characterizes several of its workshops, to mechanical variability. Although this transition depends mainly on the classes and types of objects and technologies one takes into account, the materials produced at the Bauhaus were able to illustrate both paradigms. While the artisanal variability was tested by several masters and students, others worked on the idea of mechanical variability. The tension established out practical By these two manners of approaching the production –and reproduction– of the ‘work of art’ contributed to permanently enrich the debate on how architecture form should be studied and produced. On the one hand, workshops such as the Ceramic or the Carpenter were able to proof the validity of the artisanal hand-made product. On the other hand, workshops such as the Photography, or even, the Graphic Printing and the Printing and Advertising Workshop, experimented with new means of mechanical reproduction and representation, as well as with innovative paradigms associated with the rise of the society of information.

If the age of mass production –where standardized and mechanical reproduction is to be considered as an interlude or as a gap between the hand-making artisanal production and the digital age that has come to replace it since World War II–, can we understand the paradoxical statements head by some members of the Bauhaus as premonitory of this non-linear evolution? Furthermore, if the digital turn and the pre-mechanical variability - exemplified at the Bauhaus– have many common points, is it possible to find within the Bauhaus the linkage between the digital agenda and the transition from artisanal variability to mechanical identity? Thus how did the Bauhaus Masters react to the dialectic between craftsmanship and mechanical reproducibility? Did their discourses anticipate the digital shift, particularly rapidly triggered after the WWII, when some of the most influential Bauhaus leaders migrated to the United States?

The paradoxes of mechanical reproduction are explained through the different groups - and their affinities– working together at the school. On the one hand, the ‘sublime’ side including Klee, Feininger, Itten and Kandinsky; on the other, the ‘geometricians’, with Moholy-Nagy at their head claiming objectivity (Neue Sachlichkeit) and finally, the ‘combatants’ led by Malevich, El Lissitzky, Mondrian or Van Doesburg. Moholy-Nagy’s collectivist ideology was truly committed with science, social systems and architecture, as he proclaimed in his first lecture at the Bauhaus in 1923. Amongst the Bauhaus masters that migrated to the US around WWII, the figure of Moholy-Nagy portrays a real continuity from the early works in Europe (pre and post-Bauhaus), to the North American theoretical and pedagogical endeavor. In this sense, Kepes takes on a decisive relevance, and links the mid-1920’s European Bauhaus context with the postwar 1940’s on to the 1970’s MIT ‘techno-social’ and ‘second modern’ environment. Was Moholy-Nagy claiming, through his studies of photography and motion –understood not only as new technical means of reproduction but of production– for a new design and self-consciousness methodologies?

The Bauhaus media from the materiality of the printed object towards a New Materiality of architecture

“The Bauhaus workshops were really laboratories for working out practical new designs for present-day articles and improving models for mass-production. To create types-forms that would meet all technical, aesthetic and commercial demands required a picked staff. It needed a body of men of wide general culture as thoroughly versed in the practical and mechanical sides of design as in its theoretical and formal laws.” Walter Gropius. The New Architecture and the Bauhaus

The Bauhaus printed material worked as an effective vehicle able to transmit the school’s modern ideal. It complied with three capital roles: It worked as an internal space for communication within the school, as a key advertising element for future students and also as a vehicle through which to disseminate theories of pedagogical approach. The printed material can be considered to be a space—a testing critical platform—for dissemination of theories raised within the school; a timely example of the emerging engagement between media and modern architectural ideology.

Specifically, Moholy-Nagy’s books were understood as experiments—test printed spaces not only capable to spread his ideas but to test them—, underlying a significant approach to graphic design. Books were able to be critical not only verbally, but also visually: One of the most enlightening aspects of Moholy-Nagy’s books was the ample selection of illustrations, a deliberate convergence between text and image. Malerei Fotografie Film is comparable to other similar manifestos published as books in the early 1920’s. The Bauhaus printed material, aside from the Bauhausbücher, was completed with the regular publication of a magazine, from 1926 to 1931, and other smaller publications, such as advertising pamphlets, fanzines or exhibition posters.

