outcome of two intersecting global trends: the maker movement and the digitization of the design discipline, resulting in stakeholders having agency over the items they make, repair, use and adapt. The recent EU "right to repair" bill {6} is transforming industries, as "manufacturers [will] have to provide spare parts for 10 years" (BBC 2019). In 2007 *Ikea Hackers* {2} *(www.ikea-hackers.net)*, a modification blog for users to repurpose IKEA goods, was born. This transformed Ikea from a retailer of "finished products" into an online shop of "parts" for end-user adaption. An OD provocation is Defense Distributed {1} *(defdist.org)*, an open-source firearm project. Their weapon caused media hysteria within days of its release, but transformed firearm law overnight, provoking authorities to look again at responsibilities and ethical best practice. OD's "innovation" is located in the notion that creations have "social lives" online. An organization which uses OD is Public Laboratory of Technology and Science {5} (PLOTS) (Bobbio 2019). PLOTS create "balloon monitoring kits, to visually map the earth" gathering evidence b commercial mapping. OD extends technology exponentially, for example, the ways in which photographic technology has undergone changes in terms of connectivity, accessibility, quality, and convenience. These have exponentially accelerated image capture including scenarios like wild animal facial recognition (Ogden 2020) {32}. In summary, Open Design practices unlock possibilities to distribute goods and material to alternate audiences, outside researchers' comprehension. OD also demonstrates a desire by communities to adapt blueprints and become actively involved (Rotman et al. 2014).

NATURE

Citizen Science (CS) is the participation of non-scientists in data collection for scientific investigation (Irwin 1995). The recording of seasonal events has been a pastime amongst natural historians with records going back to the 1730s. CS provides an indispensable means of combining environmental research with education and wildlife recording. CS "shifts power from scientists to the public", empowering communities to capture data on events that might impact them or their surroundings (Piesing 2020). An example of CS is that of children living in rural New Zealand who use school bus journeys to catalog deer, elk, and domestic livestock sightings {14}. The bus journey project helped people get actively involved in their environment and transformed their approach to nature (Irwin, Jensen, and Jones 2013). The RSPB's (Royal Society for the Protection of Birds) "Big Garden Bird Watch" {7} demonstrates that public audiences are willing to participate in "Crowd Science" activities, with over 600,000 people taking part in 2014 (RSPB 2014). A UK Government Department for Environment, Food & Rural Affairs (DEFRA) paper highlights that "government and society need to account better for the value of nature, particularly the services and resources it provides" (UK Govermnent 2011, 2). DEFRA stresses creating community partnerships, to manage environment(s) is paramount. Sprawling cities (Cox et al. 2017), funding reductions (Burke, Davis, and Diffenbaugh 2018, 549) and extended working hours (Ganster, Rosen, and Fisher 2018) have transformed our relationship with wildlife (Richardson 2020) and natural systems. We are distanced from protecting/connecting with our surroundings by an "othering" of nature (Uggla ans Olausson 2012). Our traditional relationship to nature was defined by food (Uhlmann, Lin, and Ross 2018), forest, fuel (Cincinelli et al. 2019), seasonality and self-sufficiency (Kelobonye et al. 2019). Sustainable Design rarely *explicitly* undertakes design's intent on propagating biodiversity or interrogating our consumer role as "Ecological Citizens".

In 2001, an outbreak of foot and mouth disease ripped the United Kingdom's agricultural industry apart. Surrounding national parks were closed, costing the public sector over "£3 billion and the private sector £5 billion+" (DEFRA 2004). The outbreak infected livestock, required flock culling, and prevented tourists from entering countryside areas. The 2001 events demonstrated a fine balance between public volume and nature dependencies. National parks encourage public engagement/activity, however "protected areas are not playgrounds": "national parks are assets for tourism, but not tourism assets" (Buckley 2009, e1000143). Our interactions with nature can be far too vigorous, unconsidered and cause untold harm. For example, across America, national parks face a popularity crisis. The Park Service reported, visitors are "loving nature to death" increasing tourist numbers. Glen Canyon, a park manager, stated: "social media is the number one driver, people are looking for the iconic photo" (Simmonds 2018). In 2017, the national

parks saw 330.9 million visitors, the highest ever recorded. In "Yellowstone, America's oldest national park, visitation has surged 40% since 2008, topping 4 million in 2017" (Simmonds 2018). The World Tourism Organization's 2030 aim is "responsible tourism", understood as "a driving force towards economic growth, inclusive development and environmental sustainability" (World Tourism Organization 2020). An ED example is Eco-tourism exploring exotic, often threatened, natural environments to support conservation efforts. The "voluntourism" challenge is "many agencies are profit driven, and work meeting the volunteers demands rather than the charities" (Jenkin 2015). To summarize, these examples of nature and public relationships highlight the contextual considerations that "communal design" approaches require. This area is delicate, interdependent, and reliant on many intertwined challenges.

ECOLOGICAL CITIZENSHIP

We argue for designing *with* nature, actively preserving and propagating, through our actions. Thus we present "Ecological Citizenship", which transcends consumerism by impacting culture, enacting sustainable change, and empowering resilience of local communities. These challenges are large-scale, complex, and socially responsible. They demand responses from communal design, including public communities. For example, one impact on nature is increasing artificial grass sales due to "time poor" lives. In the past four years in the UK, there has been more than a "220% increase in artificial grass sales [which has] impact[ed] surrounding domestic wildlife" and biodiversity (Laville 2018). Gardens and green spaces (no matter how small) are critical to biodiversity (Barkham 2018). Garden biodiversity is plummeting, presenting a "hyper-reality, substantially divorced from surrounding natural ecosystems" (Cannon 1999, 287). In 2019, artificial grass sales "equated to "3,000 hectares (12sq miles) of garden vegetation lost over eight years", reducing the UK's bio-diversity (Laville 2018). Coupled with the rise in "nature deficit disorder", this has meant less time spent in nature (Louv 2008). In "A Measure of Nature Connectedness", Richardson et al. state that the "size and suddenness of the drop-in levels of nature connectedness from [ages] 10-15 is notable" (Richardson et al. 2019).

Communally designed "nature engagement" initiatives are increasing, for example Flock Together. Flock Together {31} is a national collective uniting people of color in the activity of birdwatching, and is empowering communities to care for their natural world. Hopefully more communal design initiatives will help new forms of Ecological Citizenship. An "Ecological Citizenship" example is "voluntourism". Through voluntourism, The Faroe Islands sustain some conservation activities throughout the year. Even before the effects of the COVID-19 pandemic, the Faroe Islands, which was a popular nature retreat, closed to reduce impacts of tourism on wildlife {12}. We see this "social citizenship" example as inspirational but is not a universal solution.

Ecological Citizenship should be embedded within communities, urban and suburban locations and include all social classes. We summarize that enacting "Ecological Citizenship" through daily actions can inform or change our behavior(s) for example, in reducing, reusing, and considering our impact on non-human counterparts, we co-habit the world with. It is a fact that humans rely on non-human species to support the biosphere, preserving life on earth. However, organizations' focus on GDP rather than their "ecological citizenship" ultimately influences our behavioral patterns too. It is our duty to think beyond our actions and in wider ecologies.

DESIGN SPACE ALIGNMENT(S)

The pedagogical methods and utilitarian enterprises of the Bauhaus exemplified Moholy-Nagy's "aspiration to educate the general public in the skills of visual literacy" (Nelson 2006, 259), and this is contextually comparable to contemporary approaches of Open Design. Before his death in 1946, Moholy-Nagy travelled to the Museum of Modern Art (MoMA) in New York for a conference on industrial design as a "New Profession". Moholy-Nagy explained to industrialists that "their 'insidious paternalism' was choking the 'creative independence' of the artists and designers who worked for them" (Malherek 2018, 52). We think there is a direct link with the technologies and approaches to the natural world. i.e., industries which need to become aware of their ecological citizenship. Within the "state of the art" context, we require means to creatively capture and protect the natural world. Such approaches are re-enforced in Moholy-Nagy's "Production—Reproduction": "to understand correctly the mode of human expression and shaping in art, we have to examine the means [they] apply in creative activities" (Moholy-Nagy [1922] 1985, 30). In other words, using appropriate materials and technologies to explore creative activities.

David Attenborough published his *Witness Statement* and call to action. He states that our "future on the planet, the only place as far as we know where life exists, is at stake" (Attenborough 2020, 221). Our relationship with the natural world was transformed by the 2020 pandemic as previously "landscapes are valued, (functionally) for providing air, water, soil for agriculture, land for development and living" (MacGregor 2020). The pandemic led to independent communal responses such as social spaces fabricating PPE (Getusppe org 2020) {3}, the public manufacturing medical scrubs (NHS 2020), and community societies supporting local foodbanks (Perryman 2020). Inn Stirling and Bowman (2020) the barriers to responsive Open Design within a pandemic and developments which require oversight are outlined. We must think more holistically about the wider ecological stakes. Our "natural capital (basis of all life), human capital (skills and aptitudes), social capital (institutions and communities); built capital (everything from cities to manufactured goods), and financial capital

(transferring resources between capitals)" (MacGregor 2020). The British Government is championing a *Nature Recovery Network* (NRN), uniting a broad "network of cross-sectoral organizations work[ing] together to carry out action for nature" (UK Government 2020b). The network would restore protected sites to a favorable condition so nature can thrive, create or restore a wildlife-rich habitat outside of protected sites, recover threatened and iconic animal and plant species by providing more, diverse, and better-connected habitats, and achieve a range of environmental, economic and social benefits. We must "learn to respect and appreciate the diversity and pace of nature and its species so we might better co-habit with the natural world" (Arup 2020, 19). A recent UN *United in Science* report stated that "the COVID-19 pandemic has disrupted lives worldwide. However, the heating of our planet and climate disruption has continued" (UN 2020). The culmination of these territories provides the public with tools, practices and methods giving communities agency to document, engage and act for positive change.

DESIGN SPACE EXAMPLES

The design space enables advancements in communal design that benefit Ecological Citizenship. Conceptual examples include "smart waders" {11}, where individuals who are fishing wear waders with embedded technology (Amos 2015). Fresh water fishing in the United Kingdom requires a rod licence which contributes money towards the maintenance of waterways. Licenses give anglers rights to fish for different species, durations, with annual costs of up to £72 UK (approximately US $119). The fishing license {16} could be a technological device which provides reciprocal information on location, water quality, weight, and species when fish are caught, thus benefiting anglers and government parties. Projects that present "communal design" within this design space (fig. 1) are deforestation (For Forest Forever 2020) {19}, location based sculpture (Gormley 1998) {18}, mapping green spaces (Urban Good CIC 2018) {20}, VR animal perspectives (Iteota 2020) {21}, VR Snorkelling (Wiegand Waterrides GMBH 2020) {22}, Natural Insight (Licari 2012) {23}, Big Compost Experiment (Plastic Waste Innovation Hub 2020) {24}, water innovations (IceStupa 2020) {25}, DIY content creating technologies (Phillips et al. 2020) {17}, public art installations (The ASH Project 2020) {26}, community led responses (guerrilla gardening.org 2020) {27} (Pearce 2018) {28}, repurposing (something andson.com 2020) {28}, material recovery for building (Robin 2019) {29}, natural responses to electrical products (Ant Studio 2019) {30}, Animalesque approaches (Animalesque 2019) {33} and Landmine detecting rats (APOPO 2020) {34}.

The author of this article perceives the "design space" as building toward a *Nature Recovery Network* which supports "humanity, nature, and technology, insist[ing] on rights of humanity and nature co-exist[ing] in a healthy, diverse and sustainable condition" (McDonaugh

1992, 83). A current project within the design space is the My Nature-Watch project {17} (fig. 2). The NatureWatch (NW) camera is a wildlife camera which uses computer vision to take pictures when it sees movement. Active participants have frequently made NW cameras for their colleagues, parents or children, after their own interactions with the project. The NW project fosters "active community engagement", within countless publications and interviews of participants that changed their behaviors. Participants changed the camera deployment surroundings, introducing ponds, landscaping, rewilding, and propagating new flora and more. The NW project's main outputs were in the transformations featured within the participants and not solely the design of camera unit.

FIGURE 2. The My Naturewatch project, foregrounding the 'design space'; photographic credit James McCauley Photography.

The My Naturewatch Camera construction and adaptation.

Camera Deployment, Environment and landscaping.

Final Pictures, produced more connected nature interactions.

METHODOLOGY

In the 1920s and 1930s, Moholy-Nagy created experiments like *Light Prop* "as stepping stones toward a future he imagined to be imminent", i.e., provoking preferable futures through design (Tsai et al. 2017, 314). Moholy-Nagy explored what is referred to by modern design contemporaries as "Research Through Design" and "Design Through Making". These processes are practice-based communal design which foster exploration and serve as narratives which can be built on.

Here we adopt a "research through design" approach, established by Frayling (1994). It is distinguished by "a creative approach in which, both designing, making and researching are integrated" (Bunnell 2000). Coupled with this is Design Futuring, that is the building of plausible scenarios based on evidence and expert speculation. Design Futuring creates scenarios and catalyses a range of responses which require contextualization as "our utopia, is always someone else's dystopia" (Smith 2020). We developed a framework and "design futures" approach of narrative creation, unpicking situations with leading experts. Design-led approaches open up conceptual space(s), enabling collaborative and inclusive approaches.

The preferable futures were informed by previous work, case studies, a literature review, expert leadership from The Wildlife Trusts, and experience through the My Naturewatch project (fig. 2). The article draws on previous inter-disciplinary design research in ambassadors (Phillips et al. 2020), active engagement (Phillips and Gant 2020), the importance of "making/assembling" (Phillips 2018), lessons from My Naturewatch and serendipity (Gaver et al. 2019, 302), advocating and enabling training (Phillips et al. 2019), free interpretation (Tooze et al. 2014, 541), and elements of making/ownership, commonly accessible (Phillips 2014). The methodology was also supported by multi stake-holder forums (Larson and Sarmiento Barletti 2020), participatory innovation (Buur and Larsen 2020), and design reviews (influenced by "co-design as a method") with The Wildlife Trusts board members (Mateus-Berr, Trimmel, and Dezső 2020). The narratives respond to "communal responses" benefiting ecological challenges through "prefer-able" future scenarios. These build on Moholy-Nagy's New Bauhaus principles. Moholy-Nagy also believed in the values of design for so-cial change, a critical rhetoric in the process of designing for public audiences. A contemporary New Bauhaus example, which is integrat-ed into communities, is The Verticak University (VU). The VU "deep-ens place-based skills in sustainable technology, craft, and medicinal plants, and seeks to conserve and activate local knowledge while also creating sustainable livelihood opportunities. It does this through establishing 'learning grounds,' which are micro-conservation hubs, 'classrooms' throughout the landscape" (The Vertical University 2021).

Design speculations and proposals create a space and series of narratives that foster new and futures approaches. While specula-tive designs "imply a lifeworld surrounding a speculative artefact", we foresee more tangible applications of design speculations (Wong et al. 2020). In "Designing Future Experiences", "experiential scenarios create real contexts so that alternative futures can be understood and deliberated on" by audiences (García and Gaziulusoy 2021). The speculations were informed by leading stakeholder reviews, with an iterative design process to comprehend the tensions between creat-ing engagements and avoiding negative impacts.

The following future narratives, draw from parallel references focusing on a "preferable, communal nature engagement future". We created inspiring narratives, which support strategies towards realising a *Nature Recovery Network* and building narratives on *Moholy-Nagy's* legacies of technological advancement and commu-nal design. The framework seeks to create a distributed approach embedding "Ecological Citizenship" within communities and provid-ing them with autonomy whilst contributing to a larger, global ini-tiative. The work builds on "preferable futures" integrating opportu-nities for further development (Hancock et al. 1994). The design approach also builds on the following values to embed communal design responses.
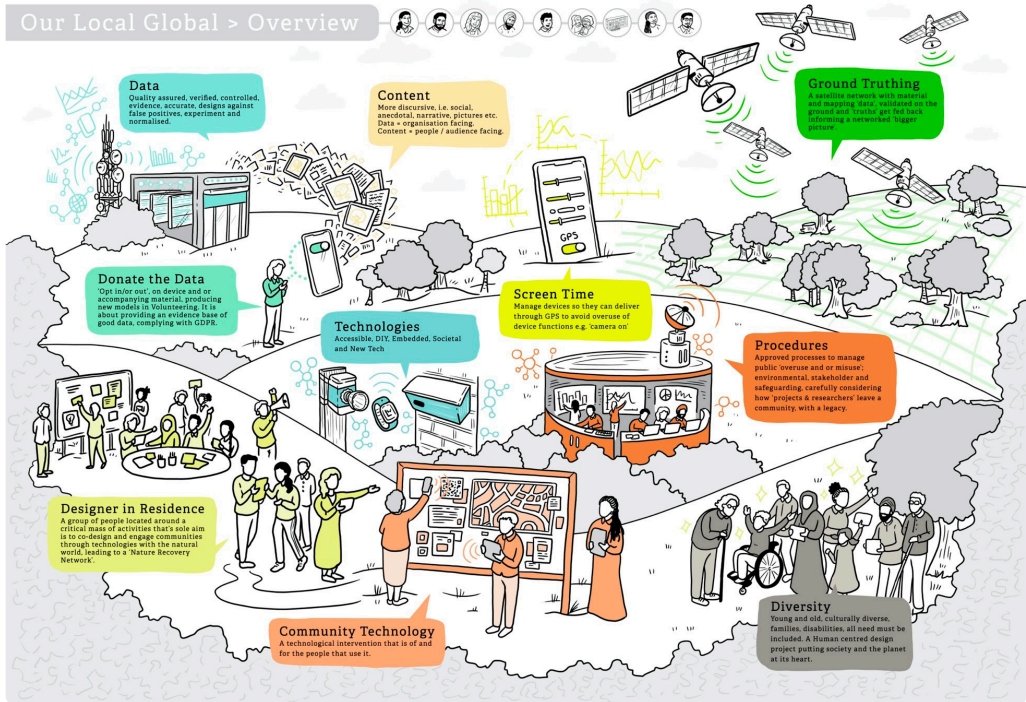
FIGURE 3. *Network with multi-level engagements.*

Designer in Residence: A group of people located around a critical mass of pre-organized and serendipitous activities. Their sole aim is to co-design and engage communities through technologies with the natural world, leading to a "Nature Recovery Network".

Differentiating data & content: Data / quality assured, verified, evidence, accurate, designs against false positives, experiment and normalized. Data = organization facing.

Content / more discursive, social, anecdotal, narrative, pictures, etc. Content = people/audience facing.

Donate the Data: The concept that participants can "opt in/or out", by using your device and or accompanying material, producing new models in volunteering.

Ground Truthing: A satellite network with material and mapping "data", validated on the ground and "truths" get fed back informing a networked "bigger picture".

Diversity: Young and old, culturally diverse, families, disabilities, all need must be included. A Human centred design project putting society and the planet at its heart.

Procedures: Approved processes managing public "overuse and or misuse"; environmental, stakeholder and safeguarding, considering how "researchers" leave a legacy in a community. The final areas that inform the methodology were the extensive literature reviews, distilled and framed in the introduction.

Narrative 1) Bonn (fig. 4): Participating in the "couch to 5km" campaign opting for a "Nature Run" creating an alternate route where they take photos (at specific intervals) (Rodenburg 2020). This more challenging route (overtime) involves meeting with other runners & walkers. Bonn is invited to a national race based on their "content" performance over a year (due to the captured data footprint). Their friends turn up to watch the race and also walk the route, learning how to take community science photos. Bonn realizes they can claim tax benefits as a *'Nature Recovery Network Runner'* visiting sites of interest all over the country (UK Government 2020a). Measurable targets of mapping spaces highlight information relevant to countless stakeholders locally and globally. Bonn plans Airbnb mini-holidays and trips for work to explore locations, based on network activities. Bonn's activities align with *"Citizen Shepard's"* program where walkers log local sheep conditions, linking networks positively, connecting people to local environments (Blencowe 2013).

FIGURE 4. *Narrative 1) Alignment with* Sporting organizations.
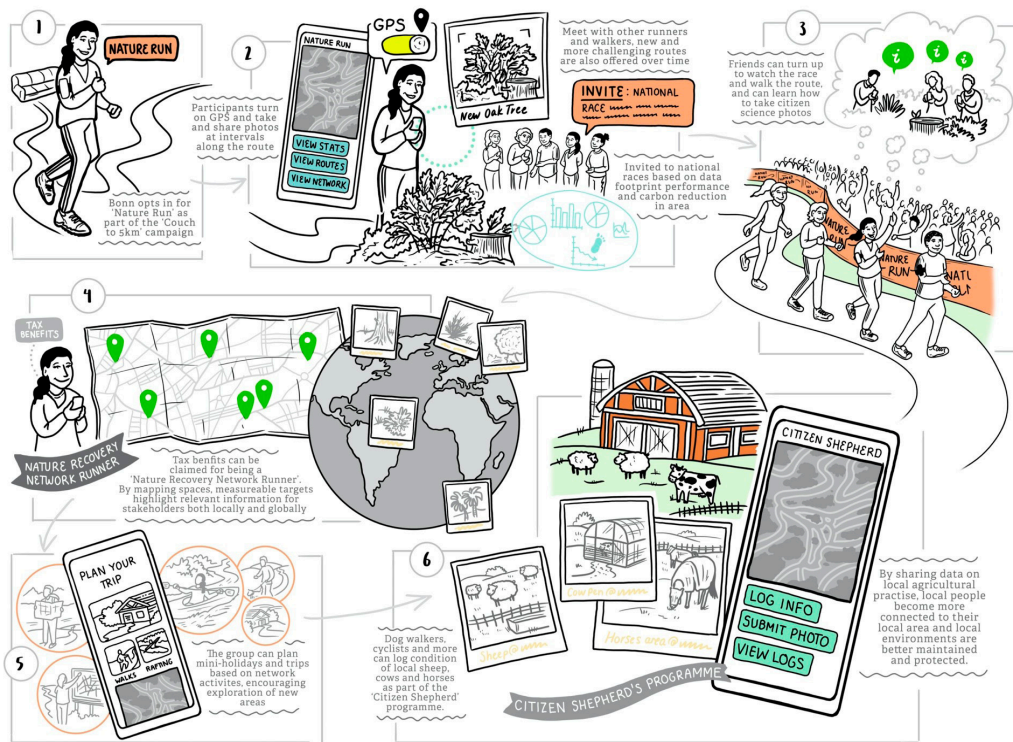
Narrative 2) Vishnu (fig. 5): A teaching assistant and part-time ranger. He researches lottery funding to create a "Butterfly Bank" to transform the landscape architecture of local schools. A small grant finances the earth works (Danahar 2010). Over four years the space is cultivated and re-invigorates the local biodiversity. Vishnu "*Donates the Data*" so impact(s) can be logged (Singtel Optus 2020). Locally, a new "treatment plant" is established. Based on four years of records, Vishnu sees a species decline, and the "monitoring technology" messages the local authorities directly, advocating for the land and local surrounding forest, and this is co-validated by satellite imagery (Public Lab 2020). The part-time 'ranger' is interested in local engagement, the Wildlife Trust is interested in repeating the exercises to nurture viable populations and map existing habitats.

