

**HUAS 6312-501
(87225)**

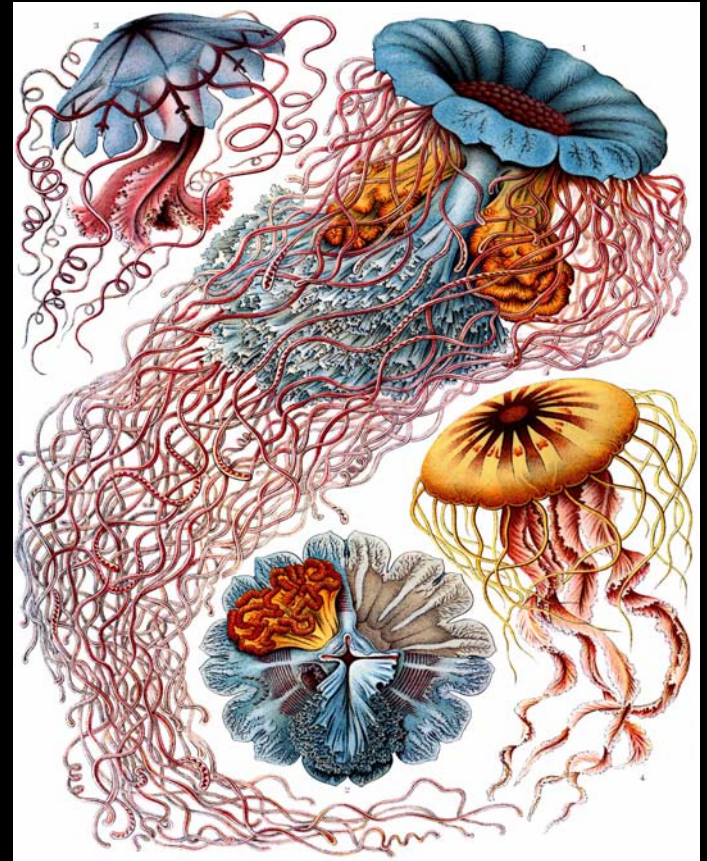
**From Bauhaus to Biohaus:
Biology and Cybernetics in Modern and
Contemporary Art, Architecture, and Design
Fall 2016**

**Dr. Charissa N. Terranova
University of Texas at Dallas
Arts & Humanities**

Tuesday 7-9:45

**Class Location: ATC 2.705, EODIAH
Seminar Room**

**Meetings by appointment
terranova@utdallas.edu
www.charissaterranova.com**



Ernst Haeckel, Jellyfish
from *Art Forms in Nature* (1899)

This course is a graduate seminar focusing on the history of biology in art and design. It traces biocentrism – a biology-based philosophy of the oneness of art and science – from the late nineteenth century to the present within the greater world of art. It focuses on the work of nineteenth-century naturalists Ernst Haeckel and Raoul Francé, twentieth-century Bauhausers Walter Gropius, Ludwig Mies van der Rohe, and László Moholy-Nagy, mid twentieth-century cybernetic thinkers and designers Roy Ascott, Gordon Pask, and Cedric Price, and contemporary bioartists and architects designing with synthetic biology. The class brings to the fore the lesser known pedagogy of biofunctionalism within the Bauhaus, comparing it to New Objectivity Bauhaus functionalism. Readings trace the diasporic spread of this Bauhaus biofunctionalism across the United States in the twentieth century onto an international stage in order to locate its transformed presence in contemporary bioart and bioarchitecture, both of which use living material as a "medium." The course covers architectural modernism, General Systems Theory, cybernetics, mid-century utopian biotopic architecture, genetics within art and design, and contemporary bioart and bioarchitecture.

Assignments:

1.) Class Leadership Exercises

Each student is required to lead the seminar in discussion of the readings twice. Students should come to class prepared with a list of guiding themes or questions to lead discussion.

2.) Class Presentation of Final Project

Each student will present the thesis statement of and research toward his/her final written assignment in a 30 to 45-minute presentation at the end of the semester. PowerPoint presentations are optional but ADVISED.

3.) Final Written Assignment

The final written assignment is a research paper based on a philosopher, critic, artist, film, or work of literary fiction. Your paper should have a thesis statement – an argument – based on your research. I encourage you to meet with me during office hours (or otherwise) to discuss your interests and passions in relation to this topic. The requirements for the research paper are as follows:

- title page, 10-12 pt. font, standard margins
- thesis statement in the body of text on the first or second page
- 20 pages
- pagination
- foot- or endnotes
- bibliography with 8 sources, of which 2 can be websites

Readings:

The readings are available in the form of books for purchase or at the **DOCUTEK** link below made accessible by way of the password also listed below.