The dissemination of ideas was produced in a sophisticated manner: Political and social issues were transformed into a mechanical graphic disseminate, individually developed through the different workshops of the school - Graphic Printing, Printing and Advertising, Photography or the Glass and Wall-Painting Workshop– and collectively put together within the different printed communication and information platforms of the school, the magazines, the book series, advertisement strategies, and obviously through their exhibitions. The magazine, together with the books and other printed material, was the space where to test this new approach to representation, occasionally emphasizing a more pre-mechanical understanding and sometimes an approach aligned with the new systems for mechanical reproduction.

The Bauhaus vocabulary was fundamentally an advertising language employed even then, with some success, not only for immediate and direct printed material but also for the

**The Bauhaus (1919-1933) and the digital agenda**

**Alejandro Valdivieso**

**Paradoxes within the Bauhaus transition between artisanal variability to mechanical identity: from the Modern Workshop to the contemporary Fab-Lab**

“The nature which speaks to the camera is a different nature from the one which speaks to the eye.”

Walter Benjamin. A short History of Photography

In his book “The Alphabet and the Algorithm” Professor Mario Carpo points out the difference between handmade variability and digital differentiability in the sequential chronology which can be established through three ‘technical ages: the age of hand making, mechanical making, and digital making. The Bauhaus was situated chronologically in the first break, in the transition from artisanal variability, which
Bauhausbücher, mainly designed by the Moholy-Nagy and Herbert Bayer11. Media becomes the ‘space’ where establish a profitable dialogue between materiality and abstraction, or the way from artisanal variability to mechanical identity as portrayed in the cover and back-cover of 1928’s first issue of the Magazine12 by featuring a photograph that included a one-exact copy of a previous edition13. On several laid-up levels, some of the classical tools of the architect – pencil, square & triangle ruler –, together with several models of three dimensional basic geometric figures – the cone, the sphere and the cube – appear juxtaposed, maybe as an allegory of the basic Bauhaus figures – the square, the circle and the triangle –. It seems that the photomontage aims to reproduce the architect’s space of work, stirring up debate on how this canvas has been transformed or will be transformed by new mechanical means of representation and reproduction, thus not only through new means of representation – and material expression – but of new interfaces of production. Far from being abstract volumetric considerations, the cover magazine photomontage brings to light the break between handmade and machine-made production of standardized elements, a premonitory assumption revealed in Moholy-Nagy’s work: How could the advent of technology address this situation?

In contrast, 1931’s issue14 featured in the front cover just a series of large-scale photographs of different textile and other ornamental surfaces, bringing up to debate the idea of the internal structure of the material. Photography was indeed starting to be considered as a possible means of architectural representation and as a new interface capable to bring spatial, material and ornamental qualities yet unexplored, nevertheless able to become a mediator between materiality and abstraction. Similar to what would happen with computers later on, photography presented an emergent concern on perception, “perceptual entities and objects”15. They were significantly addressed by Moholy-Nagy and later on by Kepes, relating to the investigations developed at the Bauhaus. Over and above, 1931 edition brought up another important debate mainstream: The gap between representation and materiality. The two aforementioned editions represented various paradoxes triggered at the school: The early-modern hand making model of artisanal variability and the struggle of mechanical reproducibility to establish new means of identical representation and reproduction.

Hence, if the computer, and assisted-design software – from CAD (Computer Aided Design) to BIM (Building Information Modelling) – has been able to introduce additional layers of mediation that did not exist before, did Moholy-Nagy’s discourse denote an awareness of an emergent transformation affecting the way in which architecture is practiced and produced? If the computer is just another “vehicle that induces a new displacement of physical experience and materiality”16, can we certainly assert that new means of representation – photography and film, as described by Moholy-Nagy (he precisely used the word representation, together with the dialectic production-reproduction) – already stated a premonitory displacement of the physical experience of space and its materiality? His theories further expanded upon this idea: How can we represent this, or negotiate the relationship between the space and the observer, through architectural representation?