FIGURE 5. *Narrative 2) Community led "part-time" ranger's scheme, building educational links.*
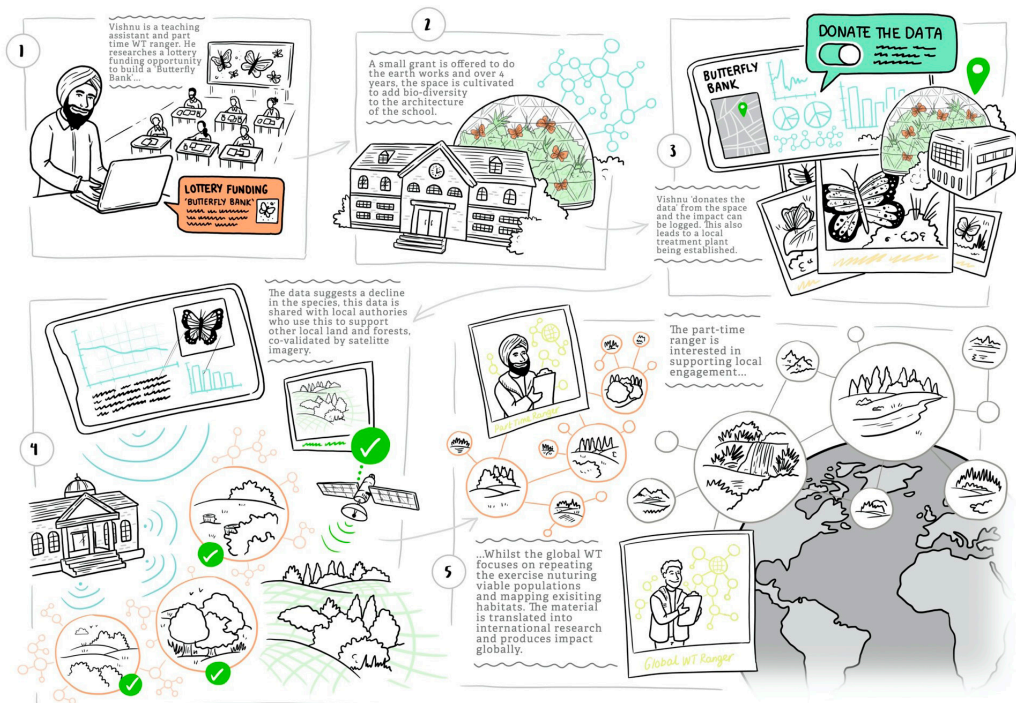
Narrative 3) Eisun (fig. 6): accesses some "Open Technology" being made in a local university research lab. It has been designed specifically to work to find evidence on remote waterways (under its own power), through anglers, wild swimming enthusiasts and locals that care about their watercourse (Amos 2015). It is also open to anyone if they visit those spaces. Eisun places the tech in the water before swim-

ming, decides to "Donate the Data" and then is live captured during the swim. Eisen is able to watch their "content" personal temperature on the wearable device, as an athlete in training they can then monitor calorific intake. Eisun is emailed as their data goes through a "digital approval" process. Eisen's brother takes the tech on their family holiday, just to see if the beaches are as clean as they think. This informs the beach selection for surfing and validates aerial mapping technologies. With their younger child they explore rock pools (with the tech as a "Smart Rock Pooling Net") in a completely different way as the quality of sea water informs them and guides them to places where they can see more active species. The "Data" is used in policy making and by the local tourist board promoting action through evidence, aligning to the WT "Shore search" (Wildlife Trusts 2020).

FIGURE 6. Narrative 3) Open spaces, collaborating with tourist boards.
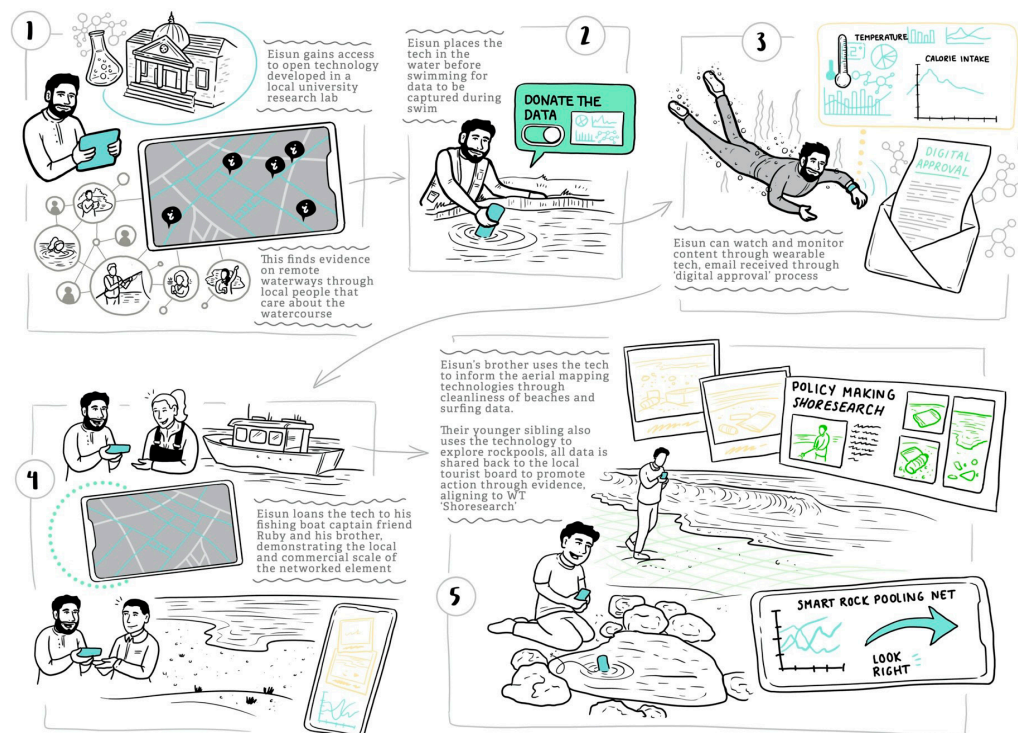
Narrative 4) Choi (fig. 7): lives in a communal tower block, urban area. He is often interested in what is immediately surrounding him. They hear about "swifts" in his school and talks to his local WT officer from a school assembly. They opt to be a "Ranger in Training": a scheme that is run locally and unites people of all backgrounds once a year at the WT AGM, where they can hear about projects. This gives Choi access

to follow a local ranger, providing work experience for college. In his communal tower block the WT place some Swift boxes that are custom made to monitor "growth, health", and access (Just Giving 2020). Choi chooses to *"Donate the Data"* and check-in on the boxes. They also share the bird box *"content"* with his local hospital. In turn this is then broadcast nationally on hospital TV, changing as more spaces become equipped, network forming "buddies" with elements feeding into approved social media channels. The ranger in Training scheme addresses "cohesion and coherence across boarders", sharing best practice, local conditions, and informing decision making of their peers who are involved in government policy.

FIGURE 7. *Narrative 4) Urban and suburban communities supporting.*

1. Choi lives in a communal tower block, central urban area. Their parents work shifts so he is often interested i what is immediately surrounding him...

2. Choi talks to his local WT officer that children have an assembly with...

... they opt to be a 'Ranger in Training', a scheme that runs locally and unites people of all backgrounds...

3. Choi has access to follow a local ranger, and attends the annual 'Ranger in Training' scheme,where he can hear about projects and gain work experience for college.

4. The WT place some swift boxes in the communal towers where Choi lives. They are custom made to monitor 'growth, health and access'.

5. DONATE THE DATA

Choi chooses to 'donate the data' that is then shared with his local hospital. This is then shared nationally on hospital TV, as well as across social media.

6. BEST PRACTISE

The 'Ranger in Training' scheme shares best practise, local conditions and informs decision making of their peers who are placed in government policy.

Narrative 5) Molly (fig. 8): Hears about an urban food project that increases local biodiversity as it is plummeting in our gardens (Barkham 2018). Molly chats to her friends in the pub and seeks advice from her local WT about low/no-tech action he could take. Molly is a film and media student and helps raise £4,000 through a crowd funding campaign. This is enough to grow barley in the central reservations throughout her town, supporting a "Micro Economy" of young people without Saturday jobs (Press 2020). This counts as work experience for

their UCAS statements, CVs and job applications creating a socially informed economy. The nuanced impact is that locals re-review how they are using their gardens, through a national event increasing "garden bio-diversity", supporting a global network (Barkham 2018). The harvest not only helps diversify the traditional look, feel, and aesthetic of the town, but the product was also brewed into ale for a community open mic session. Impacts are: local food producers get the public to witness the role of our eco-system, its complexities, and re-claim "unusable land".

FIGURE 8. Narrative 5) Rethinking; agriculture, biodiversity and diverse spaces coalesce.
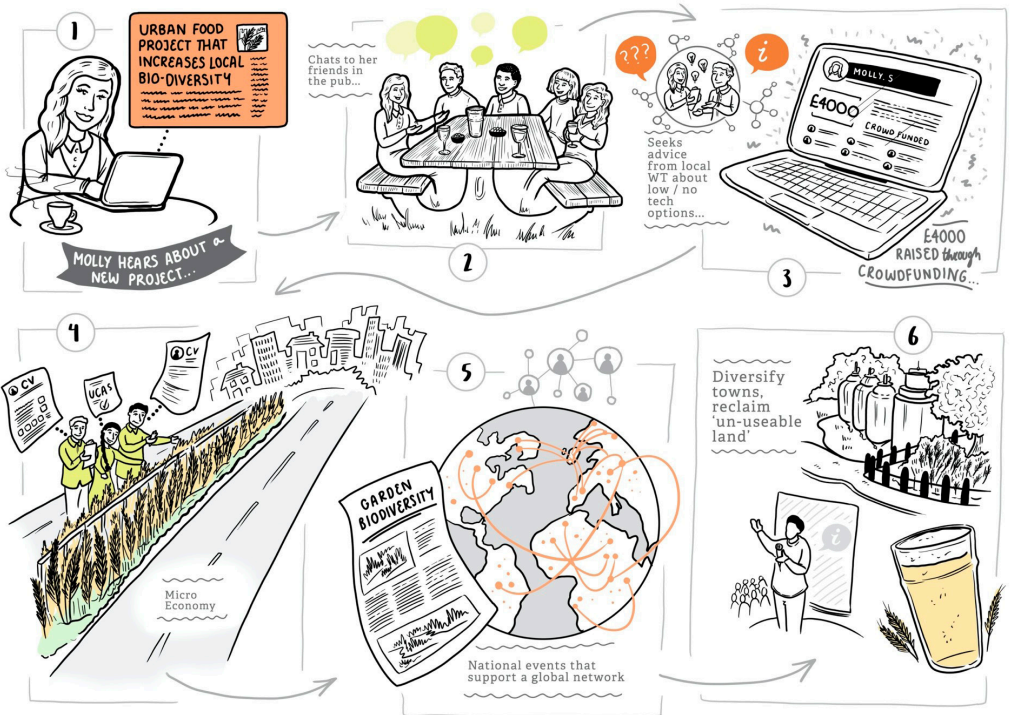
Narrative 6) Ellie (8) & Elanor (88) (fig. 9): Ellie and her mum have just moved to be near her grandmother as she needs more help. Ellie goes for walks on weekends and spots a "big bird" at a "local site of interest". Ellie talks about it to her grandmother and records the sound it makes on her older brothers' phone. Ellie takes the recording to her grandmother's house, and they decide to listen to the recording on the television as a cinematic experience. They decide to "Donate the Data" transferring the "audio content" into "My Soundtrack" of their local town. This live broadcast "radio channel" lets Ellie's grandmother hear sounds she cannot otherwise hear. Ellie starts visiting some of her

FIGURE 9. Narrative 6) Building inter-generational relationships.

grandmother's friends (under safeguarding conditions) providing nature as a link, counter-acting loneliness and depression encouraging more "nature connectedness" through "content".
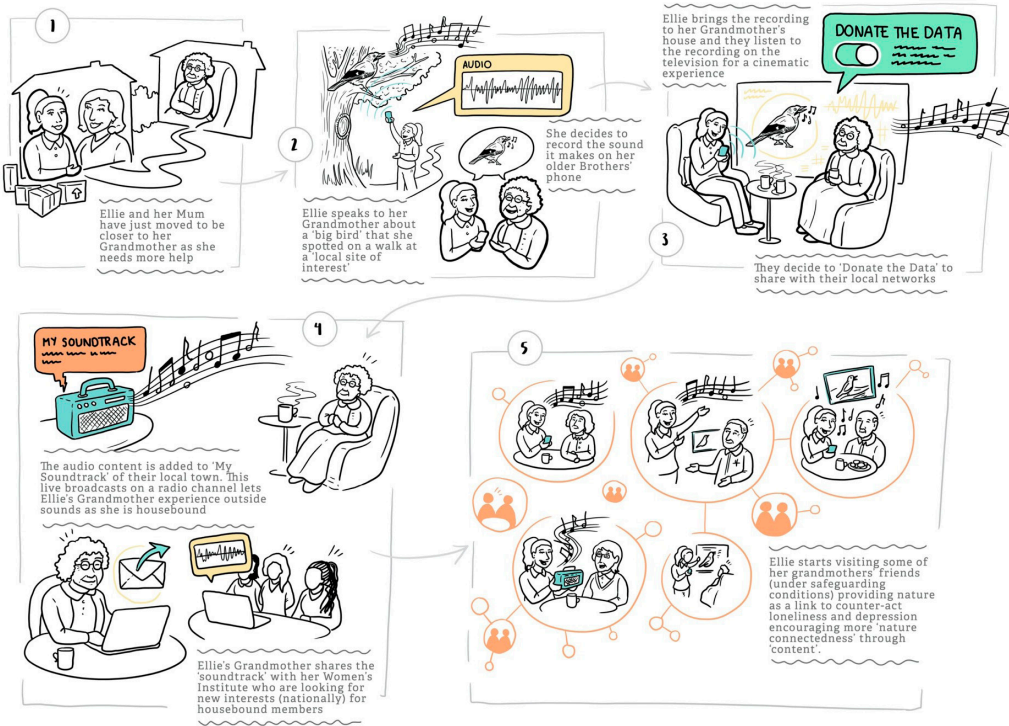
Narrative 7) Small Oaks School (fig. 10): The school is a newly re-formed academy twinned with schools throughout the EU. The school built a "nature environment" gauging their "state of nature". Initiated by hearing about the My Naturewatch cameras on BBC SpringWatch. They become more aware of their ecological footprint as all ages are talking about "A Life on Our Planet" (David Attenborough, Netflix). They team up with a local "Beaver Rewilding project" to look for beaver signs over time and measure their impact. This forms part of a national "Youth Network" where national schools are looking for habitats that are appropriate for rewilding and introducing species (Holland Park Ecology). As part of this, the schools 'football, hockey and rugby teams' take an iPad with them to away games and try to stop at "wildlife laybys" to take a few pics on the way home from a "big match", cataloging roadside wildflowers as it is part of a project that Mighty Oaks (secondary) School is working on. This instigates material from cross curricular

(geography/natural history GCSE) and promotes good practice (Horton 2020). In this way, the school helps local beavers by encouraging local communities not to walk near the site where they set up observation trail cameras. They also share findings with their twinned EU school, sharing insights on the BBC. The process enables cohesion and coherence "across borders". Over four years, the school starts code clubs in parallel with the WT, leading to meeting local councilor(s) and more established long-term funding opportunities.

FIGURE 10. *Narrative 7) Primary school network.*
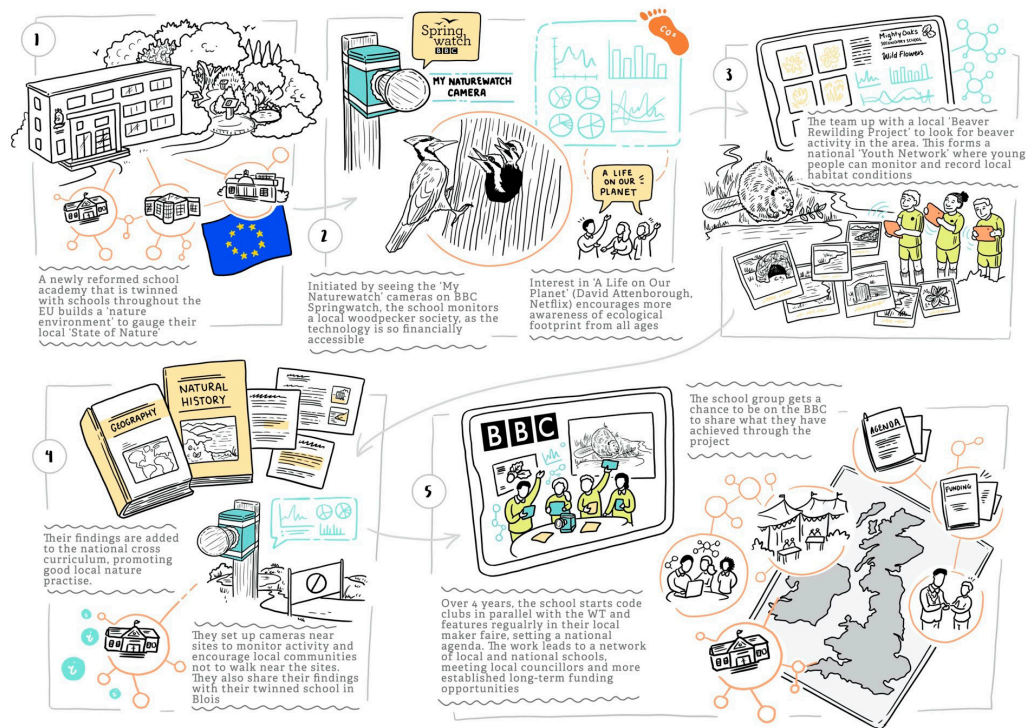
Narrative 8) Shay (fig. 11): Shay lives near a woodland, first found during the COVID-19 pandemic. They see an "info board" (common to sites) about the "Find Experience", in this case, Robin Hood (Gilbert 2018). Shay collects a smart phone, tablet, or a borrowed device from the tourist office. This proposal would comprise of a non-intrusive technology package installed in any woodland or appropriate area, potentially even (pedestrianized highstreets). The experience takes you on an (audio or AR) tour in which you find new assets and points of interest that you can share with your friends or family. The technological process asks you if you would like to "donate your data", this means that as you are using the camera application it documents the state of the "environ-

ment". Based on visitor numbers the technological process, gives people a different journey around the forest (or space) to map the area at different intervals of the year. Shay brings their friends to have a birthday picnic and whilst navigating through the woodland, the "digital content" evolves into an AR archery competition. This directs the "party" to scan particular trees. While they have fun, the "data" cloud receives a mapping of a forest for Dutch Elm and Ash Die Back diseases (chartered foresters org 2014). The application automatically turns off when not used due to parental controls as that was managed by the tourist office at collection. The work gathered and mapped informs local policy and building construction over time. This enables the local municipality to reschedule their planning decisions based on new species establishment.

FIGURE 11. *Narrative 8) AR experience.*
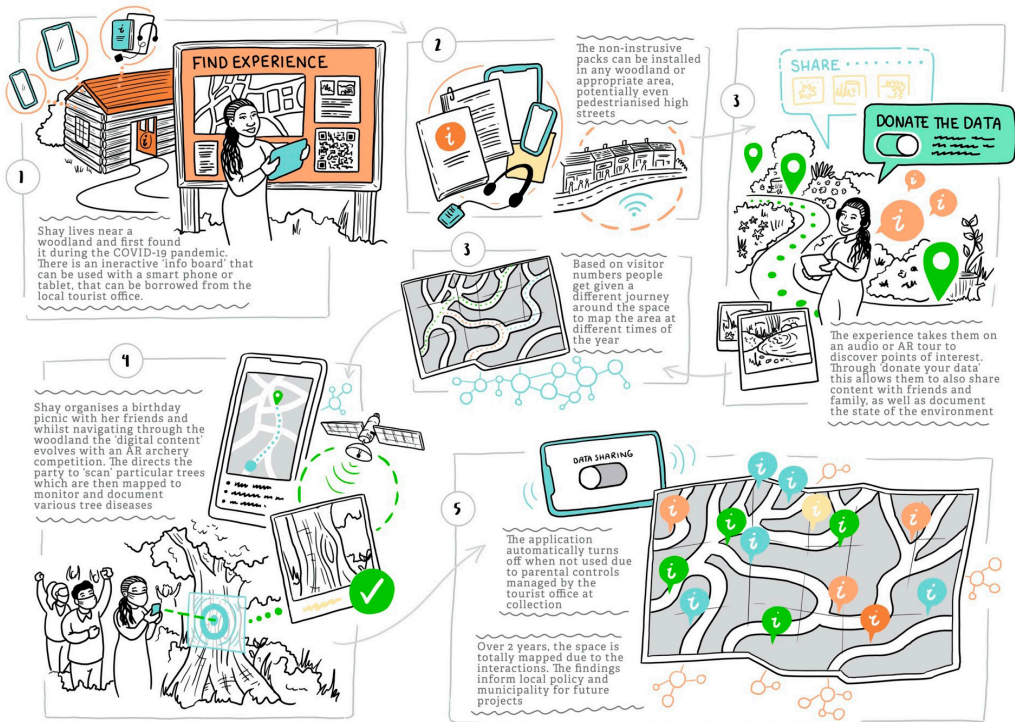
Narrative 9) Jose (fig. 12): lives in a suburban environment, they hear about #30dayswild and decides to "cut a hole in their fence" to encourage hedgehogs. He is also a "digital mature student" who visits his local "wildlife tech in residence" space and makes a "DIY Sensing Tech" (Ravindran 2020). The tech enabled the local WT to identify the hedgehog's scale, entry frequency and when they are pregnant (from weight increase over time). Jose then realizes that their street is interested so they upload tech plans for others to make them, thereby sharing designs. Jose "Donates the Data", including "go pro" camera footage, and checks for 'false positives' as a cheeky squirrel creeps in. For Christ-

mas, they use Hedgehog footprints as "content" to make Christmas tree decorations… as the Hedgehog has become a street celebrity. The local WT gets in touch via social media and ask if he can edit the "pad" to measure weight so they can use it on their reserve. Jose imparts the knowledge and brings the local trust to the Small Oaks School, where he used to go. The school share the plans with their teaching, parental and maker space networks, demonstrating the potential to scale anywhere, whilst building on existing habitat monitoring. Over time, Jose becomes the leading expert as the research team reduce contact. The result is that, for over three years, the school's network is able to see hedgehog growth within the area. The information educates all, informs policy and changes planning decisions for the local council.