Books for purchase:

- Raoul Francé. *Germes of Mind in Plants*. London: CH Kerr & Co, 1905.
- Reyner Banham. *Theory and Design in the First Machine Age*. Cambridge, MA: MIT Press, 1980.
- Peder Anker. *From Bauhaus to Eco-House: A History of Ecological Design* (Baton Rouge, LA: LSU Press, 2010).
- Marshall McLuhan. *Understanding Media: The Extensions of Man*. Cambridge, MA: MIT Press, 1994.
- Suzanne Anker and Dorothy Nelkin. *The Molecular Gaze: Art in the Genetic Age*. Boston, MA: Cold Springs Harbor Laboratory Press, 2003.
- Suzanne Anker and Sabine Flach. *The Glass Veil: Seven Adventures in Wonderland*. Berlin: Peter Lang AG, 2015.
- Rachel Armstrong. *Living Architecture: How Synthetic Biology Can Remake Our Cities and Reshape Our Lives*. Ted books: Kindle Edition, 2012.

DOCUTEK Link: <http://utdallas.docutek.com/eres/coursepage.aspx?cid=2050>

Password: design

Grades:

Class Leadership Exercises (15% x 2) = 30 %

Class Presentation of Final Project = 30 %

Final Written Assignment = 40 %

Total = 100%

Requirements:

Students are required to attend every scheduled seminar meeting, complete the assigned reading prior to class, and participate with verve and gusto in seminar discussions. Students are allowed one unexcused absence after which every unexcused absence will result in a deduction of ½ grade in the computation of the final mark.

Standard UTD policies regarding classroom behavior, religious holidays, withdrawals, etc.:

<http://www.utdallas.edu/deanofstudents/conductguidelines.html>

<http://provost.utdallas.edu/>

<http://www.charissaterranova.com/syllabi/utd-policies.htm>

Readings and Seminar Schedule:

Tuesday August 22

Welcome, Introduction to Ideas and Terms, Sign-up for Presentations

- Screening of *Proteus* (2004), a documentary about Ernst Haeckel

Tuesday August 30

Biocentrism, Art, and Design: Raoul Francé and the Seeds of Bioconstructivism at the Bauhaus

- Raoul Francé, *Germes of Mind in Plants* (London: CH Kerr & Co, 1905). Book for purchase.
- Detlef Mertins, “Where Architecture Meets Biology: An Interview with Detlef Mertins,” http://repository.upenn.edu/cgi/viewcontent.cgi?article=1006&context=arch_papers
- Detlef Mertins, “Bioconstructivisms,” http://repository.upenn.edu/cgi/viewcontent.cgi?article=1036&context=cplan_papers

Tuesday September 6

Bauhaus Functionalisms: Between New Objectivity and Biofunctionalism

- Reyner Banham, *Theory and Design in the First Machine Age* (Cambridge, MA: MIT Press, 1980) 24-97. Book for purchase.
- Peder Anker, “Biology and the Bauhaus,” <http://www.tate.org.uk/context-comment/articles/biology-and-bauhaus>
- Oliver A. I. Botar, “The Biocentric Bauhaus,” *Routledge Companion to Biology in Art and Architecture*, eds. Charissa N. Terranova and Meredith Tromble (London: Routledge, 2016) 17-51.

Tuesday September 13

Bauhaus Design and Ecology

- Peder Anker, *From Bauhaus to Eco-House: A History of Ecological Design* (Baton Rouge, LA: LSU Press, 2010). Book for purchase.

Tuesday September 20

Morphogenesis, Art, and Design: D'Arcy Wentworth Thompson

- D'Arcy Wentworth Thompson, Introduction, *On Growth and Form* (London: Dover Publications, 1992) 1-21.
- Sarah Bonnemaïson and Philip Beesley, "Why Revisit D'Arcy Wentworth Thompson's *On Growth and Form*?" *On Growth and Form: Organic Architecture & Beyond*, eds. Philip Beesley and Sarah Bonnemaïson (Halifax, Nova Scotia: Dalhousie Architectural University/Tuns Press, 2008) 7-15.
- Anne Massey, "Growth and Form," The Founding of the Independent Group," *The Independent Group: Modernism and Mass Culture in Britain, 1945-1959* (Manchester, UK: Manchester University Press, 1995) 33-53.