1925 Moholy-Nagy’s Bauhausbücher 8: Malerei Fotografie Film

“We may see that we see the world with entirely different eyes. Nevertheless, the total result to date amounts to little more than a visual encyclopedic achievement. This is not enough. We wish to produce systematically, since it is important for life that we create new relationships.”

László Moholy-Nagy. Painting, Photography and Film17 Malerei Fotografie Film was originally published in 192518. The Bauhaus book series conveyed a deliberate balance between uniformity – to make the series identifiable as a unique collection of books19 – and diversity; able to represent the different topics and therefore positions of their authors within each book. The book was divided into two related but consciously separated parts: In the first place, the text appears to be occupying approximately forty percent of the pages, while the other sixty percent consists of a collection of photographs, most of them produced by Moholy-Nagy’s students as part of their course work. At the end, the author included a manuscript sketch for a film – also typophoto – entitled “Dynamics of the Metropolis” which had been developed earlier on, in 1921-22. Embedded in an advertising language and modern structural grid layouts20 Moholy-Nagy’s first words are certainly quite revealing: “From painting with pigment to light displays projected with a reflector.”21 The shift has been announced. On the next page, occupying the entire layout, and making typography an element for graphic design itself, Moholy-Nagy stressed what he meant by the contemporary problem of optical creation and the difference between static and kinetic optical composition22. His words not only imply a shift in the way art, or architecture, was produced; but a shift in the relationship between the object and the subject, triggered by the appearance of mechanical means of representation, which had resulted in the emergence of new fields of creativity. Moholy-Nagy introduced photography and film as an alternative and mechanical means for spatial expression, able to fulfill representational purposes of a more complex society, transformed through the dialectic between production and reproduction. The mechanical reproduction meant something completely new and so photography and film could aim to fulfill the overlap of space and time in the work of art, as Benjamin will put it more than ten years later23.

Moholy-Nagy argued that “new mechanical means of representation,” using his own words, would replace the painting methods of representation, triggering a shift from representational arts – painting methods of representation, to the non-objective and abstract painting/representation techniques24. This shift will entail and embrace a new representational optical creation, an unpredictable possibility of extension of the work of art, as experimented with students at the Bauhaus. Architecture and art found in photography a vehicle capable, like no other, not only to depict it but to map it in a sense that questioned many aspects and developments of its exercise25. Photography and film found a perfect positioning and accommodation in architecture, as the art capable of bringing together space and time – as it was understood in modernity–, in order to be able to continue dealing with everyday life understanding its more dynamic reality. Moholy- Nagy’s statements26 illustrate the relationship between the artistic field, and architectural field as an main field of experimentation, and an emergent contemporary technological and pre-digital world in rapid evolution. Art and architecture started to be conceived differently.

The New [Bauhaus] Objectivity – “a non-objective’ painter needs no special courage to embrace the art of creative presentation as provided today by photography and film”27 – entailed crucial modern principles such as functionalism28, but above all entailed a new way to conceive, observe and understand spatial practices, as happened after WWII and through the early 1950’s with the by then incipient irruption of digital culture and digital design techniques29. This explains the fact that the school was really a laboratory for Gestaltung –the production and construction of form–, rather than an amalgam from the Arts & Crafts School30, just as Gropius emphasized in the school’s magazine second edition31.