FIGURE 12. *Narrative 9) Suburban environment.*
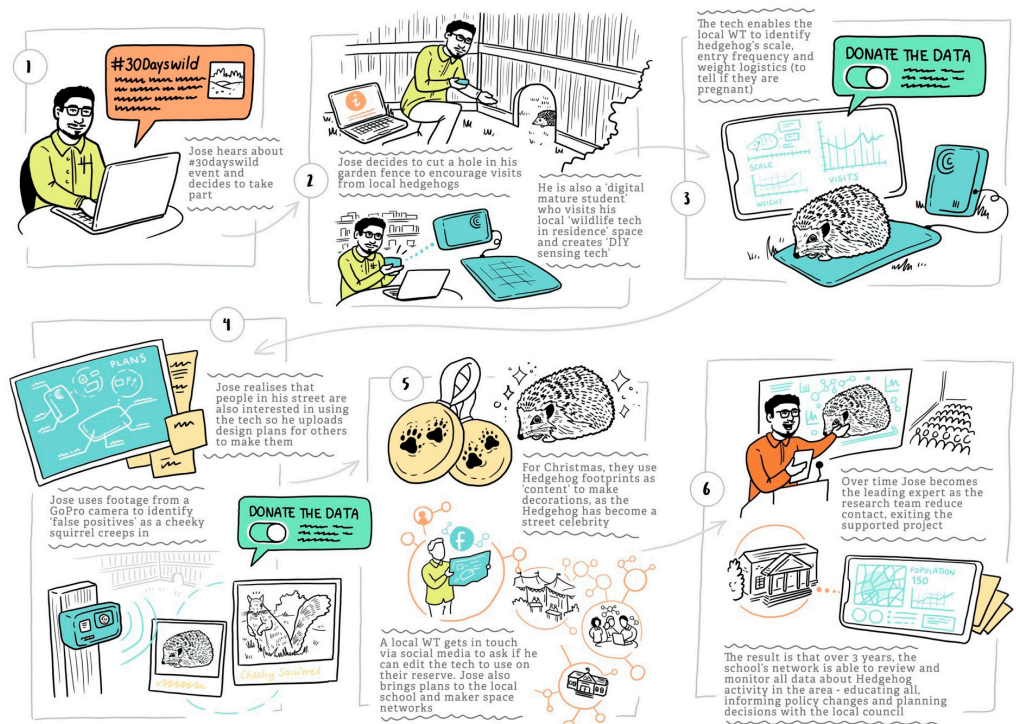
CONCLUSION

As a practice, embedding "Ecological Citizenship" (in our lives) can unite local actions for wider global gain. This in turn can unite people in "community technology", as proven through the My Naturewatch project. These practices can operate on differing scales and means, and should not be limited to those with "spare time", i.e., should not be inaccessible to the "time poor". Moholy-Nagy's work brought about a "new visual culture" which transformed values and informed "communal design". These EC approaches, embody a new visual culture in the way

we look and act within the world. The narratives communicated within the article are contextually based. The following concluded points refer to those situations, through the lens of communal design and should not applied as a blanket approach to "fit" every circumstance.

We break down "signposting themes" to make the concepts repeatable and scalable from the field review and future provocation. 1) *Project Reciprocity*: the notion of linking interests, activities and mutual stakeholder interests. This enables multiple stakeholders to mutually benefit from activities. 2) *Citizenship*: being able to witness the bigger holistic picture, unified with our local space/place. For example, these can be within the acts that we do for our neighbors, outside of legal constructs. They are the process of improving the lives of those around you. 3) *Non-colonialist & collaborative*: listening and connecting, avoiding working top down. We believe that the best communal design approaches should not only belong to the most privileged and or "time rich". Communal design practice requires 4) *routes and methods for exit*: establishing legacies, delivering within means and plan for careful and sustainable departure(s). I.e., carefully considering how these interventions are sustained, continued and or embedded within communities. Communal design should be *Impactful*: fostering measurable change and or evidence that can be validated. This is not just a problem-solving approach, for example a "happy society" is critical, and we should not just seek the most beneficial for individuals.

The proposals for communal design should be 5) *Embedded in Relationship(s)*: built into communities with project champions and or ambassadors. The intended audience of this "working typology" should be *Accessible and Appropriate*; to the intended audience(s) remaining inclusive and progressive, moving the collective forwards and not apart. The largest constraint of this type of work is the concept of responsibility. How open and or accessible should this approach of communal design be? We believe that a democratic 6) *Responsible 'Expert' Overwatch* is required. That expertize could potentially witness/predicting inter-related issues (through experience and tacit knowledge). In the cases throughout the literature (infection control, tourist scale, hidden consequences) oversight of the entire events help foresee and respond to challenges. One large challenge is the *Motivational alignment(s)*, which benefit all parties to avoid exploitation. Motivation is interlinked with *Transparency & Trust*, built over time and transforms how both communal design leads and participants are valued. Finally, there is the potential for 6) *Local to Global strategies*: leveraging opportunities for local input informing a global trajectory. For example, activities that everyone can do on a local level that then informs a global perspective or venture.

We do not possess a crystal ball to the future. However, we do vote for the preferable future where these territories are actively engaged, developed, embraced through the lens of understanding, assurance, and responsibility. Not everyone will "make" or embrace the ability to

do so, nor should they be made to. Amateurs have proven their worth and have scientifically "identified new species if they are given the right tools" (BBC 2020). During times of great crisis, we need to look or help build local knowledge, "indigenous knowledge" and not just 'plug in technology' (Boland 2020). As our world progresses, we need to build with communal design approaches and foster *Communal Responses* towards our ecologically designed future. Future generations will question our 'Ecological Citizenship' and responses to preserve our world in common times. Let's hope we are akin to László Moholy-Nagy's approach, with positive affirmation on contextual issues.

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MOHOLY-NAGY AND THE PRACTICAL SIDE OF SOCIALISM

Joseph Malherek

ABSTRACT

For László Moholy-Nagy, socialism was about progress, and industrial design was a way to incorporate technological progress into the everyday lives of ordinary, working people in the interest of achieving "social coherence", as he put it in his magnum opus, Vision in Motion. *If the economic and social structures of capitalism presented obstacles to progress, they were to be opposed; however, if the competitive incentives of businessmen could be channeled in the interest of progress, the capitalistic framework presented not an obstacle but an opportunity. This pragmatic approach to political economy aligned with the applied-arts ethos of Walter Gropius's Bauhaus, where Moholy-Nagy first established himself as an innovative teacher, but it contrasted with the starker ideological commitment of leftist artists with whom Moholy-Nagy would associate over the years, such as the Hungarian Activists and the circle around the* Ma *magazine and gallery. The idealistic elation of the immediate years after the Great War soon gave way to the rise of fascism and the geopolitics that would define Moholy-Nagy's life as an émigré in Berlin, London, and Chicago. This migrant life of making do in frequently changing circumstances and foreign cultures made Moholy-Nagy more amenable to adjusting the shape of his politics according to the constraints and possibilities of wherever he was. This approach allowed him to thrive as a commercial designer in London, and as the leader of the New Bauhaus/School of Design despite the constant threats to that institution's survival. Moholy-Nagy's partnership and friendship with Walter Paepcke—an ardent capitalist if there ever was one—is in many ways emblematic of the ways in which Moholy-Nagy creatively found ways to keep to the ideals of social democracy within a world of industrial capitalism.*

#socialism, #capitalism, #design, #Bauhaus, #Chicago

As an eternal optimist with a progressive outlook, László Moholy-Nagy always wanted to build something. Whether in physical objects such as an artwork, a collection of ideas that would coalesce in a book, an institution or school where methods of design would be practiced, refined, and tested, or in his small army of protégés (i.e., the students who would carry his ideas forward into the world), Moholy-Nagy was interested in art and design more as positive tools of social progress than as negative forms of critique. His art was an expression of form in a variety of media, and his politics were not doctrinaire but pragmatic and progressive. Technology and industrial design, for Moholy-Nagy, were the building blocks of a social-democratic future. As Victor Margolin has written, Moholy-Nagy was "a utopian socialist, though not a programmatic one, who believed that artists could help to bring about a collective society" (Margolin 1997, 137).

Political disintegration, exile, and renewal are themes that would define Moholy-Nagy's life and career, and his relentless positivity may have had something to do with the experience of always having to make the best of difficult circumstances. The First World War had been so utterly destructive that the political vacuum left in its wake created new possibilities that could be positively liberating on a national as well as individual level. For a nascent artist of a leftist bent like Moholy-Nagy, even a severe injury became an opportunity for a new direction. Serving in the artillery for the Austro-Hungarian army and engaging in trench warfare, Moholy-Nagy suffered a shrapnel wound that shattered his left thumb and would leave it permanently disfigured, and thereafter he would always conceal it when photographed. Although the trauma of war would leave him with his signature streak of white hair—at least according to the later account of his widow-biographer—the long periods of boredom at the front and during his convalescence in military hospitals would afford him the opportunity to practice pencil and crayon drawings and watercolors, a childhood hobby that he increasingly attended to as a profession as he put aside his legal and literary ambitions (Passuth 1985, 14, 396; Kostelanetz 1970, xv; S. Moholy-Nagy 1969, 8; Engelbrecht 2009, 725).

As the Habsburg Empire collapsed, new republics were born in Central Europe, and pre-war ideas like social democracy could, in fact, become realities—at least, for a time, and to some extent. The postwar movements in art and politics that Moholy-Nagy was associated with —including Hungarian Activism, Constructivism, and the Bauhaus—

may have been radical in their posture, but they were ultimately positive in their orientation. Moholy-Nagy could produce multilevel stage designs that didactically dramatized class inequalities for Erwin Piscator's avant-garde political theater, as he did for a production of *Der Kaufmann von Berlin* in 1929. Yet he could also produce abstract, constructivist-inspired window displays for commercial outlets, as he did for the menswear store Simpson's in London in 1936. When he was given the opportunity to reestablish the Bauhaus in Chicago a year later, he reported to his wife, Sibyl, that, on his initial visit, he found the city to have an unfinished quality; it was, he said, "just a million beginnings" in a way that excited his imagination (S. Moholy-Nagy 1969, 143). When the New Bauhaus lost its financial support after only a year of operation, it was a sympathetic industrial titan—Walter Paepcke, president of the Container Corporation—who helped Moholy-Nagy to reestablish the school as the School of Design, and ultimately to institutionalize it as the Institute of Design, which remains in operation today as part of the Illinois Institute of Technology.

Moholy-Nagy's reflections on his pedagogical method, the place of the designer in society, and his own artistic values coalesced in *Vision in Motion*, the book which he completed as he was terminally ill with leukemia, and which was published posthumously in 1947. Even on the eve of his death, Moholy-Nagy remained relentlessly positive and forward-looking, positioning his own Weltanschauung against a prevailing "emotional prejudice" that manifested socially as a tendency to cling to the past and to resist progress and reform (Moholy-Nagy 1947a, 5). Moholy-Nagy's inclination, and that of Walter Gropius and the Bauhaus, was to embrace technology to the extent that it could lead to the "fair participation in the benefits of mass produced goods" (Moholy-Nagy 1947a, 13). Although he was critical of the excesses of unfettered capitalism such as artificial obsolescence, Moholy-Nagy believed that striving toward a common goal could be achieved through education, and that through effective planning and good design, the talents and labors of workers in industrial society could be directed toward the end of "social coherence" (Moholy-Nagy 1947a, 27).

Moholy-Nagy's own writings about the potential of design, the aims of his own work, and his pedagogical approach should be understood in the context of the intellectual milieu and political ruptures that shaped his thinking on politics and influenced the course of his career. Art and politics were thoroughly mixed in the circle of Hungarian Activists associated with Lajos Kassák's *Ma* journal and its adjacent gallery, and the socially relevant ideas of this group would become the "standard" for Moholy-Nagy's own work and his writings about his work (Botar 2006, 30). What attracted Moholy-Nagy was the idea of a "synthetic" art that was not some bourgeois diversion or mere aesthetic indulgence but rather a deeply relevant practice that could bring subjective liberation into harmony with social justice (Passuth 1985, 14).

The rush of postwar revolution in Hungary came with the Chrysan-themum Revolution led by Count Mihály Károlyi, which established a short-lived republic in November of 1918. Though Moholy-Nagy would later support Károlyi in exile, the liberal republic was viewed as inef-fectual by many of Moholy-Nagy's communist-leaning comrades in the Activist circle. Therefore, they initially cheered the declaration of the Hungarian Soviet Republic led by Béla Kun in March of 1919, and Moholy-Nagy also registered his support for the new government. Yet, by some accounts, Moholy-Nagy was viewed somewhat skeptically by the Communists, possibly having something to do with his moderately privileged background. Despite the Activists' appeals to sympathetic government officials, Kun would denounce *Ma* as a decadent bourgeois publication and suspend its publication. After the swift collapse of the Hungarian Soviet government in the summer of 1919 at the hands of an invading Romanian army, Moholy-Nagy would adopt a cynical view of the motivations of the Communists, who, in his view, had failed to revolutionize culture and were mired in a "heap of contradictions." The reactionary wave of "White Terror" that accompanied the rise to power of Miklós Horthy would cause many of the *Ma* circle to flee their homeland, and, after a brief stay in Szeged, Moholy-Nagy would also leave his country to begin his life as an exile in Vienna for a brief period before heading to Berlin, where he arrived in March of 1920 (Botar 2006, 43–63; Engelbrecht 2009, 61–68; Moholy-Nagy 1969, 13–15).

Moholy-Nagy was immersed in the community of exiled avant-garde artists in Berlin, where he would become the representative of Kassák's *Ma* journal, which was by then operating out of Vienna, where many Hungarian exiles had settled. Victor Margolin has observed that, in his Hungarian-language writings from this period, Moholy-Nagy was stridently political in supporting art as a means of bringing about proletarian revolution, but his German-language journal writings, par-ticularly for Theo van Doesburg's *De Stijl* and Herwarth Walden's *Der Sturm*, were politically muted, focusing instead on abstraction as an artistic revolution (Margolin 1997, 63–65). Yet socialist politics was virtually a prerequisite in the Berlin art scene of the Weimar period, and Moholy-Nagy had the good fortune to be introduced to Lucia Schulz, a proudly leftist photographer from whom he would learn much about the craft and whom he would marry within a year. Commitment to the socialist cause, or at least an outward expression of sympathy towards it, may have been deeply felt, but it was also quite simply a smart career move in this context. Among Moholy-Nagy's early commissions was a job designing sets for a production of *Prince Hagen*, an anti-capitalist play by Upton Sinclair at Piscator's Proletarian Theater. Moholy-Nagy had secured the job through his playwright friend Lajos Barta, who had been the head of the Writers' Directorate in Budapest during the Soviet Republic (Botar 2006, 105–6).

While there was a destructive, nihilistic impulse on the left, Moholy-Nagy always sought out the positive elements in artistic movements.

His response to Dadaism is telling: while he appreciated some of its playfulness and its elements of social critique, and he grew to like and adopt the styles of collage and photomontage developed by certain practitioners like Kurt Schwitters, he also detested the tendency toward nihilism, and even cruelty, which characterized much of the Dadaists' work and outlook. In stark contrast, Moholy-Nagy was steadfastly optimistic; he "retained the sincerity of the child—dedicated, without irony," as Sibyl put it (S. Moholy-Nagy 1969, 25). For that reason, it is unsurprising that Moholy-Nagy was drawn to Constructivism, the avant-garde abstract art movement derived from Russian Suprematism and characterized by figures such as El Lissitzky, Kazimir Malevich, and Alexander Rodchenko, whose work Moholy-Nagy and Kassák would later compile in *Buch neuer Künstler*. Moholy-Nagy had been exposed to Constructivism via his friends in the Hungarian Activist community, notably Béla Uitz and Alfréd Kemény, who had visited Moscow in 1921–2, where they encountered the exciting work of the Constructivists and returned to Berlin to proselytize its revolutionary potential. Van Doesburg would also promote the Constructivist idea in the pages of *De Stijl*, and he published a manifesto calling for "Elementaren Kunst" signed by Moholy-Nagy and others, which advocated stripping the artwork down to its formal elements. In contrast to the nihilism of Dada, Constructivism embraced the positive potential of modern industry; its abstract, geometric forms and hard edges suggested a modern, technological future that would replace an ornamental, decadent past (Engelbrecht 2009, 142–48, 186; Margolin 1997, 45–56).

The fusion of art and industry became essential to Moholy-Nagy's approach, always with a view to positive potential. Even a sort of prank such as his famous "telephone pictures," which Moholy-Nagy had ordered to be produced on his specific instructions to the foreman of an enamel factory—a procedure so simply elegant it might have been done over the telephone, he said—were not meant to expose corruption or hypocrisy, but rather to demonstrate a productive possibility and to produce an illustrative story that could be used later for educational purposes (Moholy 1972, 75–78). What thrilled Moholy-Nagy was the challenge of exposing the means of production in the basic formal elements of the artwork itself, as he would creatively demonstrate in later experiments with photograms.

It was this essentially Constructivist idea of aestheticizing the geometrical forms of industrial society that characterized the thirty-eight two- and three-dimensional works in a variety of media presented at Moholy-Nagy's first major solo exhibition at Walden's Galerie der Sturm in February of 1922, which is what first caught the attention of Walter Gropius and would eventually lead to his invitation to Moholy-Nagy to teach the foundation course at the Bauhaus industrial design school in Weimar in 1923. The union of art and industry, and the fine artist with the craftsman, was at the core of the Bauhaus mission and identity, and a forward-looking Constructivist artist such as Moholy-Nagy was,

in the view of Gropius, the perfect man for such a job. Moholy-Nagy's task would be to prepare the "whole man," an ecumenical designer able to think in terms of relationships and work cooperatively toward the end of social progress (Engelbrecht 2009, 197–218; Forgács 1991, 96).

It was at the Bauhaus that Moholy-Nagy's socialist leanings became infused in his work as an artist and teacher to the extent that his political disposition largely acquired a more formal than explicit quality. The cooperative style of instruction at the Bauhaus denied genius but recognized the importance of individual creativity in contributing to a collective, and the culmination of design was architecture, which required a kind of "orchestral cooperation" that symbolized the "cooperative organism we call society," as Gropius put it (Gropius 1935, 39). The Bauhaus was both metaphor and model for social cooperation, and its ends were at once idealistic and practical. The school cooperated with industry, and many of its models were licensed for mass production with the aim of producing high-quality, useful goods—such as Marcel Breuer's tubular furniture—that would be made available to the masses of ordinary people. (The bourgeois patina of the Bauhaus "style"—actually a coincidence of unornamental, functional design—is a historical irony.)[1] The school expanded its public educational mission with the series of *Bauhausbücher* largely put together by Moholy-Nagy, which included his own *Painting*, *Photography*, *Film*, (originally *Malerei*, *Photographie*, *Film*) in which he embraced the mechanical reproduction of artworks enabled by photography and film and challenged the market-fetish of the handmade object (Moholy-Nagy [1925] 1969, 25–26). The books culminated in *Von Material zu Architektur*, published in 1929 and soon translated into English as *The New Vision*, in which Moholy-Nagy described his own pedagogy and the overall philosophy of Bauhaus education and its focus on using design to channel industrial production away from capitalist exploitation and toward social responsibility. By the time of publication, however, Moholy-Nagy and Gropius had left the Bauhaus, which would be finally shut down in 1933 by the Nazis, who saw it as a breeding ground for Bolshevism.

After leaving the Bauhaus, Moholy-Nagy remained involved in the avant-garde world of art, theater, photography, and film, but he also increasingly took on commercial projects in exhibition displays, advertising, and graphic design, producing layouts for books and magazines such as the trade journals *Der Konfektionär* and International Textiles. Being part of the commercial world in no way felt like a betrayal of his socialist politics, particularly as he began to see productive relationships between his own commercial work and pieces of fine art such as the *Light Prop for an Electric Stage*—made in concert with the large German manufacturing concern, AEG—and its accompanying film. He thought of such works as "unconscious" tools that would help to create a "sensory bridge" toward humans' capacity for creating and comprehending abstract concepts. By this medium, "not so much

[1] *For contrary arguments claiming that Gropius era Bauhaus largely failed to realize its mass production goals, remaining an elite phenomenon, see Antal Lakner's 2019 article about the HfG Ulm as a controversial successor to the Bauhaus: "Utazás az ulmi hokedli körül. A HfG Ulm tárgyilagos tárgyai": Disegno 4 (1–2): 38–56. https://doi.org/10.21096/disegno_2019_1-2la.—Eds.*

through […] intellect as through experience," exploitative capitalistic relations might be transcended as a new kind of consciousness could be cultivated that would be "appropriate for the society of the future" (Passuth 1985, 316, 318–19). But whatever productive attempts to reconceptualize the industrialized world on a "socialist basis" had been thwarted by the Nazis' rise to power, and Moholy-Nagy himself, probably based on his association with the Bauhaus, had been summoned in October 1934 to submit paintings for censorship to Goebbels's culture ministry. (Some of his works were reported to have been included in the Nazis' infamous *Entartete Kunst* exhibition in 1937.) By that time, he had already been living mostly in Amsterdam, though he kept a design studio in Berlin overseen by his friend György Kepes, and he would frequently visit Sibyl Pietzsch, soon to be his second wife, and his baby daughter Hattula. The new provocation from the Nazis led to Moholy-Nagy's final resolution to emigrate with his family to England, where there was some hope of reviving the Bauhaus with Gropius in London among yet another community of exiles. With this support network, as well as preestablished personal and professional ties that would ease his visa application, Moholy-Nagy finally arrived in London in May of 1935 (Kostelanetz 1997, 41; Borchardt-Hume 2006, 86–87; Engelbrecht 2009, 507–9).