Tuesday September 27

Genetics, Modernism, and the Historic Avant-Garde

- Ronald J. Gedrim, "Edward Steichen's 1936 Exhibition of Delphinium Blooms: An Art of Flower Breeding," *History of Photography*, vol. 17 no. 4 (1993) 352-363.
- Vivian Endicott Barnett, "Kandinsky and Science: the Introduction of Biological Images in the Paris Period," in *Biocentrism and Modernism*, eds. Oliver AI Botar and Isabel Wünsche (New York: Routledge, 2011) 207-226. Also available at the following link: https://archive.org/stream/kandinskyinparis00barn/kandinskyinparis00barn_djvu.txt
- Spyros Papapetros, "On the Biology of the Inorganic: Crystallography and Discourses of Latent Life in the Art and Architectural Historiography of the Early Twentieth Century," in *Biocentrism and Modernism*, eds. Oliver AI Botar and Isabel Wünsche (New York: Routledge, 2011) 77-106.

Tuesday October 4

The Epigenetic Landscape, Art, and Design: Conrad Waddington

- Richard C. Francis, *Epigenetics: How Environment Shapes Our Genes* (New York: W.W. Norton & Company, 2012) preface.
- C. H. Waddington, *The Strategy of the Genes* (New York: Macmillan, 1957) 11-58.
- Sara Franceschelli, "Morphogenesis, Structural Stability, and Epigenetic Landscape," *Morphogenesis: Origins of Patterns and Shapes*, eds. P. Bourguin and A. Lesne (New York: Springer, 2010) 283-293.
- Charissa N. Terranova, "The Epigenetic Landscape of Art and Science c. 1950," in *Routledge Companion to Biology in Art and Architecture*, eds. Charissa N. Terranova and Meredith Tromble (London: Routledge, 2016) 263-284.

Tuesday October 11

Biology, Systems, Art, and Aesthetics

- Ludwig von Bertalanffy, *Modern Theories of Development: Introduction to Theoretical Biology*, trans. Joseph Woodger (New York: Harper, 1962) 1-27.
- Ludwig von Bertalanffy, *General Systems Theory: Foundations, Development, Applications* (New York: George Braziller, 2015) 3-53.
- Jack Burnham, "Systems Esthetics," *Artforum*, Vol. 7, No. 1 (September 1968) 30-35.
- Jack Burnham, "Art and Technology: The Panacea that Failed," *The Myths of Information*, ed. Kathleen Woodward (New York: Coda Press, 1980) 200-218.

Tuesday October 18

Systems, Cybernetics, and Architecture

- Norbert Wiener, *The Human Use of Human Beings: Cybernetics and Society* (New York: Da Capo Press, 1988) 1-27.
- Gordon Pask, "The Architectural Relevance of Cybernetics," http://workgroups.clemson.edu/AAH0503_ANIMATED_ARCH/879Readings/GordonPask_Architectural%20Relevance%20of%20Cybernetics.pdf
- Mary Lou Lobsinger, "Cybernetic Theory and the Architecture of Performance: Cedric Price's Fun Palace," *Anxious Modernism. Experimentation in Postwar Architectural Culture*, ed. Sarah Williams Goldhagen and Rejean Legault (Cambridge, MA: MIT Press, 2000) 98-118.

Tuesday October 25

Systems, Cybernetics and Conceptual Art

- Roy Ascott, "Behaviourist Art and the Cybernetic Vision," (1966-67), *Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness* (Los Angeles: University of California Press, 2007) 109-156.
- Marshall McLuhan, *Understanding Media: The Extensions of Man* (Cambridge, MA: MIT Press, 1994) Part 1; 3-76.

Tuesday November 1

Biologies of the Neo-Avant-Garde: Hans Haacke, Joseph Beuys, Marcel Broodthaers, et. al.

- Luke Skrebowski, "All Systems Go: Recovering Hans Haacke's Systems Art," *Grey Room*, no. 30 (November 2008) 54-83.
- Jack Burnham, "Hans Haacke: Wind and Water Sculpture," in *Dissolve into Comprehension: Writings and Interviews* by Jack Burnham, ed., Melissa Ragain (Cambridge, UK: MIT Press, 2015) 37-47.
- Mark Jarzombek, "Haacke's Condensation Cube: The Machine in the Box and the Travails of Architecture," *thresholds 30* (Summer 2005) 99-103.

Tuesday November 8

Genetic, Computation, and Art

- Suzanne Anker and Dorothy Nelkin, *The Molecular Gaze: Art in the Genetic Age* (Boston, MA: Cold Springs Harbor Laboratory Press, 2003) 1-112. Book for purchase.
- Ellen Levy, "Contemporary Art and the Genetic Code," *Art Journal*, vol. 55, no. 1 (1996) 20-24.
- Berta M. Sichel, "The Era of Code," *Art Journal*, vol. 55, no. 1 (1996) 25-26.
- Martin Kemp, "Doing What Comes Naturally: Morphogenesis and the Limits of Genetic Code," *Art Journal*, vol. 55, no. 1 (1996) 27-32.