Moholy-Nagy argued that the observer, or the user, in architectural terms, became an active part of a work of art32. There is, of course, a striking parallel between what he had described and the situation which occurred after the invention of the computer and its individual dimension. They have in common the transition between objects and informational events: architecture as form and architecture as politics. This shift will entail a new materiality; there is a progressive connection between the materiality of photography (and film) and the new digital materiality: one precedes the other and explains its validity33. Assuming that technology and its capacity for mass production had to a great extent levelled the level of humanity, Moholy-Nagy directly referred to the invention of printing and media as a democratic process that enabled everybody to acquire books. Reproduction became also a statement for democracy, the materiality of photography, even colored prints, socially available and reproductible in lithographs, collotypes and other means made him understand that contemporary technology was capable to
offer a wide circulation for ‘originals’ too\(^6\). The work of Futurist and Constructivist movements was used several times by Moholy-Nagy to address how the ‘new function’ had been covered in the traditional form. He described, for example, the work of the Futuristic Movement and techniques such as static painting, which stated the problem of simultaneity of movement. He considered the future painting to be static, therefore stating the problem of simultaneity of movement, or as he put it, the representation of the time impulse. Photography and film were already known, but far from being understood not only as a means able to represent movement –the kinetic quality of space– but as a tool for creation (design) and transformation\(^7\). Furthermore, he insisted on the idea that the photographic camera –as a technological device– was capable of reproducing the purely optical image, enabling the subject to perceive optically true distortions, deformations and foreshortenings. On the other hand, the human eye, together with intellectual experience, was able to supplement perceived optical phenomena by means of dialogical association processes, able then to create both formally and spatially a conceptual image. How the creation of this conceptual image has changed since the appearance of this new mechanical means of representation and reproduction? Moholy-Nagy claimed the photographic camera as the first stage of objective vision and demanded for a juxtaposition of natural human eye experience and the vision of the camera, in order to make the human inhabit both the ordinary and the technological simulated space, a dual perception formed by various interfaces, similar to what has been brought to light much later, in relation to the digital agenda, materiality and perception –disperse or not– by theorists or architects such as Toyo Ito\(^8\).

1929 Moholy-Nagy’s Bauhausbücher 14: Von Material zu Architektur

“Every action and expression of man is the sum of components founded mainly in biological processes... [..We are those] much less interested today in the intensity and the quality of expressions of “art” than in the elements that determine, with the force of ruling law, our function as human beings and the forms it takes.”


Four years after the publication of his first book, Moholy-Nagy brought out another volume to the Bauhaus series. Entitled Von Material zu Architektur it was originally published in 1929\(^9\), once he had already left the school to establish his studio in Berlin. This work, the origins of which dated from the Bauhaus period –many of the examples used in the book were taken from students work, workshops– formed the basis of his later major work, Vision in Motion, which was written with the help of the Bauhaus. Moholy-Nagy and published posthumously in 1947 with Paul Theobald in Chicago. The book was organized in four chapters: “The Educational Side”, “Material”, “Volume (Sculpture)” and “Space (Architecture)”; each of them represented Moholy-Nagy’s main concerns, able to prove his strong commitment with the Bauhaus pedagogical purposes.

Within the first chapter, “The educational side”, Moholy-Nagy paid special attention to educational issues developed at the Bauhaus\(^10\); placing them in the foreground of the school. The school attempted to address what he named as the injuries worked by a technical civilization. How could the new generations combat these injuries? And how to benefit from them in order to intensify art practices? Moholy-Nagy demanded a new attitude towards this dynamic context\(^11\) emphasizing the way in which the school attempted to meet the shortcomings between hand-made production and mechanical reproduction in the context described by the irruption of technology as part of our daily lives. Moholy-Nagy vindicated, on the one hand, a manual training for the school –This attitude, which looks toward wholeness, led in the Bauhaus to a manual training. Or at least to a hand work which along with its educational aim had also that of creating models for industry, taking into account the equipment and the processes of production of our technical age\(^12\). On the other hand, he claimed for a sensory training able to introduce experience to the study of matter and to materials science –the synthetic approach to structure was introduced by experience with the material, the amassing of impressions often appearing unimportant at first–. 13 Moholy-Nagy’s sensory training ‘experiences’ paralleled the emergence of the new digital tectonics in the early 1990s –where “multiple solutions could be envisaged in order to reach a perfect fit between form and technology”.\(^14\)

The dialectic between form and technology addressed by Moholy-Nagy predicted the fact that, as it happens today, materials can be produced at any scale transforming the tectonic principles and assumptions that guided modern architecture\(^15\) and reinventing architectural ornament.