While he was always occupied with his own projects such as the short film *Lobsters*, in the thriving community of exiled artists, Moholy-Nagy had little trouble securing a string of commercial design projects in London for magazines, advertising agencies, exhibitions, retail shops such as the aforementioned Simpson's, and even futuristic science-fiction films such as Alexander Korda's adaptation of H. G. Wells's *The Shape of Things to Come* (Senter 1975). But Moholy-Nagy always kept the dream of the Bauhaus alive, and when, in 1937, Gropius, who had by then taken a position at Harvard, recommended him to lead a revival of the design school as the "New Bauhaus," he jumped at the opportunity. An association of industrialists and businesspeople in Chicago who had "always subscribed to the plan of the Bauhaus" were looking to establish an industrial design school in their "great manufacturing district of the Middle West," and Moholy-Nagy would be the man to lead it (S. Moholy-Nagy 1969, 140).

The final, American chapter of Moholy-Nagy's life is a tale of excitement and possibility, disappointment and frustration, and ultimately perseverance and renewal, even in death. Despite his initial five-year contract and assurances to the business community that the school would function essentially as a research and development laboratory where the problems of industrial design would be investigated and solutions to design problems discovered, the founders of the school, who failed to comprehend Moholy-Nagy's unorthodox pedagogical methods, withdrew their support after only a year (S. Moholy-Nagy 1969, 149–50). It did not help that the final director of the Bauhaus in Berlin, Mies van der Rohe, had also arrived in Chicago to direct the architecture program

at the Armour Institute (later the Illinois Institute of Technology), presenting something of a cross-town rival. Moholy-Nagy was left scrambling, suddenly forced to supplement his income with commercial design contracts. Fortunately, the idea of the Bauhaus still held sway in the United States: a new exhibition opened at the Museum of Modern Art, *Bauhaus 1919–1928*, which included some works by students at the New Bauhaus and made the school newly relevant to an American audience. The trade publication *More Business* also devoted an entire issue to the New Bauhaus in November of 1938, which included an article by Moholy-Nagy in which he described the school's various workshops in wood, metal, textiles, color, glass, clay, plastics, display, and "light," which included photography, motion pictures, and the commercial arts.

Ultimately, Moholy-Nagy was saved by the intervention of his patron Walter Paepcke, who would become a close friend, and who helped him to gather the financial resources and institutional support from business leaders, foundations, and prominent people in the art world and academia—including John Dewey—to fairly quickly reestablish the School of Design in February 1939. Being in the business of paperboard packages used both for shipping and retail display, Paepcke's interest in industrial design was to some extent natural: it was a fundamental aspect of production for both the Container Corporation and its clients, whose promotional images would often adorn those boxes. Paepcke's wife, Elizabeth, was a key figure in Paepcke's patronage, herself a serious lover of modern art and believer in the principle of good design who encouraged her husband's artistic direction. The Container Corporation's famous institutional advertising campaign of the late 1930s had featured the works of many prominent modern artists such as A. M. Cassandre, Jean Hélion, Fernand Léger, and Man Ray. The ingenious marketing campaign made Paepcke's box company synonymous with modern art in the public mind. Paepcke would later duplicate his efforts to nurture Moholy-Nagy's career with another Bauhaus alumnus, Herbert Bayer, whom Paepcke brought on as a kind of cultural ambassador in Aspen, Colorado, the defunct mining town that Paepcke would transform into a sleek and sophisticated ski resort that catered to an elite class of forward-thinking businessmen.

The School of Design put together by Paepcke and Moholy-Nagy was organized along the same lines as the New Bauhaus and with many of the same faculty, who mostly supported their director. Following the original Bauhaus ethos, the School's program rejected atomization and instead encouraged the "powerful creative stimulus" that came from "social integration" (School of Design 1942). Moholy-Nagy would later insist that designers were not merely technicians but also analysts of the production process with a keen grasp of their social obligations. Because technology and its array of useful objects had become part of the human "metabolism", the aim of the designer was to reevaluate human needs that had been distorted by the "machine civilization"

and use experimentation with the fundamentals of design to seek out solutions (Moholy-Nagy 1946). Cooperation between artists, scientists, and technicians was the ideal of the Bauhaus, and, according to Moholy-Nagy, the designer had a "sociological responsibility which is founded in mass-production" (Moholy-Nagy 1947b). The School of Design's workshops produced practical designs for such varied things as plywood furniture, radio cabinets, lamps, glass tumblers, dishes, jewelry, wire-mesh shock-absorbers, new fabrics, wallpaper, ergonomic screwdriver handles, and airplane doors. Sometimes, these designs were licensed for mass production, and the School received royalties. During the Second World War, the School excelled at innovative designs that worked around war-rationed materials—such as bedsprings made of wood instead of metal—and Kepes led a series of camouflage courses certified by the US Office of Civilian Defense. Students' experiments in designing constructions with various new kinds of plastics would be a sign of things to come in the burgeoning market for consumer durables that exploded after the war. As Moholy-Nagy's health declined, Paepcke sought to establish an institutional framework that would relieve Moholy-Nagy of administrative burdens, and the School was reorganized as the Institute of Design in 1944. Thanks to Moholy-Nagy's work it continued beyond his death in 1946 and still exists today as the institutional legacy of the Bauhaus.

What Moholy-Nagy finally built was an institution that had social-democratic values at its core, but which operated in a capitalistic world. Repeatedly displaced, disrupted, frustrated, and defeated, Moholy-Nagy's indefatigable optimism motivated his constant adaptation and reinvention. The destruction and disintegration of his youth seemed to leave him with a powerfully positive will to build and create new and better things. While many of his associates on the left made careers of critiquing the powerful and agitating against institutions, Moholy-Nagy's version of social democracy was progressive, humanist, and pragmatic; this was despite, or perhaps because of, the constant failures to realize it that he witnessed in Central Europe after the First World War. It was not so much a compromise of his values as an adjustment to constantly shifting circumstances for which Moholy-Nagy had a nimble talent. It is fitting that Moholy-Nagy is most associated with Constructivism and the Bauhaus, because it was his life's work to distill an aestheticized abstraction from the chaotic mess of industrial civilization and use it as raw material to build something good and lasting.

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RAW MATERIAL-CENTRIC DIDACTICS:

MULTI-SENSORY MATERIAL KNOWLEDGE IN DESIGN EDUCATION

Apol Temesi

ABSTRACT

The raw material-centric and holistic designer attitude has become a subject of design education in recent years. This approach is expanding and has adapted itself to the full scope of advanced capitalism, including consideration of the use of raw materials, market reception, and the environmental aspects. The pedagogic roots of the new perspective, such as the DIY approach and the origins of the expressive sensory atlas, can be traced back to the Bauhaus foundation courses. Tactility is today the starting point for examining consumer behavior related to the market success of raw material developments. The pilot courses, launched in collaboration with Italian and Dutch technical and art universities, are based on the methodologies of Itten and Moholy-Nagy and examine our relationship with raw materials and their unexplored possibilities. Moholy-Nagy's approach of seeking solutions to life's problems not in isolation but bearing the community's interests in mind was revived by Victor Papanek in the 1970s and has recently been renewed in Alice Rawsthorn's expression "attitudinal design." The raw material-centric pilot courses of the previous years have now become permanent at European art universities. This article introduces the methodological approaches to raw material-centric design, that are built on my own experiences and innovative solutions. The holistic view of these approaches combines Moholy-Nagy's "material-form-function" unity with the motivations behind consumption and the sensory properties of materials.

#attitudinal design, #DIY approach, #methodology, #raw material, #sensory dimensions

DESIGNER ATTITUDE

"Designing is not a profession but an attitude." This is how László Moholy-Nagy defined the enlightened concept of design in his book *Vision in Motion* in 1947 (42). According to Moholy-Nagy, the profession of the designer should be separated from the notion of a specialist and must be transformed into an improvisational, instinctive, and inventive attitude that goes beyond merely adapting products to limitations in systems of production. With this new approach, the work of the designer should not take place in isolation but should consider instead the aspects of a community and focus on real social problems. (Compton 2020, 169). Even though the prophetic value of Moholy-Nagy's writings were not recognized at the time, and his message in a bottle awaited the understanding of another age (Wyss 2007, 59–60), his thought is relevant in the current conditions of industrial production. In his time, the excitement of mass production and economic opportunities it provided overshadowed the holistic and conscious approach to designer attitude. As a consequence, the endless possibilities of material developments were celebrated without much thought for the long-term consequences. Today, when (after losing their functionality) objects leave behind accumulating materials whose decay time is disproportionately longer than the time of their use, solution strategies need a paradigm shift and a holistic approach. This is why the "artist-engineer" designer approach comes to the fore.

The XXII. Triennale di Milano, organized in 2019 and titled *Broken Nature* drew attention to the determining problem of our time: the broken relationship between nature and humans. In connection with the solution-centric exploration of ecological problems, the role of design as the "agent of change" was given a prominent place in this exhibition, reviving Moholy-Nagy's approach. The "Design Emergency" manifesto by the event's curators Paola Antonelli and Alice Rawsthorn not only celebrates the opportunities for design to unfold, but also aims at its redefinition, supporting design's mission as a comprehensive tool for making the world a better place. In their view, design is a way of seeing the world and of communicating with it, a tool that can help solve a wide range of issues such as climate change, dysfunctional social care systems, social injustice, or global health emergencies. By introducing serious subjects and an ambitious approach to design culture they want to call not only leading designers but also global companies to action. Design becomes an attitude regardless of the scale of efficiency when

it is goal-oriented and the available assets are utilized in the most economical, efficient, safe, and elegant way. Design can help inform, connect people and shape society (Compton 2020, 170).

Rawsthorn's term "attitudinal design" (Rawsthorn 2018) seeks to emphasize an approach in which the designer does not work to further his or her reputation, but to contribute to solving a global problem through greater collaborations. Coordination of disciplines becomes crucial, and design gains the trust of other professions if expertise is applied smartly and sensitively; thus designers need to be prepared for real collaborations with other professionals (Rawsthorn 2020). Moholy-Nagy's vision was therefore only waiting for its time to come, a time that needs a larger perspective and a more global approach in the field of material use.

RAW MATERIAL - CENTRIC DESIGN

Raw material-centric design seeks solutions to problems arising from the material used in mass production and does so by revisiting residues from industrial production. In addition, it provides an alternative to the use of non-degradable materials by exploring natural renewable raw material sources for the industry, the market, and the consumer. The holistic approach supports more sensitive solutions developed by the harmonization of local resources, labor, community, and culture. The approach based on the in-depth examination of materials takes their physical, chemical, and also sensory properties into account. It expands the aspects of object design from the selection of raw materials through market success to tracking the entire life cycle of an object, seeking balance through learning about consumer behavior by aligning our material-use culture with evolving raw material approach and resources.

Studies examining the effects of raw materials on the senses and the factors influencing consumer decisions draw attention to the possibilities of the designer and, with it, the increasing responsibility of his or her decisions (Karana 2009; Karana, Hekkert, and Kandachar 2009). Just as a more holistic understanding of the design implications of the phenomena behind the reduce-reuse-recycle initiatives of the 1990s (McDonough and Braungart 2007, 59–84) has inspired a circular manufacturing approach in industrial production (Bell 2020), a similarly significant shift in restoring balance to our object culture can result from observing consumer behavior. By integrating the experiences gained from this field into work, design could take on a dominant role.

Given the current problem of object accumulation, the effect of materials on users' sensory organs is of overriding importance and leads to the recognition of an emotional connection between object and user, influencing the lifespan of objects (Karana 2009). This means that understanding the sensory nature of materials and then adapting it to their function can be a new point of view in design processes (Folkman 2010). Furthermore, the ideal combination of sensory material and function can increase the service life of objects by strengthening our

attachment to them. Therefore, in addition to the assessment of aesthetic and perceptual values, as well as the associations evoked by cultural backgrounds, trends, and materials, evoked emotions must also be taken into account in design decisions (Rognoli 2010). Recognizing the significance of this, the Material Experience Lab, founded by Elvin Karana, and in collaboration with the Delft University of Technology, examines the properties of raw materials, the background of the relationship between materials and people, and the process and possibilities of attitudinal change. Interacting aspects open up new areas for material and product design by exploring the technical properties of materials and the layers of meaning inherent in them that categorize consumer emotions and reactions evoked through associations.

The term "material experience" introduced by Karana defines results that can be integrated into material design, grouped around aesthetic experience as sensory effect, meaning, and evoked emotional experience, triggering a performative effect (Karana et al. 2015). (Fig. 1)

FIGURE 1. *Visualization of "modest" (above) and "provocative" (below) data sets as "materials experience patterns" based on Karana 2009. Source: Karana et al. 2015, 44.*
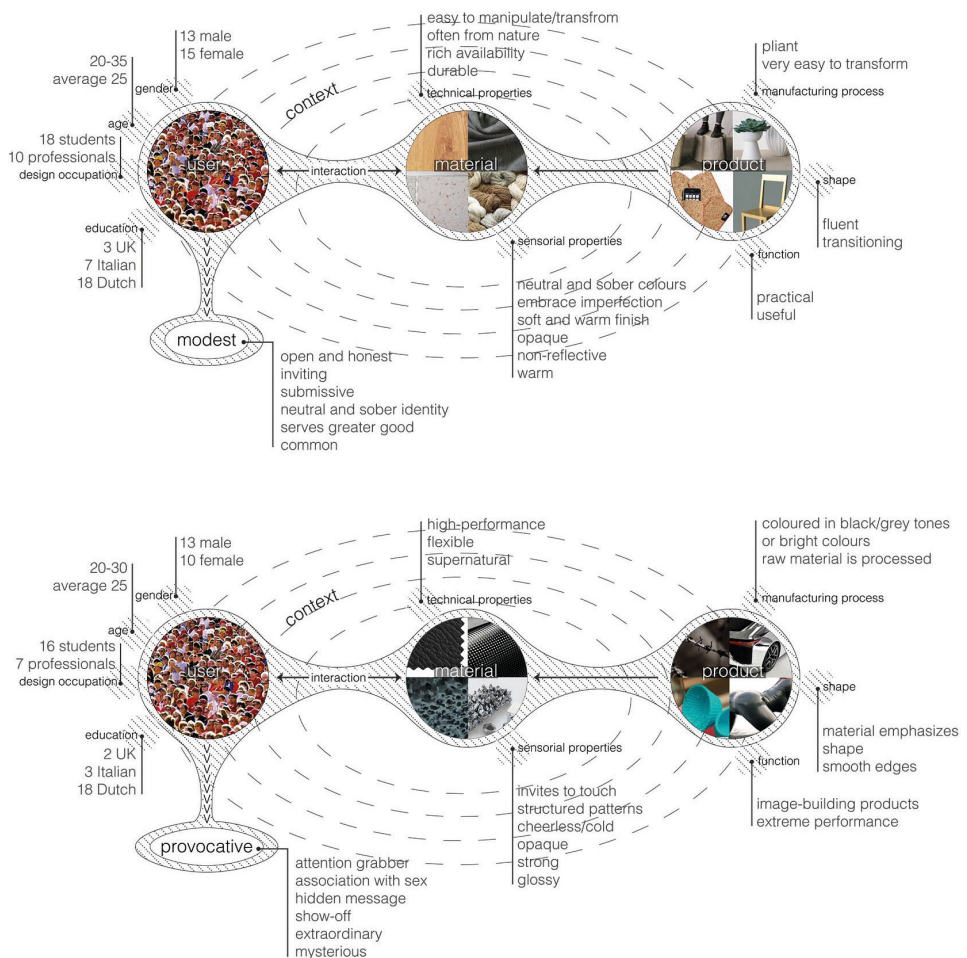
The aim of the research is to understand and define the physical, biological, social, and cultural conditions that affect a person's experience with materials, given that the introduction of new materials and the elimination of old ones ultimately depends on the consumer's decision. The iterative and empirical research processes they apply are key to the success of raw material-centric design, which, in addition to discovering and integrating renewable raw materials that can replace currently used materials detrimental to our health and environment, can also restore the relationship between nature and humans. Observing the success of the use of innovative materials, the analysis of the relationship between consumers and materials can shorten the development periods and predict market acceptance, which can lower the risk of material development while making it faster and more efficient (Karana et al. 2016).

Today's practice-oriented approach to research focuses on the three stages of design processes. First it focuses on material choice, which involves the exploration of meanings (Karana, Hekkert, and Kandachar 2010), then, on understanding the motivation behind consumer choices, which informs the comprehension of market processes and the predictability of a product's success (Van Kesteren 2008), and finally, on improving the knowledge about material and technology (Rognoli 2010), which seeks to strengthen interdisciplinary communication and thus the efficiency of production processes. This strengthens communication between the disciplines and thus the efficiency of the production processes.

RAW MATERIAL CENTRIC DIDACTICS/METHODOLOGIES IN DESIGN EDUCATION

Thus far in design education, only a few experimental courses have addressed the exploration of deeper material knowledge, such as sensory dimensions and emotional or associative effects. The methodological integration of these aspects into education was, until recently, undeveloped (Rognoli 2004). Recognition of this lack was behind the launch of areas of research and development methodologies that help students and professionals in the practical application of new aspects of their work.

In what follows, I am going to present the basics and tools of the methodology of multi-sensory material knowledge dimension, developed by Elvin Karana, Associate Professor of Design Engineering at Deft University of Technology and Valentina Rognoli, Associate Professor at the Politecnico di Milano Design Institute, the development of which has started in recent years in the framework of laboratory project work and experimental courses. Today's raw material-centric design goes back to the methodological roots of the Bauhaus. This reference is essential for an in-depth approach to the study of materials, to think it further, and complemented it, for example, with the analysis of the opinions on new material developments and the subjective and objective dimensions of material perception.

The basics of the approaches focusing on the involvement of sensory dimensions lead back to the theme of the foundation course developed at the Bauhaus. Both Itten and Moholy-Nagy's approaches emphasized the importance of the role of sensory encounter and practical elaboration in understanding materials, which, when integrated into design activities, enrich the intended experiences of final designs (Itten 1975; Wick 2000). The Bauhaus teachers were primarily creative artists rather than educators and therefore their methodologies were typically developed from practical experience. The Bauhaus concept of the unity of individual work and teamwork, arts and technology, science and craft aimed at the mutual transmission of explicit and implicit knowledge. Those who experience how theoretical knowledge is translated into practice no longer insist on the separation of manual and intellectual work (Brock 2021).

Itten's "theory of opposition" was part of the foundation course. He asked students to examine sensory contrasts relevant to materials, such as smooth-rough, soft-hard. His theory of contrasts has drawn attention to the "nature" of materials, which aims to present the characteristic properties of the material in a variety of ways. Nevertheless, the contradictions were also to be felt, not just seen. With Itten's approach, his students could experience the physical nature of materials directly through practical exploration (Itten 1975). Following Itten, Moholy-Nagy developed a new course focusing on the tactile experience of materials (Wick 2000). In his methodology, the emphasis shifted from the experience of seeing to the perception of touch. In order to do this, he set up tactile tables on which materials were arranged according to specified sensory criteria. Similarly Albers, who took Itten's position after he left the Bauhaus, like his predecessor, applied tactile boards to improve material perception. However, in his design approach, the purpose of working with material was to explore deeper physical properties in addition to learning about their basic properties. Through manual processing and interventions manipulating the structure of the material, the new properties of the materials and, consequently, new areas of use have also been investigated (Droste 2003, 140–42).

The DIY approach to material development at Dutch and Italian universities introduced by Rognoli not only observes the physical and sensory properties of materials, but, in response to the challenges of today's material developments, also examines the evoked associational effects, which might additionally influence our perception of unknown materials. The elicited reactions are categorized along the color, surface and texture of the materials and grouped along associations that strengthen and weaken trust. Further material development will evolve in all directions, taking the results of the survey into account, aiming at increasing positive reception until further responses are surveyed. To analyze this, a tool for the evolutionary map of material change was developed. By drawing this map, the development of the user's reaction is examined step by step. The results make it possible to categorize the

FIGURE 2. *Experiments with textures and seeds in "A Matter of Time" by Stefano Parisi, Master of Science in Product Design for Innovation graduation project, supervised by Valentina Rognoli, School of Design, Politecnico di Milano, 2015. Source: Parisi, Ayala Garcia, and Rognoli 2016.*

experiences gained by observation according to character, match, deficit, and benefit. (Rognoli 2016, Karana et al. 2016) In-depth knowledge edge of the emotions evoked through associations has become a market advantage, with the predictability of the emerging materials' reception and popularity (Karana et al. 2015, 48–49).

The starter tool of methodologies inspired by Bauhaus founders, are material samples and associated concise text definition cards that explore the description of materials simultaneously with different senses, emphasizing possible dissimilarities. Sensory practice using material samples, in which the samples are ranked according to a particular aspect, leads to a different result in each case. The so-called expressive sensory atlas applied at Dutch and Italian research laboratories is used to show the quality dimension of materials, with differences between subjective and objective perception in terms of material, color, and structured surfaces (Rognoli 2010). The interactive work model they use as an educational tool is based on the organic, simultaneous expansion of user requirements and experiences. However, the atlas is not a "catalog of existing knowledge", that is to say, not only is it a surface that conveys knowledge, but it is directly involved in shaping the culture of raw materials and in consolidating the new concepts that form the basis of expressive sensory description of materials. It is a tool that

designers and practitioners can utilize to interpret the complexity of phenomenological, perceptual and sensory aspects of materials (Rognoli 2010, 297), and thus help reconcile the needs of consumers with the developed materials.

EXPERIMENTAL COURSES

The experimental courses on the research investigating the materials' effects on the senses took place at the Material Experience Lab operating beside the Deft University of Technology and the research laboratory of the Politecnico University in Milan. The courses examined the application of theory to practice using the expressive sensory atlas. In their view, the methodology is a suitable starting point (Rognoli 2010, 297). The first studies on DIY approaches focused on natural, recyclable raw materials such as long-life wool (Rognoli 2015). These were then complemented with an examination of biodegradable alternative raw materials (Ayala Garcia and Rognoli 2017) as well as mycelium-based developments (Parisi, Ayala Garcia, and Rognoli 2016). (Fig. 2).

In addition to laboratory experiments, opportunities to collaborate with students were provided first by the London-based Royal College of Art and then by the Central Saint Martins Universities at semester-long design courses, integrating the methodology into design education. Thanks to its popularity and success, the raw material-centric design approach has now developed into an elective major in MA training at several Western European art universities. The courses, called Material Future,[1] explore the possible development directions of renewable raw materials based on methodological foundations. By studying and harmonizing the chemical, technological and aesthetic possibilities of the materials, they are searching for in-depth answers to raw material problems of our age. The continuity of this mentality is noticeable in the design career of the graduates, and therefore the developed materials are in most cases tested in the market. Due to increasing success, design based on raw material developments has already appeared and is prized as a separate category at the design competitions of recent years.[2]

CONCLUSION

In developments starting with the discovery of renewable raw materials, which anticipate an exciting paradigm shift in the approach to the material culture of our time, the holistic design attitude of Moholy-Nagy, including the cooperation of the disciplines and the unifying presence of the designer, plays a key role. However, his ideas, which transcended his time, would make an impact only generations later (Moholy-Nagy 1996, 334). Nevertheless, the methodology of the research conducted by Karana and Rognoli has significantly shortened the time between developments and subsequent impacts. They see the solution in the

[1] *For example: Central Saint Martins, Royal College of Art, Iceland Academy of the Arts, Aalto University, TU Delft, Politecnico di Milano.*

[2] *See for example: New Material Award, Hublot Design Prize, Dutch Design Award, Future Award, AFFA Materials Innovation, LEXUS Design Award*

development of a common language between disciplines, and in understanding the motivations of market players. Moholy-Nagy's thoughts have therefore been honed and have a renewed relevance in line with the pressing need today for a large-scale cooperation, in accordance with practice-oriented visions adapted to solving issues that affect our environment.

Facing the intense competition for success of material developments, which is today defined by market acceptance and consumer choice, design challenges are complemented by the ability to overcome general prejudice and mistrust. The study of evoked emotions is rooted in the foundations of the Bauhaus. The tactile approach, and, in addition, the associative background induced by aesthetic and sensory senses also plays a prominent role in the evaluation of the material.

The phenomenological approach of traditional and newly developed materials opens up innovative possibilities in design education as well. The approach of the designers of the "future" includes not only objective and technical knowledge about raw materials, but also the study of the subjective senses (Rognoli 2010). Raw material-centric design, which takes the exploration of the unique properties of a material into account, and thus can provide answers to complex questions of object design, can also gain competitive advantage in the market by exploring sensory reactions. In addition to evolving material development trends, didactic approaches are also gaining an increasingly important role in the higher education of designers, influencing the views of the generation that is shaping the material culture of the future.

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MOHOLY-NAGY'S LIGHT PROP FOR AN ELECTRIC STAGE.
DESIGN, COPIES, AND REPRODUCTIONS

Sofía Quiroga Fernández

ABSTRACT

László Moholy-Nagy worked on the prototype for Light Prop for an Electric Stage *for eight years, from 1922 to 1930, developing several sketches and designs. The final drawings and model were made with the collaboration of the Hungarian architect Stefan Sebök (István Sebők). The device was built by the AEG company, and it was displayed for the first time in the Werkbund exhibition held in Paris in 1930, where it appeared as an autonomous aesthetic object. This was clearly captured in the film* Light Play: Black-White-Gray, *in which Moholy-Nagy recorded its kinetic quality in the spirit of the abstract films developed at that time. The film clearly shows the motion of the lighting device as a formal exercise of abstraction using double exposures, special effects and close-ups. The* Light Prop *underwent several alterations over time to keep it working in a variety of exhibitions around Europe and America. In 1956, after Moholy-Nagy passed away, his widow, Sibyl Moholy-Nagy, donated it to the Harvard Busch-Reisinger Museum, where it has remained ever since. After further damage caused by inappropriate restoration and its mechanical instability, the* Light Prop *was reconstructed in 1969 for the exhibition* From Pigment to Light, *celebrated at the Howard Wise Gallery in New York (Tsai et al. 2017). The idea of a copy emerged during the planning of this exhibition to preserve the legacy of Moholy-Nagy's knowledge. Sibyl Moholy-Nagy finally approved this idea in 1970, allowing the production of two copies, one for the exhibition and the other for the 35th Venice Biennale (1970). Both reproductions were kept and sent to the Bauhaus Archive in Darmstadt and the Van Abbemuseum, where the original device had suffered repeated damage during the* KunstLichtKunst *exhibition (1966). The essay attempts to trace the timeline of modifications from the original device to the reproductions.*

#copies, #electric stage, #exhibition, #Light Prop, #reproduction

INTRODUCTION

László Moholy-Nagy, besides exploring painting, leading the Metal Workshop, writing, editing books, and applying new typographies at the Bauhaus school, also explored the creative possibilities of photography and film as art. Both photography and film work with light, which was also the main focus of Moholy-Nagy's research in painting, sculpture, photo plastics, photograms, photographs, typography, and theatre sets. He started his research in paintings and photo collages, exploring space through transparencies. Moholy-Nagy was interested in the arrested moments of light on canvas and kinetic light plays, both live and recorded as film (Botar 2014, 102). His interest in movement and light through space led him to explore its possibilities and build *Light Prop for an Electric Stage*, which Moholy-Nagy also called "the architecture of light" (Peterse 2010, 104). The mobile perforated disks, the rotating glass spiral and the sliding ball, together with the lighting bulbs, intentionally created the photogram experiments' effect in motion. For Moholy-Nagy, the *Light Prop* is a mechanism that illustrates the phenomenon of light and movement, and which applies in space the ideas reflected in his writing production (Moholy-Nagy [1944] 1947). In *Malerei, Fotografie, Film* he presents new media as creative resources capable of reproducing reality and as instruments of creation, highlighting the possibilities of projection (Moholy-Nagy 1927).

Moholy-Nagy's interest in light and space motivated him to present an audiovisual show close to multimedia creation. The experimental display is an example of "total theatre", a precise and fully controlled organization of form and motion intended to be a synthesis of different phenomena such as space, form, movement, sound, and light performing dynamically and simultaneously, based on formal modifications and the conditions for mixing colors, which are directly linked to the composition and the interplay of movements (Schlemmer, Moholy-Nagy, and Molnár 1925). As a reference, Moholy-Nagy counted on the devices designed by Kurt Schmidt and Oskar Schlemmer for the lantern festival at the Bauhaus school. Their investigations into the mechanics of performance were an essential reference for him.

The *Score Sketch for a Mechanized Eccentric*, initially published in the fourth volume of the Bauhaus Books, *Die Bühne im Bauhaus* (Schlemmer, Moholy-Nagy, and Molnár 1925), shows a graphic proposal for the stage. The sketch presents a symbolic notation of multiple
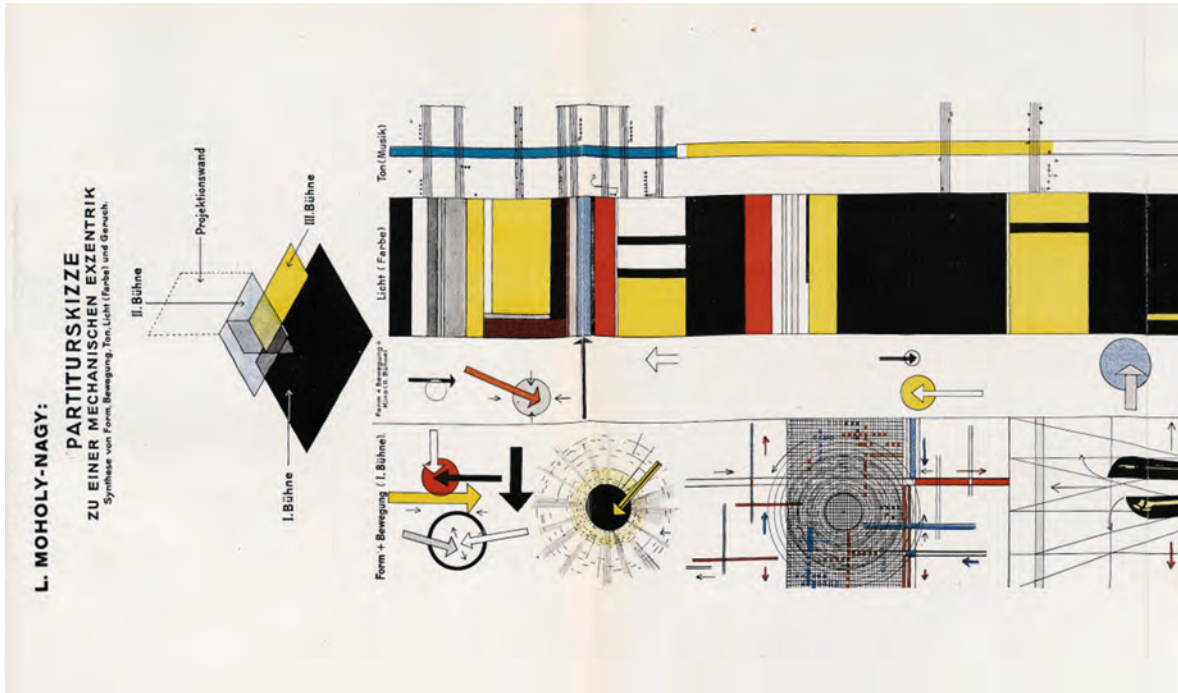
actions that evolve simultaneously, resembling a storyboard. The notation is organized in four parallel columns addressing all the actions and elements displayed and their evolution over time linked to three different stages (fig. 1).

In the diagram, Moholy-Nagy included the following aspects: form and motion, form, motion and cinema, light (color), and sound (music). The timeline prescribes the simultaneous performance of human action, motion, light, and sound. The stage would be equipped with sound systems, mirrors and optical equipment to produce sonorous and visual effects.

Each column refers to one of the three stages defined by Moholy-Nagy as follows: the main one, the one for projection, and the intermediate one (between them). Following the notation, the first column shows form and motion and should be performed in the primary stage; the arrows and geometries in this column represent the movement of human actors, mechanized actors, and machines involved in the production. The second column includes notation for form, motion, and cinema to be displayed on the second stage above the main one. According to Moholy-Nagy's description, the stage would have a folding glass plate for small shapes and movements that would work as a screen for cinematographic projections (Schlemmer, Moholy-Nagy, and Molnár 1925). The third column represents the sequence of lighting effects, which play an essential role and affect all the stages. The lighting notation was made using lines of different
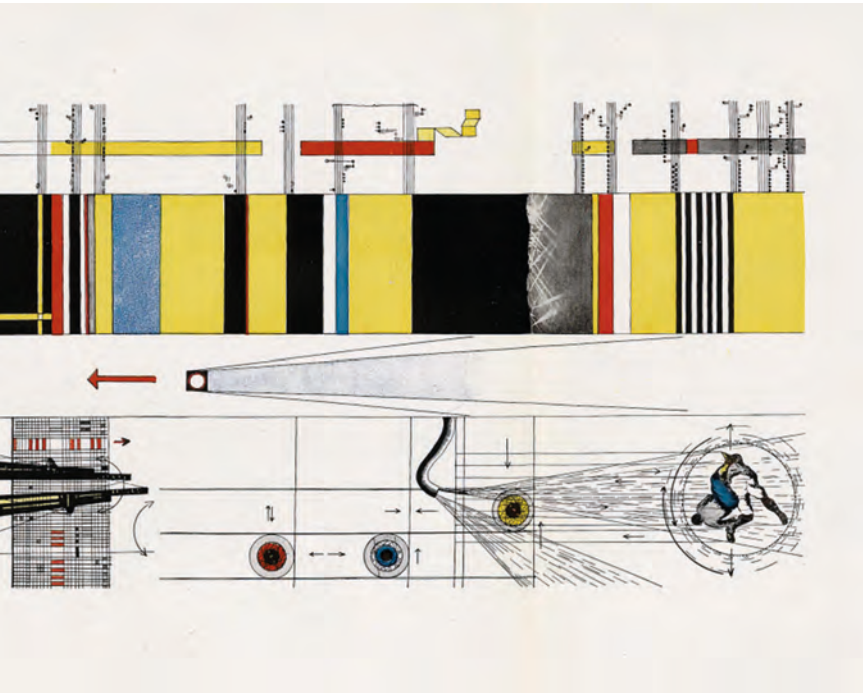
FIGURE 1. *Moholy-Nagy's Score Sketch for a Mechanized Eccentric in Schlemmer, Moholy-Nagy, and Molnár 1925, following 44. This sketch was shown in the exhibition organized by Friedrich (Frederick) Kiesler in Vienna (1924).*

color and thickness, which represent the lighting color and duration. The fourth column shows the sound effects produced by mechanical instruments and musicians located on the middle stage so as to be visible to the audience. The notation is written vertically and consists of music notation, vertical stripes representing variations on the tone, and notes to indicate different sound effects. The synchronization of actions and effects is marked with horizontal lines, which provide guidance for the mechanized space operator to interpret the sequence of dramatic action, lighting, sound, and projection. Even though it has never been made or displayed, we can imagine "Mechanized Eccentric" as a "total theatre" of stunts, actions, and projections to behold (Terranova 2016), and it definitely would function as an expanded and extruded version of *Light Prop*.

LIGHT PROP FOR AN ELECTRIC STAGE:
DESIGN AND REVISIONS

The project that finally materialized instead was *Light Prop for an Electric Stage*. Moholy-Nagy used the term "Light Prop" to describe it, a title that perfectly captures his intention to display together both light and movement into space. He uses the term on drawings, collages, and other artworks. In his research in photography, he tries to synthesize simple elements through the constant superposition of their movements (Moholy-Nagy 1938).

[1] *Oliver Botar proposed that the device would be shown behind a translucent screen as is recorded on the working plans for* Light Prop: *"The round opening on the box was to be covered by glass with flashing—a layer of glass or film in a contrasting color applied to it" [so that] "the light effects produced within the box, behind the dark flashed glass, would only have been visible when the lighting array on the interior of the box was switched on. [...] This is the 'installation lumineuse' seen by visitors to the Paris show: an abstract "film," a 'Flächenfilm' constituted in real time while the visitor was watching". (Botar 2014, 122)*

This electric stage would exemplify mechanical movement, electric energy, and industrial aesthetics in art. The *Light Prop* was primarily conceived as a projection device for the stage to generate spatial variations through mechanical movement and the use of light, motion, and color. However, it was first unveiled as an autonomous aesthetic object in the Paris Werkbund exhibition (1930) instead of on the stage. Moholy-Nagy describes the model as a mechanical apparatus made of different materials and shapes displayed in a cube of 120×120 cm with a circular opening on the front side (probably designed to be covered by a translucent screen).[1] On the back of this panel and around the opening were located seventy colored bulbs, yellow, green, blue, red, and white (fifteen watts) and five headlamps (one (hundred watts). Following the precise notation, the glow of the bulbs illuminated a continuously moving mechanism built from translucent, transparent and fretted material that generated a play of shadows on the back wall of the box. This wall could be removed to project the shadows on a bigger screen or even into space, and thereby transform it (Moholy-Nagy 1930). The appliance was a mobile structure driven by an electric engine. Most of the motion elements were made with transparent materials, such as plastics, glass, wire mesh, latticework, and perforated metal sheets. In the book *The New Vision,* he remarked that, even though he knew how all the effects would work when *Light Prop* was set in motion for the first time in a small mechanics shop (1930), he felt like a sorcerer's apprentice. The mobile was so staggering in its coordinated movements and spatial articulations of light and shadow sequences that he declared he could almost believe in magic (Moholy-Nagy [1944] 1947, 86).

Light Prop for an Electric Stage was conceived by László Moholy-Nagy and Stefan Sebök (István Sebők), the engineer responsible for its design details and construction. Sebők developed a series of drawings to specify the object and facilitate its construction, including plans, sections, axonometric, and description of the materials used for making the artefact. The drawings show the components of the mechanism, its movement, and the relationship between them. For example, one shows the three surfaces installed between the rotating mechanical device segments (fig. 2).

The process of creating *Light Prop* took eight years, from 1922 to 1930. Consequently, the prototypes and designs experienced several modifications based on experimentation and marked by successes and failures.

The documents published in the *Die Form* journal showed the box with a circular opening at the front and bulbs placed on the back around it. There was a second board inside the box, parallel to the front, which also had a circular opening and a set of bulbs mounted around it. Moholy-Nagy outlined the placement of the colored light bulbs and the lighting time sequence. According to Moholy-Nagy, the moving
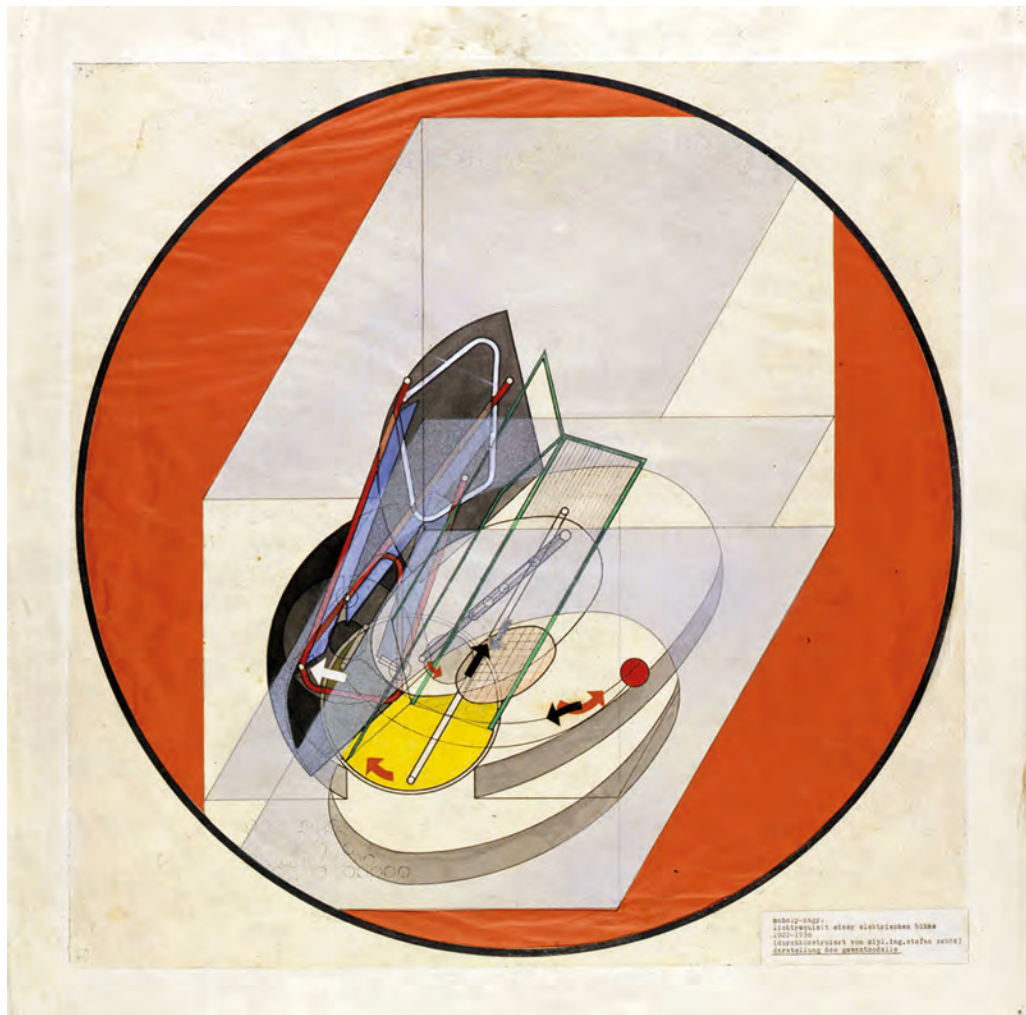
mechanism was built of translucent, transparent and fretted materials that respond differently to the light, creating different shadow patterns. The mechanism, divided into three parts, was mounted on a circular platform divided by two transparent cellophane walls and a metal wall made of vertical rods (fig. 2). The three sectors would accommodate different playful movements that, together with the material's reflection of the moving mechanism, would create striking optical effects, transforming the space around it.

These vertical surfaces and the inner boards also appeared in the *Room of the Present* exhibition plans (fig. 3). The exhibition was curated by the director of the Hannover Landesmuseum, Alexander Dorner, who invited Moholy-Nagy to design the final room in their collection's chronological reorganization.