The foregoing considerations bring us to the second chapter of the book (“Material”) dedicated in first place to materials –or the material, as an abstract entity, itself– rather than to materiality, understood not only as the physical, mechanical and chemical qualities of materials, but as a social and cultural construction. This chapter is perhaps the most important part of the book in terms of the variety and extension of the content and also with regards to its premonitory statements on materiality –from tectonics to ornament-, more engaged with the current design techniques –parametricism, thermodynamics, typology,– rather than with the tectonic assumption, which prevailed before the dawn of modernity\(^16\). Via the introduction of new experiments working on scale and material conditions, some of which had been practiced already by Johannes Itten\(^17\) within the elementary courses, Moholy-Nagy addressed a new way of looking at materiality. He studied the current conditions and mechanical characteristics incorporating sensory experience to design techniques yet avoiding any kind of phenomenological, poetic or metaphoric adjective of matter or materiality, and preceding what could nowadays be described as a Thermodynamic Materialism. To this respect, the introduction of new means of representation and advanced technologies –photography and film– in these investigations transformed the assumptions on scale and ornament that had prevailed since the early modern times, envisaging a disruption between subject and object, or between human and the work of architecture.

These new mediation processes between the subject and the object –materials and their materiality– were tested through different experiments developed by students at the school. Such was the case, for example, of the ‘tactile exercises’, which had already been addressed by the Futurists –Marinetti, the leader of the Futurists, published in 1921 a manifesto on the creation process based on tactile values–\(^18\). The link between these sensory experiments with some of the principles that have arisen since the emergence of technology within design professions in the last 30 years is somehow or other related to the supposed content of the diagram as part of the design process. In a sense, as it happened in film making –by filmmakers such as Eisenstein or Kubrick– the work of Moholy-Nagy was anticipating the chromatic basis of architecture, bypassing what he considered to be the misleading functional diagram, and proposing some means of representation and information capable to approach the incorporeal\(^19\), and the interaction between space and movement. The Bauhaus used diagramming far more than for pure mental schemes. They used it as a research tool capable to guide architects and designers among the different flows of data and information that were already then affecting design processes\(^20\).

Photography for example, addressed by Moholy-Nagy in the third chapter, was able to introduce new layers of mediation in the sense that a new optical approach through the camera assisted the tactile training; similar to what has later been demonstrated in the computer age, dealing with concepts such as structure, time, materiality –from tectonics to ornament, as a social and cultural construction. This chapter is perhaps the most important part of the book in terms of the variety and extension of the content and also with regards to its premonitory statements on materiality –from tectonics to ornament-, more engaged with the current design techniques –parametricism, thermodynamics, typology,– rather than with the tectonic assumption, which prevailed before the dawn of modernity\(^16\). Via the introduction of new experiments working on scale and material conditions, some of which had been practiced already by Johannes Itten\(^17\) within the elementary courses, Moholy-Nagy addressed a new way of looking at materiality. He studied the current conditions and mechanical characteristics incorporating sensory experience to design techniques yet avoiding any kind of phenomenological, poetic or metaphoric adjective of matter or materiality, and preceding what could nowadays be described as a Thermodynamic Materialism. To this respect, the introduction of new means of representation and advanced technologies –photography and film– in these investigations transformed the assumptions on scale and ornament that had prevailed since the early modern times, envisaging a disruption between subject and object, or between human and the work of architecture.
workshop into a new space for action and algorithmic or differential reproducibility. Ornament is also present in his work. He for example defined concepts such as the mass arrangement of the material (“massing”), which was precisely described as the classical or modern conception of ‘surface treatment’, or the surface itself as architecture. Without doubt these statements were an enabling starting point for Moholy-Nagy to introduce the function of ornament: “the correct and creative application for the material clarifies the question of functional and ornament form.” Although he stated the modern assumption on ornamentation arguing that where a complete fulfillment of the functional need has been found, there is nothing left for ornamentation; he probed the linkage between mechanical reproduction –introducing the idea of repetition – and the debate functionalism and ornament. Was Moholy-Nagy venturing the future consequences of the suspension of traditional tectonic assumptions? Can we find a correlation, and if so, in what terms, between the ongoing debate on digital tectonics and what he experienced during that period at the Bauhaus? 

The last pages of Von Material zu Architektur are dedicated to space and to the movement of the body in space. In contrast to the static, hierarchic dimension of earlier periods, Moholy-Nagy claimed for a kinetic and dynamic understanding of architectural space. He asserted that space is meant to be as the magical box produced by the relative location of bodies in continuous motion, thus “spatial creation is the creation of a relationship between the positions of bodies”. The study of motion within architectural space –intensified through photography and film– became a touchstone for his definition of space, advocating the use of the term kinetic space instead of static space, or in other words, the recognition of spatial conditions –which are not the result of the positions or relationships within a rigid volume– but rather consist of visible and invisible flows of movement together with the phenomena triggered by this movement.

Anticipating the digital: Translating knowledge from Europe to the United States. From the Bauhaus modern ideal to the ‘techno-social’ MIT second modernism, László Moholy-Nagy and György Kepes

“... The education of the architects must, therefore, include the education of the eye.”

Moholy-Nagy left the Bauhaus in 1928 and he was replaced by Josef Albers. He then established his own studio of typography, exhibition design, photomontage and photo collage in Berlin and participated, in 1933, in the 4th CIAM Congress in Athens. A year later, he emigrated to Amsterdam and London, where he stayed until 1937 before moving to the United States. On Walter Gropius’s recommendation he was named director of the planned New Bauhaus in Chicago in 1937. However, the school was forced to close as early as 1938 for financial reasons and in 1939 Moholy-Nagy founded the successor to the School of Design in Chicago, which was restructured in 1944 as the Institute of Design, currently part of the Illinois Institute of Technology. Moholy-Nagy also worked as a freelance artist and designer until his death in Chicago in 1946, the same year Kepes, his former collaborator, started teaching at MIT.

It has already been addressed by several scholars, how the Bauhaus influenced Canadian and North American art school’s institutional program instruction. Many professors and leaders moved from Europe to Canada and the United States before or during the WWII. In the case of Moholy-Nagy, a continuity of his legacy was translated to Kepes investigations at MIT, which did not happen in such an influential manner as the other members of the Bauhaus that came to the United States. The venture between Moholy-Nagy and Kepes allows us to easily trace a line between the European avant-garde context –after the Great War– and those conditions performed in the United States after the WWII; this is to say, from the creation of the Bauhaus to the creation of the MIT Center for Advanced Visual Studies in 1966.

In this sense, Kepes’ legacy at MIT can be understood as one of the most pivotal proponents of the Bauhaus tradition; after WWII, the institute was transforming its educational curriculum from an established engineering school into a science-based research institution, elaborating a new meaning for scientific knowledge as deferred research agency. MIT was for Kepes a fertile ground for applied knowledge. His theories addressed several important influences from the Gestalt perceptual psychology. This approach to vision had already been explored by Moholy-Nagy through photography and the sensory training experiences developed at the Bauhaus, claiming for a combination between the human real vision and the artificial vision, and hybridization between nature and artifice -machine, technology-. In this respect, and in order to illustrate an emerging techno-social commitment, it seems appropriate to note their collaborations with the US Army; they developed several collaborations with the ‘apparatus of war’ that emphasized the perfect combination, triggered since WWII, between war and technology. For example, Kepes worked in 1942 under the auspices of the United States Army in the study of civilian camouflage.

This newly certified arm of civil defense gave him the opportunity to work with large agencies and test new ideas. By flying over Chicago at night, Kepes transformed his ideas about environmental art and large-scale mapping. His proposal was to string together a large network of cables and lights and float them on Lake Michigan in order to fool night raiders into thinking the city extended further into the lake, thus providing a false target for bombing raids.

It is not casual that the MIT received after the WWII the influx of defense funding in Campus –“the largest share of any US university in the postwar period”–. Indeed, the question to be addressed is clear: the correlation between the Bauhaus approaches to perception, concept and reality, triggered in some points with little self-consciousness, through the employment of new technological means of representations and production; the subsequent translation to the United States, in this case through Moholy-Nagy and Kepes; and the ongoing debate on digital principles for design. Thus how to map the common ground between the Bauhaus gestaltung spirit, the MIT ‘techno-social’ moment and the ongoing digital and liquid scenario?