FIGURE 2. *László Moholy-Nagy and Stefan Sebök*, The Mechanics of the Light Prop, *1930. Collage (light-print, ink, watercolor, and colored paper on paper), 60.4 x 59.5 cm. Bauhaus Archive. Courtesy of the Moholy-Nagy Estate.*
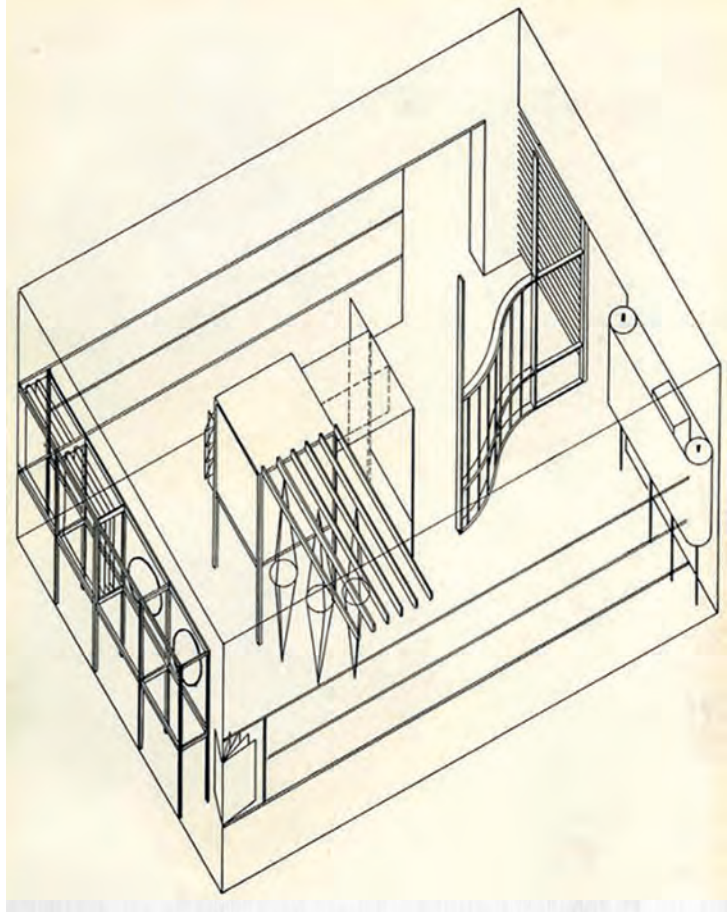
FIGURE 3. *László Moholy-Nagy's design for the* Room of the Present *for the Hannover Landesmuseum, 1930. Courtesy of the Moholy-Nagy Estate.*

This room, knows as the *Room of the Present*, aimed to have interactive exhibits dedicated to film, architecture, and design. Moholy-Nagy included *Light Prop* in the exhibition layout, installed in a box framed with lights (fig 3). Although Moholy-Nagy's plans were never realized in Hannover due to financial and political issues, a reconstruction of the *Room of the Present* based on the 1930 documentation was exhibited from 2009 to 2012 at the Van Abbemuseum Eindhoven. The stunning reconstruction by the researchers and designers Kai-Uwe Hemken and Jakob Gebert included the *Light Prop* replica made in 2006.

LIGHT PROP FOR AN ELECTRIC STAGE: *EXHIBITION*

Light Prop for an Electric Stage would finally be exhibited as an autonomous aesthetic object at the Werkbund exhibition in Paris in 1930. The display follows the same ideas used previously for the *Room of the Present* in the Hannover exhibition, but it was presented differently, as it is shown in the plans and pictures (fig. 4).
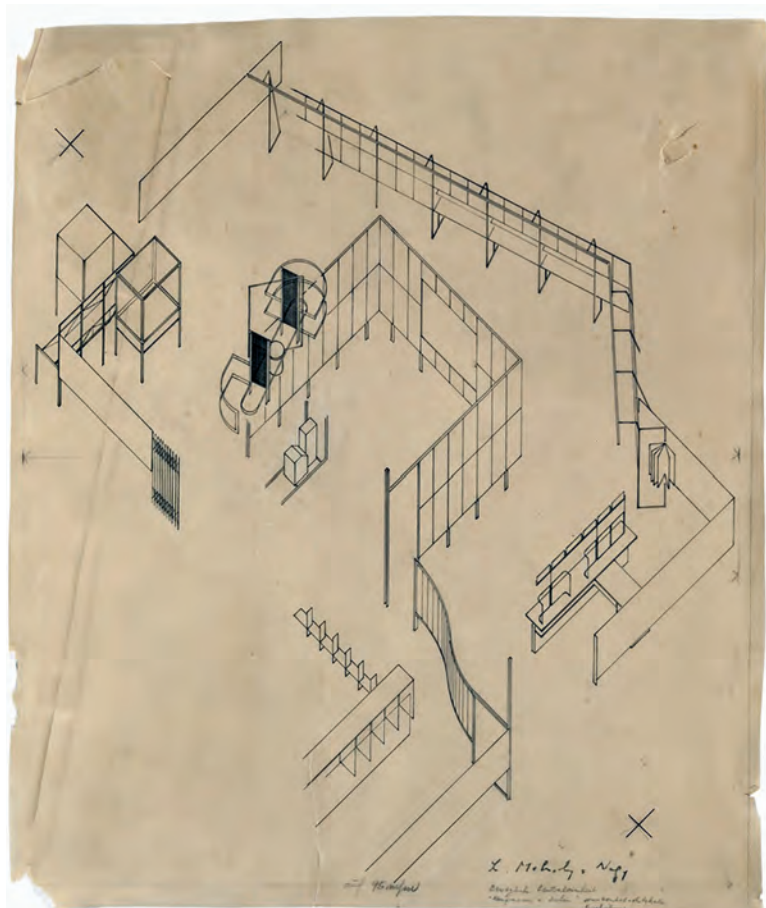
FIGURE 4. *László Moholy-Nagy's isometric view of room 2 for the 1930 Paris Werkbund exhibition. Ink on tracing paper, 52. x 45. cm. Courtesy of the Moholy-Nagy Estate.*

Light Prop was shown in a cubical structure, elevated to eye height by a metal framework to facilitate the view. Looking through the circular aperture acting as a frame, the audience would be fascinated by the *Light Prop* "stage" performance and the colored bulbs placed around it (fig. 5).

This installation of *Light Prop* produced unexpected results. Although the mobile was mainly designed to see transparencies in action, it was a surprise to discover that shadows thrown on transparent and perforated screens produced new optical effects, a kind of visual inter-penetration in constant change. The mirroring of the moving plastic elements on the extraordinarily polished nickel and chromium-plated surfaces were also unexpected outcomes. These surfaces, although opaque in reality, seem transparent in movement. In addition, some transparent wire-mesh flags had been placed between the bottom and ceiling planes, demonstrating powerful and irregular illusions of motion. These reflective surfaces produced a dramatic and emotional display, shifting the shadows and varying the volume of the composition, generating

FIGURE 5. Light Prop for an Electric Stage. *Designed by László Moholy-Nagy from 1922 to 1930, it was built by Stefan Sebök and the theatre department of AEG for the 1930 Paris Werkbund exhibition. Courtesy of the Moholy-Nagy Estate.*

temporal space transformations linked to lighting and movement. In this exhibition, Moholy-Nagy was finally "painting with light" in space, equal in innovation to what he had previously done with drawings and photograms. As Noam Elcott mentions, the device was thought of in cinematic terms, enhancing the components of what would typically be captured in film, only without the medium of film (2011). Moholy-Nagy also thought about the possibility of removing the back of the box to project the light play effects on an external screen specially set up for it and the possibility of being remotely controlled (Moholy-Nagy 1930). Although Moholy-Nagy's intention was to display the light prop in the designed box (fig. 4), without the box, the device could transform an entire room by projecting light into space (Botar 2014), activating the space around like avant-garde cinema had aimed to do.

Moholy-Nagy recorded the performance of *Light Prop for an Electric Stage* in the film *Light Play: Black-White-Gray* (1930). He also used the film as an experimental tool to study the interferences of movement, light and shadows, and our perception of it in time. The film[2] recorded the kinetic quality of the device, avoiding the apparatus and focusing on the play of light.

LIGHT PROP FOR AN ELECTRIC STAGE:
REVISIONS, RECONSTRUCTIONS AND REPLICAS

Over time, *Light Prop for an Electric Stage* underwent suffered several changes and restorations due to misuse and the fragility of its components.

The article "Lichtrequisit Einer Elektrischen Bühne" ("Light Prop for an Electric Stage"), published by Moholy-Nagy in the journal *Die Form* (Moholy-Nagy, 1930), anticipated the potential failing of the lighting device performance. He remarked that the *Light Prop* displayed at the Paris exhibition represented only a modest initial attempt to introduce the possibilities of light technology to the public (Tsai 2010, 293). The fact is that it broke when it was displayed first in Paris (Tsai et al. 2017).

Like a precious piece of Art, Moholy-Nagy took the device with him around the world, no matter the cost. When he moved to London in 1935, he realized how fragile the object was; therefore, he added an external frame to stabilize it and prevent further damage. When Moholy-Nagy moved to Chicago in 1938, other elements like the engine or the glass spiral were replaced and modified. The glass spiral was replaced by a metal one, together with an acrylic wedge located on the base. This was the first transformation.

After Moholy-Nagy passed away, and according to the documents, the Busch Reisinger Museum had the opportunity to keep the machine on a long term loan. The device came to the museum in a deplorable condition, with some elements missing and corroded surfaces. At this point, Jack Washeba, the museum curator, replaced the missing parts and painted the corroded surfaces to hide them.

In 1956, the Moholy-Nagy's widow, Sibyl Moholy-Nagy, donated *Light Prop* to the Harvard Busch-Reisinger Museum. After that, the electric stage underwent several alterations to keep it working in exhibitions around Europe and America. For instance, in 1965, the *Light Prop* was restored to be displayed in the *Kinetic Art Exhibition* organized in Eindhoven. The restoration made by William Wainwright consisted of removing the paint used in previous work to hide the corroded surfaces, re-plated some components and recovered the machine movement. It was the first time that the idea of a replica emerged, but Sibyl Moholy-Nagy preferred to restore the original *Light Prop*. After subsequent damage as a consequence of international exhibition loans (*KunstLichtKunst*, Van Abbemuseum, 1966), in 1966, Sibyl Moholy-Nagy demanded the return of the device to her due to its poor condition.

[2] *Later, Moholy-Nagy applied the knowledge he acquired from it to produce his design of the city of the future, which he created specially for the film* Things to Come, *directed by William Cameron Menzies in 1936. It seems that the design of this city was initially offered to Le Corbusier and Fernand Léger, who, for political reasons, declined. Finally, the commission was offered to Moholy-Nagy, with Gropius as a consultant, to ensure that the design was in accordance with Bauhaus design principles. In the space of ninety seconds, Moholy-Nagy managed to transmit the atmosphere and dynamism of the futuristic city by including industrial images. Despite the considerable research and the recorded film metrics, the work was reduced to a few frames, and he would never appear on the film's credits.*

Light Prop was exhibited again in 1968. It was part of the exhibition *The Machine as Seen at the End of the Mechanical Age* celebrated at MOMA in New York. As a result of its fragility and difficulties in running the machine safely, *Light Prop* was shown as a static element, and this was when the idea of replicas emerged again, obtaining permission from Sibyl Moholy-Nagy, who agreed for no more than two copies to be made. She believed that the best way to preserve Moholy-Nagy's work was to reproduce the device.

It was finally reconstructed in 1969 for an exhibition held in New York at the Howard Wise Gallery, where other contemporary lighting explorations were displayed under the supervision of the Harvard art historian and researcher Nan Piene. Two copies were produced, one for this exhibition and the other for the 35th Venice Biennale (1970). Both reproductions were kept and finally sent to the Bauhaus Archive in Darmstadt and the Van Abbemuseum. The replicas were made by Woodie Flowers, an engineer at MIT, assisted by Nan Piene, who had written her Master's thesis about *Light Prop for an Electric Stage*. These copies were built after analysis of the original piece, together with the pictures kept in the Harvard archive. The MIT engineer modified some parts to ensure their safety and movement in exhibitions.

Another replica was made in 2006, also for a new exhibition, *Albers and Moholy-Nagy* at Tate Modern in London. A full-sized replica of *Light Prop* commissioned by the Tate was made by the German engineer Juergen Steger. It was considered a travelling exhibition copy. To make the replica, Steger studied the original space modulator and Moholy-Nagy's original pictures, drawings, and film *Light Play: Black-White-Gray*. All this documentation served as a guide for the creation of the new replica. The engineer also created a CAD file to simulate its movement as well as to facilitate the fabrication of every copied element. The model was made to match the Moholy-Nagy original design, preserving even the variety of finished surfaces.

The Harvard Museum acquired it on condition that the replica would be lent to significant exhibitions, that it would not be considered a work of art, and that the Tate Museum could display the reproduction once every four years. Steger developed, together with the museum staff members, a document for the replica's maintenance and correct operation to avoid future problems or damage. Due to the instability of the initial device and the inherent weaknesses in its design, the replica needs to be adjusted and repaired, and some pieces also need to be occasionally replaced to keep it running correctly and in good condition. This document is a record of the pieces that make the *Light Prop for an Electric Stage* possible. It serves as an archive document of the replicas and their components, preserving and showing Moholy-Nagy's research legacy.

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MAN WITH A LIGHT PROJECTOR:
LÁSZLÓ MOHOLY-NAGY'S CINEMATOGRAPHIC TOOLKIT

Attila Csoboth

ABSTRACT

The Light Prop for an Electric Stage—*also known as the* Light–Space Modulator—*is a major piece by László Moholy-Nagy, yet its intended use has remained subject to debates. Does its importance lie in being a stage lighting tool, a three-dimensional mobile sculpture, or conversely, a projector which shows its full glory in* Light Play: Black–White–Grey, *the film Moholy-Nagy created with and about it? As a cinematographer, I will argue in this essay that the* Light Prop *stages an elemental engagement with light by someone constantly tinkering with the kind of lighting props that are still very much in use in photography and filmmaking today.*

#cinematography, #lighting, #light props, #projection, #re/production

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László Moholy-Nagy is known and acclaimed in many disciplines, but cinematographers like me—part artist, part technician—are drawn to his work primarily due to the way he played and experimented with light in any medium he turned to. We relate to his techniques because in our early studies we ourselves experimented with light by making photograms, building pinhole cameras, and creating shadow plays.

This manipulation of light, shadow and space is something that still defines our professional work life. As cinematography students at the Hungarian Academy of Theater and Film (SzFE), we were constantly reminded to study light all day every day, everywhere we went because as cinematographers we must construct moods via light, and if we study moods every day in our own surroundings, we will be able to reconstruct or augment lighting setups that we have previously experienced or have an emotional connection to. Having to regularly improvise on set with makeshift tools is the norm in cinematography no matter the size of production. Building or customizing our tools is how we think and a source of pride. Moholy-Nagy was a polymath tinkerer who collaborated with engineers, drafters, mechanics, and machinists in his quest to open new artistic horizons, just as we use technology, machines, and electric light to create a new cinematic experience.

Moholy-Nagy's *Light Prop for an Electric Stage* which has become better known as the *Light-Space Modulator*, is one of the key elements in his collaborative work.[1] It immediately arrested my eyes and mind.

Joyce Tsai, Angela Chang, Matthew Battles, and Jeffrey Schnapp's article "László Moholy-Nagy's Light Prop as Design Fiction: Perspectives on Conservation and Replication" is one of the most concise pieces of writing and analyses of his signature kinetic structure (2017). The article tracks the travels of the device, and its repairs and refurbishments until it found a home at Harvard University, where it is now switched on monthly, without its original encasement. The essay is focused on a very thorough breakdown of the parts and movement, but, as with many articles I have encountered, it deals purely with the mechanics from an engineering perspective.[2]

After careful studying of this kinetic object, I came to realize that the individual parts of *Light Prop* have an uncanny similarity to the light shaping tools that have traditionally been used on a movie set since the early days of cinematography. This essay will discuss how we can find counterparts of these tools in *Light Prop*, which I understand to essentially be a kinetic cluster of movie lighting and light shaping instruments.

[1] *Light-Space Modulator is a posthumous title. During his life, Moholy-Nagy used the concepts of "space modulators" (plastic sculptures) and "light modulators" separately (see Henderson 392–393n66). By the latter, he meant any sort of light reflecting surface used in photographic image making, from a sheet of paper to the exact curvatures of a model's body and face (Szilágyi 2011, 65–66).*

[2] *For a detailed discussion of the views of Tsai et al. and others on the logic, history, and reconstructions of the Light Prop see "Moholy-Nagy's Light Prop for an Electric Stage. Design, Copies, and Reproductions" by Sofía Quiroga Fernández in the present issue.—Eds.*
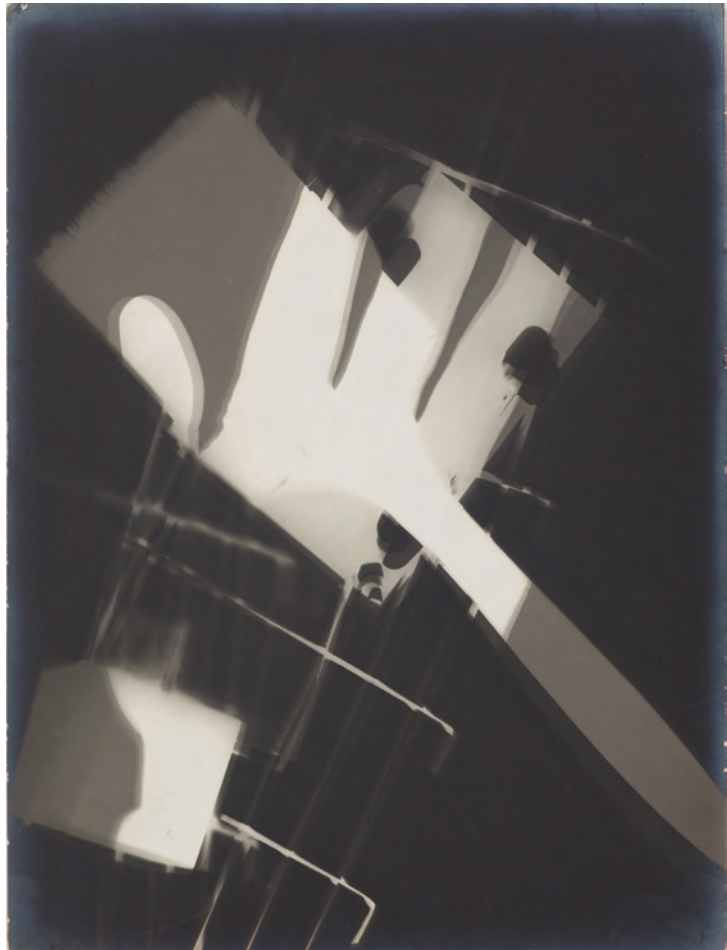
FIGURE 1. *László Moholy-Nagy*, Photogram, *1926. 23.9 × 18 cm (gelatin silver). Courtesy of the Moholy-Nagy Estate.*

Moholy-Nagy became fascinated with light early in life. His 1917 poem on light pondered the question, "Space, time, material—are they one with Light?", to conclude that the "total Light, creates the total man. (S. Moholy-Nagy 1969, 11, 12) His profound interest in the play of light is evidenced in work ranging from his trademark photograms all the way to his reflective kinetic structures and projections in works like the emblematic *Light Prop*. Often referred to as perhaps the world's first piece of electric kinetic art, it shares similar mechanics to those of a cinema camera with cogs, cylindrical drums with sprockets, and a spinning mirror. Indeed, Moholy-Nagy already envisioned turning reproductive devices into productive, creative tools in "Production—Reproduction" (1922) by utilizing, in the case of the camera, "the bromide plate's sensitivity to light to receive and record various light phenomena [...] which we ourselves will have *formed* by means of mirror or lens devices." (Published in English in Passuth 1985, 289–90.) The cinematic effect that is created when the machine is put into motion reaches far beyond

its technical operation alone. The work not only consists of the physical object, but also the fleeting impressions of movement, light, shadow, and reflection, which are also the main elements of cinematography.

This kinetic sculptural apparatus is more than the means by which Moholy-Nagy manipulated light effects, as he had previously done in photograms (fig. 1). It generates light effects and puts them into motion. In an essay from 1923, Moholy-Nagy called his early experiments with light in various media, not least his famous photograms, "creation with light" (Moholy-Nagy 1923). By the 1930s he was specifically referring to the *Light Prop* as a tool for "experimenting with painting with light" (quoted in Iskin 2004, 53).

In a letter from 1934, Moholy-Nagy showed his commitment to light as a natural medium of modern art and a means to move behind traditional painting: "Ever since the invention of photography, painting has advanced by logical stages of development 'from pigment to light.' We have now reached the stage when it should be possible to discard brush and pigment and to 'paint' by means of light itself." (Moholy-Nagy [1934] 1936, 30)

MOTIVATION OF LIGHT

In cinematography the motivation of light refers to the imagined source of light in a narrative way. For example, if there is a window in the background (daytime) the subject will be backlit. In cinema, light is always motivated, usually by some kind of source. Even if the source is imaginary. A lighting setup should serve purely aesthetic purposes, a narrative or an emotional purpose; our primary goal is to express emotions through light.

As a cinematographer with a particular toolkit, I have the means to manipulate light at many stages, starting from its source (the sun or artificial light) all the way to the film plane. I can place light shaping tools in front of a movie light, in front of a lens by using filters, inside a lens, and in front of the film plane. I can even manipulate light by placing diffusion in the air, to create the effect of mist or smoke. On multi-million-dollar budget films, a cinematographer might stretch a stocking behind a lens or spread grease with a paintbrush on the front of a lens that costs tens of thousands of dollars, just to play with light.

When I began studying the *Light Prop* I started to think about the kind of light it is trying to create. What is the purpose of the metal objects spinning around? There must be a reason behind these shiny reflective objects. Was it constructed to be used in theater on a stage to create a lighting effect? Or to be center stage and the lead performer? I turned to Alice Arnold, a media artist, photographer, filmmaker, and Adjunct Professor at the City University of New York who has studied Moholy-Nagy for years. She credits him with fusing the roles of artist and engineer, and besides being artists, we cinematographers could also be thought of as instinctive engineers. As she explains:

[A] combination of photography, working with light (photographically and directly with electric lighting products); working with new materials, such as metal and electric infrastructure; the influence of theatrical experiences (specifically at the Bauhaus); the rise of new urban experiences in the 1920s, such as neon lighting, advertising signs, window displays, and urban lighting; and experimental ideas about abstraction and creating new […] experiences are all manifest in Moholy's ideas for the Light Prop. (Arnold 2021)

Nevertheless, Arnold' recalled that her first reaction to the *Light Prop* was how much of it resembled items in her kitchen, such as "strainers and graters and silverware. Metal tools with long handles and surfaces that include holes and or wire mesh. 'Everything but the kitchen sink.'"

FIGURE 2.
My kitchen tools

FIGURE 3.
My kitchen skimmer during the eclipse

FIGURE 4.
Shaped "bokeh" effect.
Source: author's archive

(Arnold 2021) My conversation with Arnold opened my thoughts in a new, more playful direction. Her comments drove me to rummage through our kitchen drawer to find tools that might resemble the kinetic elements of Moholy-Nagy's *Light Prop* (fig. 2).