It seems worthy to investigate, especially today, when the digital has invaded the discipline –theoretical stances, universities and practice–, how it is possible to correlate historically and theoretically this digital turn, and the way in which it has affected architecture and urban landscape –design processes and production (built) paradigms-. The assumptions here described find their theoretical and historical conditions to justify how, when and why the aforementioned turn was early rooted within the Bauhaus pedagogical and experimental experience –the transition from artisanal variability to mechanical identity–, thereafter at MIT. In a bigger context, these conditions also struggle to overcome Benjamin’s debate on reproducibility and hand making variability. The dialectical between the mechanical and the digital copy has its architectural parallelism: from anthropocentric vision of space to the break of the space of the Cartesian order, and definitely between the Beaux Arts model to the aforementioned ‘techno-social’ model, going through the European Arts & Crafts Bauhaus structure and the Modern Movement. Moholy-Nagy’s (and Kepes’) figure appears to be a condition of possibility that certifies this assumption, this is to say, their work –which in a sense can be taken as pro-digital technological manifestos– represents in part what made the digital conditions. Thus, which are for example the convergences between the theoretical conditions of materiality that both Moholy-Nagy and Kepes were striving towards, and the digital, soft conditions in which we currently inhabit? Having already addressed the importance of the social value in the training of the designer how should designers tackle today the question of digital design within the educational environment? If the mechanical and technological age needed –as it was proved by Moholy-Nagy at first, and then by Kepes– a new visual practice, what should be the necessary nowadays? What does the digital paradigm require to embrace a non-linear architecture after the age of printing? and finally, how is this achievable in the different schools of architecture and design?
In an early version of this paper, the development was in the seminar “Evolution and the City” under the guidance of Ann Marie Ryan at Harvard University Graduate School of Design (Sypin). The seminar was so ad-libbing that it was described as a second reader. The current research narrative draws from a small group of seminar participants who were present at the part of the seminar “Transforming Architecture, Walter Gropius and the Bauhaus” that was given by the late Philip Johnson at Harvard University Graduate School of Design. The vast majority of the text, however, is extracted from the seminar notes of Ann Marie Ryan, who has been a central figure in these discussions. The seminar was held in Paris, France, in 1966. Thanks to the late Philip Johnson for his guidance and assistance in this endeavor. The seminar was also examined at the Massachusetts Institute of Technology Library, and my thanks to the staff there. 2. Benjamin, Walter, A Short History of Photography, Cambridge, MA, MIT Press, 1994. 3. Colomina, Beatriz, Espace, Temps et Médias, Photographie, originally published in The Lithaerxrxeal of 30. 4. Colomina, Beatriz, The Alphabet –. In 1926 the alphabet became the “official” Bauhaus typographic and produced part of the graphic content together with Moholy-Nagy. In this sense, it is not coincidental, and perhaps even a nod to the Sturm und Drang of the early-20th-century modernist perspective and avant-garde variability. 5. Bauhaus 1 (1926): Die Zeichenerscheer vierteiler (directed by Gropius and Moholy-Nagy). 6. Although the graphics correspond to 1927’s second issue, Bauhaus 2 (1926). 7. Ockman, Joan (Colomina, Beatriz: Guest Editor), “Organic Architecture and the Alphabet: The Bauhaus and the Bauhaus in the late 1980’s and early 1990’s with the Gulf War, the first war to be broadcasted further, on sent by a televisual transmission (originally developed by the old; the new function is shrouded in the traditional form”. Malv melody. –. In 1926 the alphabet became the ‘official’ Bauhaus typographic and produced part of the graphic content together with Moholy-Nagy. In this sense, it is not coincidental, and perhaps even a nod to the Sturm und Drang of the early-20th-century modernist perspective and avant-garde variability. 8. “The Bauhaus had become an institute for design, a laboratory for the artist, a school for the craftsman, the Bauhaus, and a workshop for the modern artist. 9. Bergdoll, Barry; Dickerman, Leah (Ed.), Bauhaus 1919-1933, Workshops for Modernity, Museum of Modern Art, New York, 2010. 10. “The time for manifestos for das neue Bauen is past and that for Gestaltung (“form giving”), rather than an amalgam of an 11. Ray, Paul, “The Elements of Style” (New York: Harcourt, Brace, 1925). 12. O’Keeffe, Georgia, “Material to Art: The Bauhaus 1925-1933, Workshops for Modernity, Museum of Modern Art, New York, 2010. 13. Although the graphics correspond to 1927’s second issue, Bauhaus 2 (1926). 14. The Bauhaus investigated the relationship between the movement, which was based on intuition, tried to rival out a workable notion of similarity almost from the beginning of Western thought. Computers engineers and cognitive scientists today are trying to do essentially the same kind of thing: to create machines that can understand, absorb, and mimic - “Documentary exact photographs of material (tactile) values, unambiguous that produces forms of some sort, tend to reside precariously before, in contrary almost every observer – not only the wilderness- 16. “The time for manifestos for das neue Bauen is past and that for Gestaltung (“form giving”), rather than an amalgam of an 17. Moholy-Nagy points out that the same problem of justification crops up between practical literature and reality or taking things for granted in the way they are. 18. Moholy-Nagy, László, The New Vision and Abstract of an Artist, op. cit., pp. 268-289. 19. “The fancied increase in value was mostly mere imitation 20. The middle of the 1950’s and early 1960’s with the Gulf War, the first war to be broadcasted further, on sent by a televisual transmission (originally developed by the old; the new function is shrouded in the traditional form”. Malv melody. 21. Ray, Paul, “The Elements of Style” (New York: Harcourt, Brace, 1925). 22. “In his own words, Le Corbusier told us, “The new function is shrouded in the traditional form”.” –. In 1926 the alphabet became the “official” Bauhaus typographic and produced part of the graphic content together with Moholy-Nagy. In this sense, it is not coincidental, and perhaps even a nod to the Sturm und Drang of the early-20th-century modernist perspective and avant-garde variability. 23. Moholy-Nagy, László, The New Vision and Abstract of an Artist, op. cit., pp. 144-185. 24. Moholy-Nagy, László, The New Vision and Abstract of an Artist, op. cit., pp. 16-17. 25. Moholy-Nagy, László, The New Vision and Abstract of an Artist, op. cit., pp. 16-17. 26. “New function is shrouded in the traditional form”.” –. In 1926 the alphabet became the “official” Bauhaus typographic and produced part of the graphic content together with Moholy-Nagy. In this sense, it is not coincidental, and perhaps even a nod to the Sturm und Drang of the early-20th-century modernist perspective and avant-garde variability. 27. Moholy-Nagy, László, The New Vision and Abstract of an Artist, op. cit., pp. 16-17. 28. Moholy-Nagy, László, The New Vision and Abstract of an Artist, op. cit., pp. 16-17.
63. “Where design and the professional education of architects were also articulated as a discipline of intellectual research, analysis and invention.” Vallye, A., “The Middleman. Kepes’s Instruments”, op. cit., pp. 146.

64. “Rejecting a focus on immediate industrial productions, MIT assimilated the liberal, pre-scholastic model of the undergraduate level and promoted basic science in graduate and post-graduate research. No longer a practical servant to industry, the Institute would dedicate itself to the broader and more abstract purpose of service to the nation. The transition involved a development of a new logic of instrumentality capable of articulating relationships between knowledge production and citizenship.” Ibídem.

65. Kepes worked at MIT for thirty one years, from 1946 to 1977. “The educational program Kepes was invited to establish at MIT under the placeholder of ‘drawing’ was developed during his years of teaching at the New Bauhaus in Chicago as a course of Visual Fundamentals, and it was encapsulated in his Language of Vision, published in 1944.” Ibídem, pp. 154.


73. “The correspondence between the physical and the psychic, cognitive environment that Kepes focused on articulating at the MIT was essential to the translation of professional skill into social value in the training of the citizen-architect.” Ibídem, pp. 156.

Bauhaus
Digital turn
László Moholy-Nagy
György Kepes
Photography
Film
Materiality