As I held the skimmer (the left most object in fig. 2), it dawned on me just how clearly it resembles the round perforated chrome plate in the *Light Prop*. Before venturing into my kitchen in search of utensils, I imagined the *Light Prop* as a cluster of cinematic light shaping tools put in motion. As I drew more objects out of the drawers, I realized many of them resemble tools used in my trade, where cinematographers play with light professionally.

On March 20, 2015, there was a partial eclipse in Budapest. I was busy all day, but suddenly when the eclipse was total during the day, I realized I might miss out on it. Not having prepared in any way to watch the eclipse, I improvised. I knew that when you project light through a shape, but the source is partially blocked, the shape of the projected light will be altered. So if the moon is covering the sun, and I let the sunshine through a round hole, the shape of the moon will be visible in the projected image. The best object I could find for this on the spur of the moment was this kitchen skimmer. Lucky for me, I took a picture of it. Notice how the round holes of the skimmer project crescent shapes (fig. 3).

Behind this was my experience as a cinematographer of using so called matte masks when playing with light. If you put a matte or mask that has a shape in front of the camera, it will alter the shape of the out of focus light shapes (commonly referred to as "bokeh") in the background. Figure 4 shows a bokeh effect created by placing a black heart shape cutout in front of a lens. It is important to note that the heart shape is not visible in the image, it just shapes the path of the light rays entering the lens in general as they travel into the camera towards the sensor.

LIGHT MODIFYING TOOLS USED IN FILMMAKING

The tools used to shape light in the film industry have remained relatively unchanged since the early days of cinema and since Moholy-Nagy built his mesmerizing contraption.

REFLECTOR AND MIRROR

Anything we use to reflect light is called a "reflector" (fig. 5). This can be a metal or glass apparatus. If it is inside a movie light then it is curved in some manner, and typically used to direct light rays emanating from a light source. If a reflector is used on its own then it is usually flat and covered with metallic or reflective fabric panel (sometimes called a reflector board) and is used to bounce or redirect light, with the light source being an artificial light or sunlight. They are available in a variety of sizes and shapes and materials of varying reflectivity, often custom built to the cinematographer's needs.

Flags, which are also known as black flags or cutters, are the most basic tool used for shaping light in film. They are usually available in rectangles and squares and are placed in front of lights to shape how the light falls onto a scene. A flag is an opaque rectangle (usually black cloth stretched over a wire frame) that is used to block light from a certain area. In the early days they were made of metal or wood. A standard flag is attached to a small metal handle and short rod that can in turn be attached to a stand and placed so that it blocks the light from reaching something in the shot. Flags can be used to prevent light from reaching background walls, for example, leaving only the central subjects illuminated. Types of flags include singles and doubles to cut down hard light, or solids to block light. Silks, though similar in shape, are translucent and used to diffuse, rather than block light. All the *Light Prop*'s elements are shiny and reflective, the exact opposite in function of the black flags, but the shapes are very similar. Despite being reflective they create the same kind of kinetic shadow play that a flag would create. A gobo is a large flag, cutter, or even a full-sized flat used to cast a shadow on part of the set (fig. 6). The name comes from the early days of film, when the

FIGURE 5. *A reflector. Source: author's archive*

FIGURE 6. *A gobo. Source: author's archive*

director would call "go black out" a portion of set. This was abbreviated on the production notes as "GO B.O." and later became gobo. Many gobos appear to be like shapes cut in a cookie sheet (and indeed many are) but they consist of a material able to withstand the heat put out by the fixture, with shapes cut out for the light to travel through.

FRESNEL LENS

The high-powered lights seen on movie sets are known as Fresnels, due to the Fresnel lens they house, which are named after the French inventor who sought a way to strengthen the beams sent out from lighthouses. A Fresnel is divided into concentric circles to make it thin enough to fit in a portable device (fig. 7). The light from a Fresnel is more even and allows for the beam to be varied from flood to spot by changing the distance between the lamp/reflector unit and the lens. Many light sources employing this type of lens have a stippled pattern on the flat side of the lens to smooth out the beam. The translucent plexiglass spiral shaped rod in the *Light Prop* reminds me of a section slice of a Fresnel lens.

CUCALORUS COOKIE

A cucalorus, which is commonly known as a "cookie", is used to break up light into patterns. Almost anything can be used as a cookie. A cinematographer might use natural objects like tree branches, woven fabrics, or patterns specifically made for lighting tools. They include hard cookies, made from plywood or poster board with random shapes cut out; soft cookies, made from plastic impregnated screen with random shapes cut out; and natural cookies, which include tree limbs or other objects that can be placed between the light and the subject. An opaque or translucent material having one or more cutouts that will allow light to pass through in order to project a dappled form or pattern, such as the suggestion of the shadows of tree branches, on the subject and background (fig. 8). An irregularly perforated shadow-forming flag, opaque or translucent, made of plywood or plastic, for example. The perforated spinning metal disks of the *Light Play* are essentially cinematic, kinetic cookie sheets.

SCRIM AND NET

A scrim is a circle of wire mesh, which slides into the ears in front of a fixture and reduces the intensity of the light, without changing the color temperature. A scrim is a type of material used to manipulate the intensity of the light source. Typically, scrims are quite large, either 10 × 10 or 20 × 20 feet, and used to diffuse the harsh sunlight when shooting exteriors. In the film and video industries, a round, framed metal screen, available in various densities, is placed on the front of a light source to act as a dimmer (fig. 9). They are also available so that only half of the frame is

FIGURE 7. *Fresnel lenses. Source: author's archive*

FIGURE 8. *Cookies. Source: author's archive*

FIGURE 9. *Scrims and nets.*
Source: author's archive

screened, therefore allowing for only a portion of the light to be dimmed. For us, a metal screen used in front of a light to reduce intensity without diffusion. A net is a bobbinet or black net fabric on a frame, used to reduce light intensity and is available in single (half-stop) or double (full-stop). The scrim and net shape and material is also present in *Light Prop*.

DIFFUSION

Diffusion refers to anything that spreads or softens the harshness of light. We usually use the terms "heavy" or "lite" to define its diffusing properties. Heavy diffusion softens the light so much that there are practically no shadows, while lite only softens the edges of the shadows. In the *Light Prop* there is a large frame on the central axis that holds a material which only softly diffuses the light. It looks very similar to a modern-day standard ultra lite diffusion material called Hampshire Frost. As the name suggests its light altering properties are similar to a frosty window in Hampshire, England.

Now that we see the direct parallels of movie lighting equipment to Moholy-Nagy's apparatus, does it change our opinion of what the *Light Prop* actually was, or was intended to be? (fig. 10). It is crucial to remember that *Light Prop* was initially shown in a box with a large aperture lined with colorful flashing lights, but Moholy-Nagy subsequently exhibited it without the enclosure, and it appears in the film *Light Play: Black-White-Grey* without them as well. The film itself shows several tightly composed shots of different objects such as photographic film interspersed with passages of manipulated film—positive-negative reversals, inversions, or double-exposed frames (Tsai et al, 2011). As Arnold explains:

The machine never worked as intended. It did not have the smooth, continuous motion needed to create the intricate dance of shadows and light that are needed to create an immersive theatrical experience. So the film he created was actually the realization of his ideas for this machine. In the film he is able to selectively film and edit the motion of reflected light and cast shadows to create something both playful and theatrical. And also sublime, because the space created by these kinetic lights and shadows is deeply perceptual and taps into our own creative processing powers. (Arnold 2021)

When Moholy-Nagy fled World War II, he lugged the bulky apparatus to America, but never did anything with it, so we will never know what its future might have been. Today the modulator is displayed in a different gallery lighting, it is not enclosed in the box, and therefore the reflected light is different. Similar to how its name changed over time, it has changed from a piece of equipment to an art piece. Might we consider the film *Light Play* a big photogram machine? What kind of light play are we talking about? What mood or source does the light play suggest to us? These are questions Moholy-Nagy himself probably did not feel the need to answer. Born into a world accelerating towards rapid change, Moholy-Nagy quickly found a place at the forefront of art, light, and communication. His fascination for industry, technology and the engineering culminated in his *Light Prop*, an object and idea he carried with him literally and figuratively into the new world.
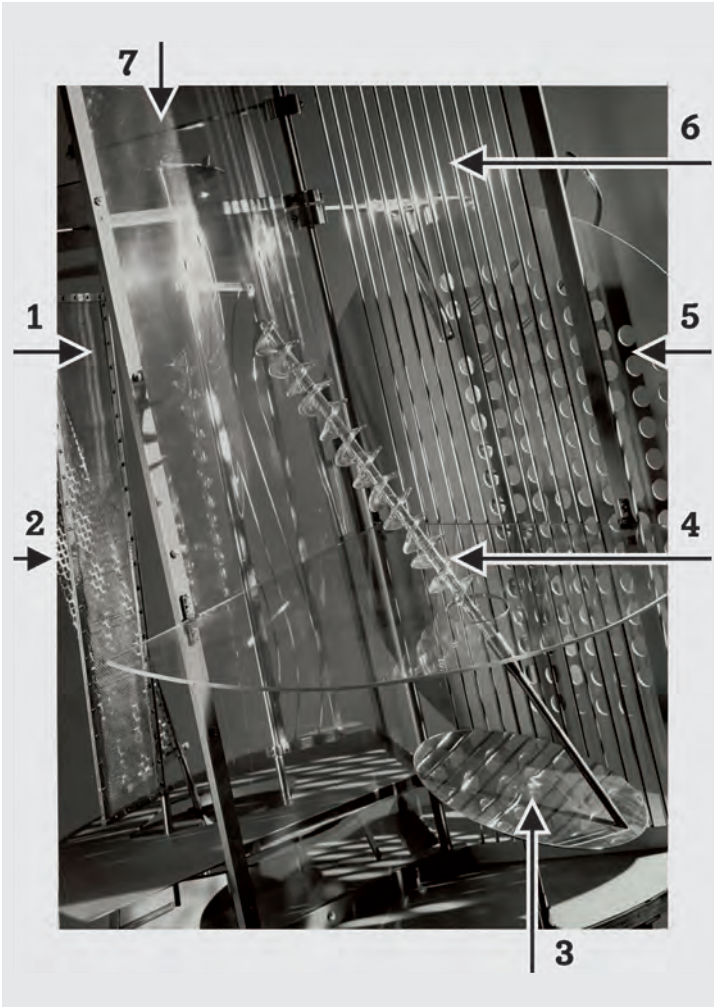
FIGURE 11. *Parallels between movie lighting equipment and the Light Prop. 1: net; 2: scrim; 3: reflector; 4: Fresnel; 5: cookie; 6: flag/solid; 7: diffusion. Author's visualization, superimposed on László Moholy-Nagy's 1930 photograph of the piece. Courtesy of the Moholy-Nagy Estate.*

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Attitudes of Design Leadership

An interview with Guy Julier by Márton Szentpéteri [1]

https://doi.org/10.21096/disegno_2021_1-2gj-msz

Guy Julier is the leading expert in the field credited with having established design culture studies as an autonomous territory of academic study and research. He was professor of design at Leeds Metropolitan University (2001–10). In 2011 he was appointed as the Victoria & Albert Museum/University of Brighton principal research fellow in contemporary design and professor of design culture. He is currently Professor of design leadership at Aalto University in Finland and was previously Visiting Professor at Glasgow School of Art (2005–10) and the University of Denmark (2013–14) and Visiting Fellow at the Otago University (2009). He holds an honorary PhD-degree of the Moholy-Nagy University of Art and Design. He is the author of Economies of Design *(2017) and* The Culture of Design *(3rd Revised Edition 2014). His other books include* New Spanish Design *(1991),* Thames & Hudson Dictionary of Design since 1900 *(2007) and* Design and Culture *(2019).*

Disegno: I am interested in your thoughts about the relevance of Moholy-Nagy's design pedagogy today, specifically regarding your everyday experience at Aalto and in the context of design education in general.

Guy Julier: We can still keep going back to Moholy-Nagy. In fact, just the other day I was reading *Vision in motion*, where he discusses two important things for design culture studies. One is the interconnectedness of different spheres of life, in particular between material and immaterial aspects. So, between society, the nation, the family, individuals, institutions, and communities, but also the interconnectedness of these with multi-material components, the world we live in. In addition to that, he talks about relationality and how each of these works together. As designers or students of design, it is important to return to and reconsider these important topics: how we can take these ideas of interconnectedness and relationality, how can we think

about them in the vastly different industrial, economic, technological, and societal conditions in which we live today.

D: Well, it is natural that we reconsider, mutatis mutandis, Moholy-Nagy's intellectual heritage. There is this bon mot, for example, in the above Vision in motion *that designing is not a profession, but an attitude. What do you think of this today?*

GJ: It is intriguing that the idea of design attitude has become a fashionable term quite recently. In fact, the idea of design attitude is about a sensibility, a way of being sensitized to the multiplicity of what makes up design culture. That is one sense in which we can think about design attitude then as being not just something which goes beyond the design profession as a specific field of professional sort of activity. Moholy-Nagy is perhaps also thinking of design attitude in terms of a kind of citizenship, a democratic engagement with the material and immaterial constellations that make up everyday life. I mean, we can replace the term design attitude with diffuse design, as Ezio Manzini calls it.[2] The idea is that it is not just professional designers doing design, many people are engaged in the shaping or the configuration of things. So, we can perhaps call design attitude defuse design, or we might even call it design culture living in a period of dominance of design culture. We can make a comparison, for example, with visual culture, especially in the early days when visual culture studies was emerging as a discipline, maybe twenty-twenty-five years ago. There was a lot of discussion about where visual culture starts, and many academics pointed to the 1870s and 1880s when the idea of the visual became ever more pervasive. Especially when thinking about the rise of photography as a visual technology or the arrangement of cities. So that is when this idea of visuality became more commonplace, that is, where visual culture in the modern age begins. We can think about a design attitude or design culture as being something which belongs very much to the modern age. This is a kind of intensification of what design is, where it is, how much it is present. This kind of shift is almost a kind of a bodily shift. It is a cognitive shift as well. Going back to your question about design attitude, in a sense, I think yes, it is a way of thinking, it is a way of being. I think, we can push this further then to think about what are these ways of being? What are these ways of thinking? How are these constituted? What is the role of technology, urbanization, and globalization in this?

D: I would love to know more about your views on the recent appearance of design culture studies as a postdisciplinary endeavor. In fact, I would particularly love to know more of your views on when it appeared, who are the most important practitioners of it and how you are connected, or interconnected to it, and which are the most important centres if there are any.

[2] *Ezio Manzini.* Design, when Everybody Designs: an Introduction to Design for Social Innovation *(Cambridge, Massachusetts: The MIT Press, 2015).*

GJ: Well, design culture studies, how did it start? To some degree there are unknown, unrecognized or below the radar elements in this story. And it is also, therefore, about particular changes in what design was in the 90s. A whole set of discourses outside design itself which seems to be increasingly more relevant. From my personal point of view, how I came to, I suppose, construct for myself at least some notion of design culture studies came out of a frustration with design history as a discipline. I was trained as a design historian in the mid 1980s at the Royal College of Art. And at that moment in the mid 1980s, design history was beginning to split into two major camps. One was focused on the more traditional Pevsnerian approach of telling the histories and the stories of famous designers and architects and design studios. The importance of the modern movement was such a strong imprint into the way by which design history was done in this camp. On the other side, there was increasing interest in this thing called material culture. The idea of thinking about everyday consumption, leaving behind the stories of designers and thinking about how this design stuff is used and thought about, its domestic meanings, for example. I think, for ten or fifteen years, there was a bit of a standoff between these two camps in design history. Now, me trying to teach this stuff in a design school, I was in trouble to choose.

D: I think design history has gone through major changes since then.

GJ: In a way, as you say, design history has changed enormously. It is a lot broader. It has expanded its purview. Part of the story of how design history began in the 1970s really goes back to the famous Coldstream Report written in 1960. It was at the time when arts and design courses were considered as being full university degree level studies. The story goes that in order to push that through, it was agreed that all art and design courses should have twenty percent of credits dedicated to more traditional academic studies. That is the space in which design history began, apart from the influence of the Open University. I think in these early days of the 1970s, there was greater flexibility and creativity in design history, which I think has come back. And I think design history itself has also suffered from this expectation to justify the existence of design courses in institutions. Is it there to service art and design practitioner students? Or could it or should it be an autonomous discipline? Design culture studies, for me, does not necessarily suffer from this problem because I am increasingly tending towards the idea of design culture studies as a practice in itself.

D: Our contemporary world is truly complex, and I am pretty sure that design culture studies is one of the best means of understanding this complexity. Do you think that there is a common agenda of scholars of design culture studies in the world, or given that it is still an emerging field, does it not have a definite common agenda yet?

GJ: I think the common agenda, if there is one, is really just motivated by the fact that design in all its manifestations, in all its scales, and at all its levels is something worthy of serious academic study. Other than that, for me, there are probably two things which attitudinally sit in the background of design culture studies. The first one, in fact, goes back to Moholy-Nagy's idea that no object is an island, that all objects are part of complex networks and so one has to understand those networks in order to understand the individual objects. The second thing, which relates to this, is that everything, and design cultures in particular, are in a constant state of emergence, a constant state of change. Because, when you have networks, you have so many nodes, and therefore changes to individual parts of a network result in changes to the network itself.

*D: You mentioned in the introduction of the 2019 **Design Anthology**[2], that although design culture studies is historically grounded, it is much more concerned with changing the present or creating the future. So, it is much more interested in changing the existing situations or creating lifeworlds, if you want to use Ben Highmore's Heideggerian approach to it. What do you think about this? Design culture studies is historically grounded, but it is no longer design history.*

GJ: By historically grounded, I mean two things. One is the need for specificity and rigor. But the second is about understanding processes of change. If we take design culture studies to be primarily interested in the present, in our contemporary world and therefore in contemporary worlding, it is about understanding something of the dynamics, how are dynamics in the world or in design culture, forced, played, or structured? What therefore are the processes of change in that? In a way, this develops work in practice theory, science and technology studies, and actor network theory, if we think of those as three overlapping fields of study. It is more focused on what might be changing in networks. There is, nevertheless, a tendency to think about stabilizations. About networks being kinds of stable ecosystems. Sometimes I find this use of the word ecosystem quite problematic because it suggests some kind of natural stability in patterns, processes, or contexts. On the contrary, I think it is interesting to look at destabilization. What are the processes of destabilization in these networks? So, this is where we get to the idea of what is driving these processes of change. So, design culture studies is, in a sense, about being historically aware in the present.

D: This leads us to a question which is for me a bit outdated, but still worth addressing because it is still discussed a lot. And that is how design culture studies comes into the picture, as we shall see. The question is: how can any kind of design theory be applied

in the field? And I am pretty sure that everything that you have already mentioned and your position as a design leadership professor points to a direction where these good old Aristotelian distinctions between theory and practice or theoretical, practical, and poetical are blurred, but still... What do you think about this?

GJ: A noticeably short answer to your interesting question here might be to recall a conversation I had with an industrial designer way back in the mid-1990s. I was in Stockholm, and I heard a product designer give a talk about Wittgenstein and notions of play. And after the talk, we were walking to get a coffee and I said it was unusual to find a professional designer talking about Wittgenstein at this academic conference. How do you find time to do this kind of work? And he said, well, it actually saves me time because reading theory and engaged with theory expands my way of thinking as a designer and I find I can get process ideas and get to solutions. So that is one aspect of it. But if we turn to the notion that design culture itself can be a kind of practice, we will have a second option I mean, in a really basic sense, we practice design culture by studying it, by doing it in an expanded field of practice. It might be that the current forms of this are the conversations with people listening in some way, or the organizing of symposia, events, and such things, or even policy making or decision making in marketing and retail. You asked me earlier about where design culture is being done. Well, when we think about one of the core places, the University of Southern Denmark in Kolding, their BA and MA courses are in fact linked to management courses. So, in that particular culture they found much more attraction in thinking about design culture studies. And yes, it can be conceived of as a humanistically or humanities grounded kind of activity, but it can be thought about vocationally as well. It develops people as better design clients for example, or better able to move into other fields. Hence, in Kolding, they run their programs with a significant amount of management studies as well. So, there is what you might call instrumentalizing aspect of design culture studies. But I think in a way this also resonates with Moholy-Nagy's idea of having a design attitude. That is about building up a sensibility and understanding about finding ways of approaching particular circumstances, problematics, ordering them, seeing what is there, mapping these things, understanding them, and also showing them to other people. Remember Ben Highmore, who you mentioned earlier, and who said very forcefully and interestingly that describing something is a political act. So, bringing stuff into consciousness, showing what is there, that is part of what the design culture studies activity is.

D: This brings us to the next question, if you like, namely that, for many experts, design culture studies is of course a critical kind of cultural practice. You mentioned the notion of describing, which already involves an act of criticism in the sense that when you describe

something it is already an interpretation in a way because the one who makes the criticism is the one who chooses what to criticize and what not to criticize. So, it is already a critical act to describe something. But of course, design culture studies involves much more than just describing. So, to what extent do you think that design culture studies can be critical? And of course, I am not referring here to a detached kind of criticism in the ivory tower of academic centres, but to a very practical sense, a sense we have been talking about, namely, that of design culture studies as a critical practice.

GJ: I would like to have another way of calling this notion of describing. In describing you pay attention and that is therefore a slowing down. Paying attention is therefore giving time and space to something. Paying of attention is an especially useful way of drawing out the unseen or the unnoticed or the forgotten. For example, neoliberal economic practices are quite chaotic, and largely premised on what you can get away with. So, by stopping, paying attention, and drawing out details we can identify what they are trying to get away with, in terms of, for example, the impacts of neoliberal practices on environments, well-being, and so on. Let us mention the example of SUVs! Currently, one in every three cars bought in America is an SUV. They are responsible for the second highest rise in global carbon emissions in the last ten years. Compared with standard passenger cars, they cause more serious injury when they collide with pedestrians. You begin to think about these figures and then about all kinds of other background activities the way in which SUVs were regulated or subject to fairly low safety standards because of all kinds of lobbying of the motor industries with governments. Then we begin to see there is a kind of connectivity between these massive things in our streets and a whole set of other impacts and policies and politics. And then we begin to think about it in terms of a consumer psychology, well, what does that mean? Well, safety. Why the need for safety? That opens up all kinds of questions about the society we live in. We see that this kind of connection is important in this process. So, it requires us to stop, think and study.

D: When you are actively working with people, but not necessarily in a productive sense—for example, with people who are embedded in a field, I mean politicians, businesspeople or decision makers— how can you step back, how can you apply this slow understanding of ongoing processes in which we are involved? Do you have any suggestion or even a strategy for stepping back and and then rejoining? How can one be a reflective practitioner working as a design culture studies scholar?

GJ: To start with, one thing is to acknowledge the temporal regimes.[3] Acknowledge, for example, that often budgets are allocated, or policies are made according to particular time frames and policy cycles or

[3] *Felipe Torres*, Temporal Regimes: Materiality, Politics, Technology *(London: Routledge, 2021).*

[4] *After the interview, Márton Szentpéteri and Attila Horányi had a workshop with Guy Julier titled* Design for Decline: Viable Futures? *at the Doctoral School of the Moholy-Nagy University of Art and Design, on the November 5, 2021, devoted to similar topics.*

budget cycles. Then think about, well, how that is constructing certain kinds of policy making or certain kinds of budgetary thinking. This is a really tough question you have posed here, because to some degree it would be too stereotypical to say, yes, we academics are the ones who have time to sit back, read and think and reflect. Whereas in fact, most academics will agree that they are caught up in these cycles and just succumb to the speed of things. The second aspect here is to also recognize that we are working in different temporalities as well, either at different points or sometimes at the same time as well. Think about the relationship between the slow and the fast, for example, or what the medium might be. I started a conversation yesterday with some students and we were talking about the issue of activist design. There is a call for doing slow design, for stepping out and being involved with, say, the slow city movement or the transition towns movement and these sorts of things, and stepping out of this kind of relentless pace, the fast pace of contemporary commercial design.[4] The reasons for needing to slow down are incredibly urgent. So how do you make the transition? That goes back to the question of the processes of change, about how you transition. What are the structures, what are the resistances, what are the opportunities for transitioning between from one temporality to another? Perhaps that sounds very abstract. But if we begin to think about, say, with ordinary working hours, how our week or day is structured, we can consider if there might be other ways of thinking about these things. How do you change to a different way of working?

D: It is a big challenge for me as well and it relates to the publish or perish issue, naturally. We are writing too much or publishing too much because we must survive. We have to live in this scientometric world, if you want. This leads us to another set of questions, to the problem of the humanism versus post-humanism issue. I don't know whether you remember the conference last year to which we invited you to be one of the keynote speakers together with Richard Shusterman and Patrick Devlieger. Ákos Schneider, one of our PhD candidates gave a talk on design and posthumanism. He talked about the decentralization of human beings. Remember when Ákos was speaking about this decentralization of the human being or even the current decenteredness of the human being, you put a simple but very intriguing question to him, if I am not mistaken: "How can we imagine social struggle if we think of a human as an aggregate of information and viruses and other bio stuff instead of someone who is responsible for her or his deeds and still in the possession of the understanding of her or his world." How can we make sense of our position as representatives of design culture studies in the field of humanities or as Rosi Braidotti called it, in the field of post-humanities?

GJ: By no means am I an expert on this, it is all quite new to me as well. Your conference, which I was so pleased to be at, opened up a lot of new thoughts for me as well. There are two sides, two parts of the posthuman, or posthumanism. One is in this kind of Donna Haraway cyborg idea that we are not necessarily all ourselves. That got me really thinking a lot more about this question of somaesthetics and sensing. There is some really interesting work going on across fine art and anthropology these days around sensing studies and sensing methods. So, I have been interested recently in this notion of methods that create disturbances and using the disturbance as a method. In other words, what I have been doing is around performance and kind of bending and stretching the experience of being in a space to then be the audience to the effects of that. Using my body as a sensing method if you like. In a way, it might sound a bit perverse, but personally as a researcher, posthumanism in a sense brought me back to my body. Maybe I have become even more anthropocentric than I was to start off with. The other one is this question of the more than human that we were talking about within the conference as well. You are going out of the body and thinking about these other things. The virus outside, which becomes the virus inside. Intellectually and ontologically, that is an interesting point to currently be at in the context of the climate crisis and thinking beyond the anthropocenic. I do, however, and the historian in me does want to think, well, it is us who got here. What is it about the human that has got us into this mess in the first place? So, I would caution against the notion of posthumanism, forgetting who we are, or how we have become who we are; or even as a way of avoiding these pressing human decisions and actions that need to be taken. That sounded horribly grandiloquent. I do apologize.

D: You mentioned that, thanks to the challenges of post-humanism you began to be much more aware of your body. Funnily enough, I also regard posthumanism as an intellectual challenge being a former Renaissance scholar who has been pretty much involved in the history of humanism and even Enlightenment. So, it is also very inspiring for me to see what my colleagues do, and especially what Ákos does at MOME. What he is involved in and some of other philosophers at the Eötvös Loránd University as a small group of posthumanist scholars, what they are doing is quite inspiring. But their challenge took me back to my humanist roots, even to my existentialist roots. Of course, I do understand the critical posthumanist philosophy. And I absolutely appreciate that we must take into consideration all the current changes and challenges like the AI challenges, or the climate change challenges, or the epidemiological challenge nowadays. So, I do appreciate the posthumanist perspective, but still, I am always smiling at the situation with all the posthumanist scholars authoring books and papers and giving lectures to a human audience. It sounds a bit

like what the Brexit guy, Nigel Farage, did in the European Parliament, constantly criticizing the European Union but taking a nice salary from it.

GJ: Yeah, massive expenses and claims.

D: Yes, exactly! Okay, so why not to wrap up with the vexed question. What does a professor of design leadership do at Aalto University now?

GJ: Well, yes, I am a professor of design leadership because that is the job I applied for. So having made an application, I then had to make a presentation as part of the hiring process about the role of research and practice in design leadership. So, I thought I would better think about that and what this design leadership role is. I managed to create a very broad definition of design leadership, which was that design leadership is about the creation of new forms of design and designing and the creation of the conditions in which that might happen. I probably do more of the second of those things than the first. I probably do not do any of the first, but the second of those things perhaps through design culture as a lens. In other words, setting up situations where questions are raised, which might lead to thinking about new objects of design, new processes of design, new publics and so on. I mean those settings, those situations which one sets up might be, for example, writing a book. It might be curating an exhibition. It might be running a salon, a discussion salon. It might be working with students on a project or whatever, out of which perhaps comes to light new ways of thinking about what design is or what the design object might be. So, it is a perverse form of leadership from the perspective of followers.

DISEGNO_V/01-02_MOHOLY=NAGY

Beatriz Colomina:
X-Ray Architecture.
Book review

Ágnes Anna Sebestyén

Beatriz Colomina:
X-Ray Architecture.
Zürich: Lars Müller
Publishers, 2019.
200 pages,
ISBN 978-3-03778-443-3

"The bond between architecture and illness is probably my longest pre-occupation." (7) The first line of Beatriz Colomina's book entitled *X-Ray Architecture* has never been more relevant than now, during the coronavirus pandemic in 2021. The renowned architectural historian's book was published in early 2019, before the outbreak of the disease, and it turned out to be quite timely as the pandemic determines our interaction with the built environment and other people. Yet, as Colomina mentions in the Introduction of her book, she has been preoccupied with the connection between architecture and illness at least since 1980, when she arrived in New York after studying architecture in Barcelona. (7) As a visiting fellow at the New York Institute for the Humanities, Colomina was surrounded by such prominent thinkers as Susan Sontag, whose book *Illness as Metaphor* (1978) proved to be hugely influential on her. Although the main fields of her research were elsewhere, she started to study modern architecture in terms of its related pathologies. This interest persisted and more recently the topic of architecture and its relationship with illness has reappeared in her publications. She published essays[1] and the book *Are We Human? Notes on an Archaeology of Design* (Colomina and Wigley 2018), which address this subject to some extent and also includes some of the arguments she has developed in *X-Ray Architecture*. In addition to Colomina, the historians Margaret Campbell and Paul Overy have also studied the relationship between architecture and illness. They also emphasized the modern ideas of health and hygiene that reformed architecture and design in the first half of the twentieth century (see, for example, Campbell 2005; 2012, Overy 2007).

The book *X-Ray Architecture* represents Colomina's latent and occasionally re-emerging interest in the relation between architecture and illness. The emergence of modern architecture from the 1920s has generally been understood in terms of functionalism, the machine aesthetic and new construction materials and techniques. In contrast, however, the hypothesis of Colomina's book "is that modern architecture was shaped by the dominant medical obsession of its time—tuber-

[1] *See Colomina's list of selected articles in* X-Ray Architecture *(11 n.1)*

culosis—and the technology that became associated with it—X-rays." (10) According to Colomina, architects became modern by designing sanatoriums and other health buildings, and adapted the lessons learnt from these buildings to residential houses and other projects (fig. 1). At the same time, Colomina also points out that we still live in a built environment that was created under the influence of modern architecture, tuberculosis and X-ray. (10) True to its title, the book indeed focuses on tuberculosis and its main diagnostic tool, but not exclusively. It expands its timeframe and the suggested scope of diseases by incorporating the psychological ailments of the post-war period as well as the allergies and sick building syndrome of current times.

Following the Introduction, the book consists of five chapters, which roughly follow the chronology of the architects and the dominant illnesses included in the argument. The first chapter, entitled "Health and Architecture: From Vitruvius to Sick Building Syndrome", presents a historical overview with a parallel analysis of dominant diseases and architecture as well as medical and architectural representations characteristic of certain eras. At the same time, emphasis is placed on the relationship between architecture, the body and the psyche. Colomina positions the architect in the role of the medical professional, and the occupant of the building in the role of the patient. In Colomina's analysis: "[t]he occupant is a patient, with modernity itself being both a disease and a possible cure." (55) The second chapter entitled "Tuberculosis" focuses on the links between TB and the architecture of the first half of the twentieth century. Colomina underlines that tuberculosis was so widely spread that "sickness was no longer seen as the exception, but as the norm". (70) It often affected both the client and the architect, so the latter was able to design health buildings based on personal experiences (see for example, the Finnish architect Alvar Aalto's design for the Paimio Sanatorium). (65) (Fig. 2) Before the discovery of antibiotics in the 1940s, sun-and-air-therapy was used as the cure for tuberculosis in sanatoriums ideally located in high altitude with fresh air. For the sun and fresh-air cure, sanatoriums were built with big windows, balconies and roof terraces. But, according to Colomina, the sanatorium is not simply a building with additional balconies and terraces to catch the sun, it is a crucial medical instrument, a building transformed into a solar device. (74) "In fact, the sanatorium modernized architecture". (74) "The hospital had to be thought as a new kind of house. And in reverse, the generic house needed to be a sanatorium." (69) The third chapter entitled "X-Ray Intimacy" examines the connection between architecture and the main diagnostic tool of tuberculosis, X-ray. Colomina's interest is in "how X-ray images had transformed the visual field long before the so-called avantgarde." (128) Colomina draws a parallel between the X-ray and the transparency of glass architecture. She highlights that similarly to the tissues outlined around the bones in X-ray, glass architecture presents only a blurred insight into the interior. However, the link between X-ray and glass architecture in Colomina's understanding is not only visual.

Both X-ray and glass architecture blur the boundaries between the private and the public: X-ray exposes the inside of the body and the modern building reveals its interior to the public eye, thus changing the relation to private spheres. (147) This idea is brilliantly conveyed by Lars Müller Publishers' excellent book cover design, which depicts an illuminated nighttime image of George Keck's Crystal House (1933–1934, Chicago) with a negative print of the same image on the semi-transparent jacket, and which leans onto the hardcover creating a captivating visual effect. The fourth chapter titled "Blurred Visions" continues to study the topic of transparency. The focus here is also placed on the lack of real transparency and on the manipulation of the surfaces and spaces by glass and other transparent materials. The last chapter "Hyperpublic: An Afterword" considers the recent diagnostic tools and visualization technologies (CAT scan, MRI scan, FLIR scan, etc.) and their visual connections with contemporary architectural representations. At the same time, Colomina reflects on today's diseases such as allergies, autoimmune disorders and sick building syndrome. As Colomina concludes her book "[t]he correlation of architecture with the medical body has finally come full circle with the rise of the 'sick building syndrome.' The type of architecture that was meant to inoculate its occupants against disease has become a source of disease. We are becoming physically allergic to buildings. New bodies will probably have to be designed. A new theory of architecture is likely to follow." (184)

The relationship between architecture and the human body is key in this book as well as Colomina's recent scholarship. "Design always presents itself as serving the human but its real ambition is to redesign the human." (Colomina and Wigley 2018, 9) This was the opening sentence of the book *Are We Human? Notes on an Archaeology of Design*, which continues by remarking, for example, how our meals, our breath, our touch, our movements and our thinking redesign us continuously. This idea prevails in *X-Ray Architecture*. "The modern house was understood not just as a kind of medical equipment, a mechanism for caring for the body, but as a piece of exercise equipment designed to enhance it, to produce a strong and healthy body." (27) In Colomina's understanding, Le Corbusier's *machine à habiter* is transformed into the *machine for health*. This engagement between the human body and its environment largely implies the man-made environment. And, according to Colomina's position, illness helped make modern architecture modern. In a book published over two decades ago, *Privacy and Publicity: Modern Architecture as Mass Media*, Colomina argued that "modern architecture […] becomes modern with its engagement with the media." (Colomina 1996, 14) With *X-Ray Architecture*, we can say that *modern architecture becomes modern with its engagement with illness*.

Like the highly influential *Privacy and Publicity: Modern Architecture as Mass Media*, *X-Ray Architecture* also remains within the canon of the history of architecture. It is characteristic of Colomina that although her discourse belongs to the canon she also reveals the
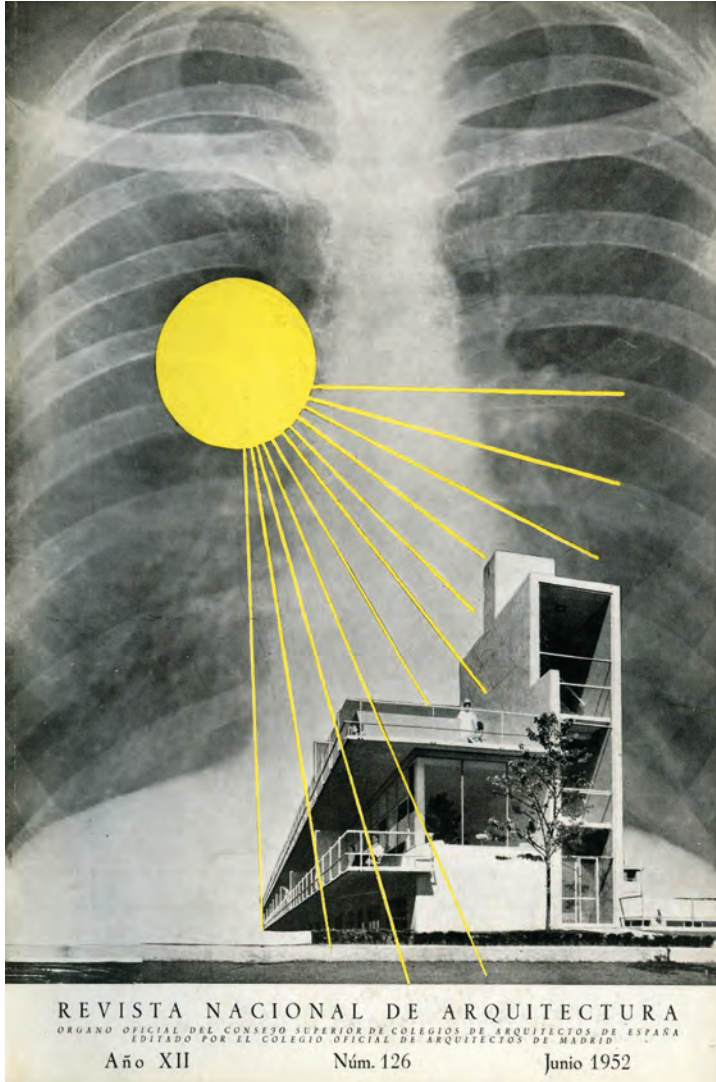
FIGURE 1. *Cover of* Revista Nacional de Arquitectura, *No. 126, June 1952, with an image of Lake County Tuberculosis Sanatorium (photographer unknown); composition probably by José Luis Picardo and Fernando Cavestany © Colegio Oficial de Arquitectos de Madrid.*

unexpected that is inherent but never before disclosed as part of it. She remarks: "I think of my research as 'intra-canonical'—attentive to the unexpected within the canon itself. And in this case, the unexpected is disease." (9) In *X-Ray Architecture*, the canonized figures of modern architecture appear, including Alvar Aalto, Le Corbusier, Ludwig Mies van der Rohe, Richard Neutra, Charles and Ray Eames. The same applies to the iconic buildings included in the book, such as Alvar Aalto's Paimio Sanatorium (1929–1933), the Zonnestraal Sanatorium by Bernard Bijvoet and Jan Duiker (1925–1928, Hilversum), Richard Neutra's Lovell Health House (1929, Los Angeles), as well as Mies van der Rohe's Tugendhat House (1929–1930, Brno) and Farnsworth House (1949, Plano, Illinois).

This declared "intra-canonical" attention is increasingly challenged today. Jiat-Hwee Chang (National University of Singapore), who reviewed *X-Ray Architecture* in the *Journal of the Society of Architectural Historians* expressed his doubts about the relevance of the "intra-canonical" approach posing two historiographical questions. (Chang 2020, 347) First, he points out that the modern history of illness and architecture is a global topic, which questions the Eurocentric canon of modern architecture. Second, he warns that the "intra-canonical" look preserves disciplinary norms and thus it is incompatible with interdisciplinarity, which is both the ambition of Colomina's book and contemporary architectural historical scholarship. (Chang 2020, 347) However, it is important to note that the term Eurocentric is also questionable in this context, as this position implies the Western (i.e. Western European and North American) canon, in which, for example, the Eastern European situation is also often marginalized (fig. 3). But this is perhaps scarcely visible from a global point of view. In Evangelos Kotsioris's interview with Colomina, she reflects on these critiques. "People could accuse me of focusing on canonical figures, like Le Corbusier, or Loos, or the Eameses. But the reason I have paid a lot of attention to these figures is because I am interested in looking at them in a non-canonical way. I think that is my role precisely." (Kotsioris 2020, 6) Colomina goes on stating that the *X-Ray* book also includes the lesser known "side-men" and "side-women". So, *X-Ray Architecture* "is both canon and anti-canon." (Kotsioris 2020, 7) With these in mind, *X-Ray Architecture* is an essential addition to the historiography of modern architecture, because it certainly inspires further research in this topic from either a global or a previously omitted local perspective.

FIGURE 2. *Paimio Sanatorium, patient wing with sun terraces in the 1930s, designed by Alvar Aalto © Alvar Aalto Foundation, photograph by Gustaf Welin.*
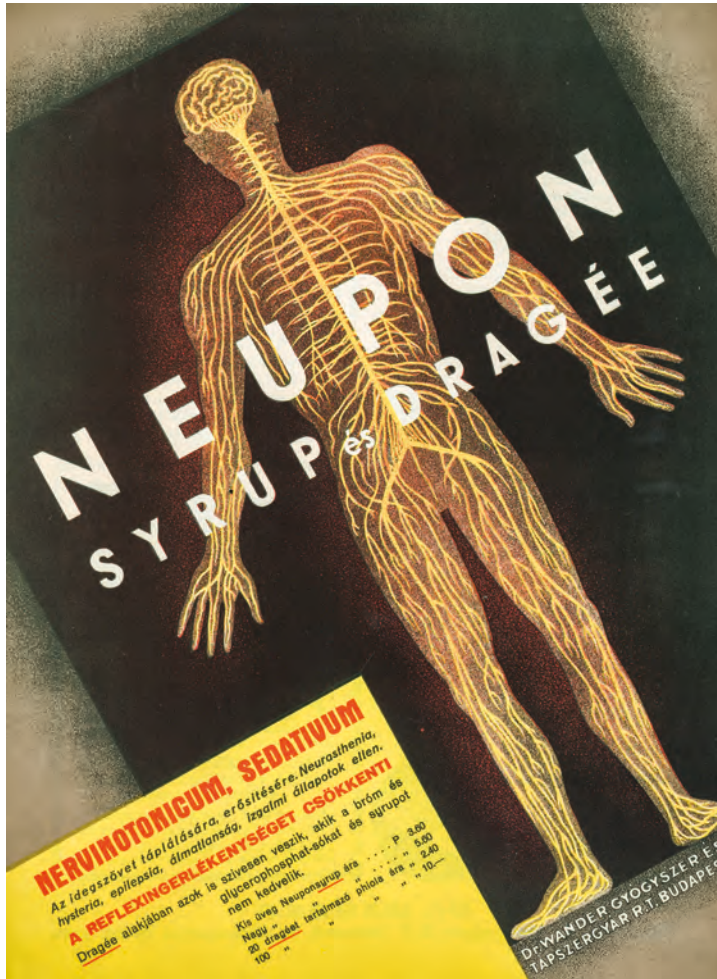
FIGURE 3. *Hungarian poster for a medicine curing nervous disorders, design by the architect József Körner, ca. 1928–1930 © private collection (image not included in* X-Ray Architecture*).*

In 2021, however, the reader cannot fail to see a connection between the topic of the book and the coronavirus epidemic. The publication of *X-Ray Architecture* just preceded the outbreak of the disease. This means that the book is strikingly topical, but the publication cannot offer direct reflection on the pandemic. Nevertheless, Colomina's name frequently appears as an expert in speculations surrounding the impact of the coronavirus pandemic on architecture. Kyle Chayka, for example, interviewed Colomina in June 2020 in his article entitled "How the Coronavirus will Reshape Architecture", which appeared in *The New Yorker*. Colomina explained here that the minimal interiors and open spaces promoted by modernism are incompatible with our current state and needs of living. We are not longing for open spaces anymore, but for more walls and corners. Our homes became our refuges. (Chayka 2020) To rethink the relationship between architecture and disease in the light of the coronavirus pandemic, the book *X-Ray Architecture* provides a solid basis.

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