Tuesday November 15

Welcome to Biohaus: Bioart and Bioarchitecture in the 21st Century

- Stefan Helmreich, “What Was Life: Answers from Three Limit Biologies,” *Sounding the Limits of Life: Essays in the Anthropology of Biology and Beyond* (Princeton, NJ: Princeton University Press, 2015) 1-18.
- Suzanne Anker and Sabine Flach, *The Glass Veil: Seven Adventures in Wonderland* (Berlin: Peter Lang AG, 2015) 9-70. Book for purchase.
- Rachel Armstrong, *Living Architecture: How Synthetic Biology Can Remake Our Cities and Reshape Our Lives* (Ted books: Kindle Edition, 2012).

Tuesday November 22

Fall Break/Thanksgiving

Tuesday November 29

Student Presentations

Tuesday December 6

Student Presentations

Monday December 12

Final Essay Due

Bauhaus and Bioart



Walter Gropius, Bauhaus School, Dessau, 1926

Anna Dumitriu, The Human Super-organism, 2014 +

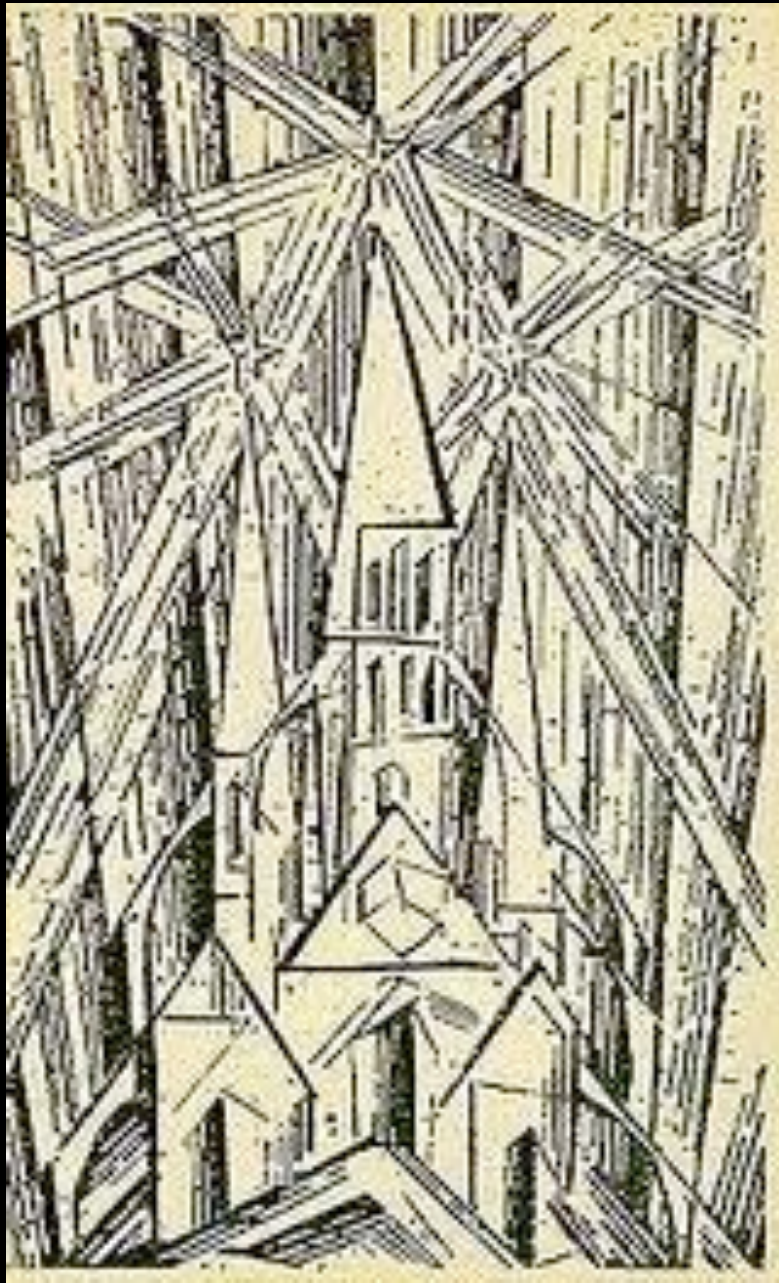


FUNCTIONALISM IN DESIGN

- Arts & Crafts
- Expressionism
- New Objectivity/Neue Sachlichkeit
- Biocentrism
- Systems Aesthetics
- Cybernetics

Bauhaus: Weimar, Dessau, Berlin, Chicago 1919-1933

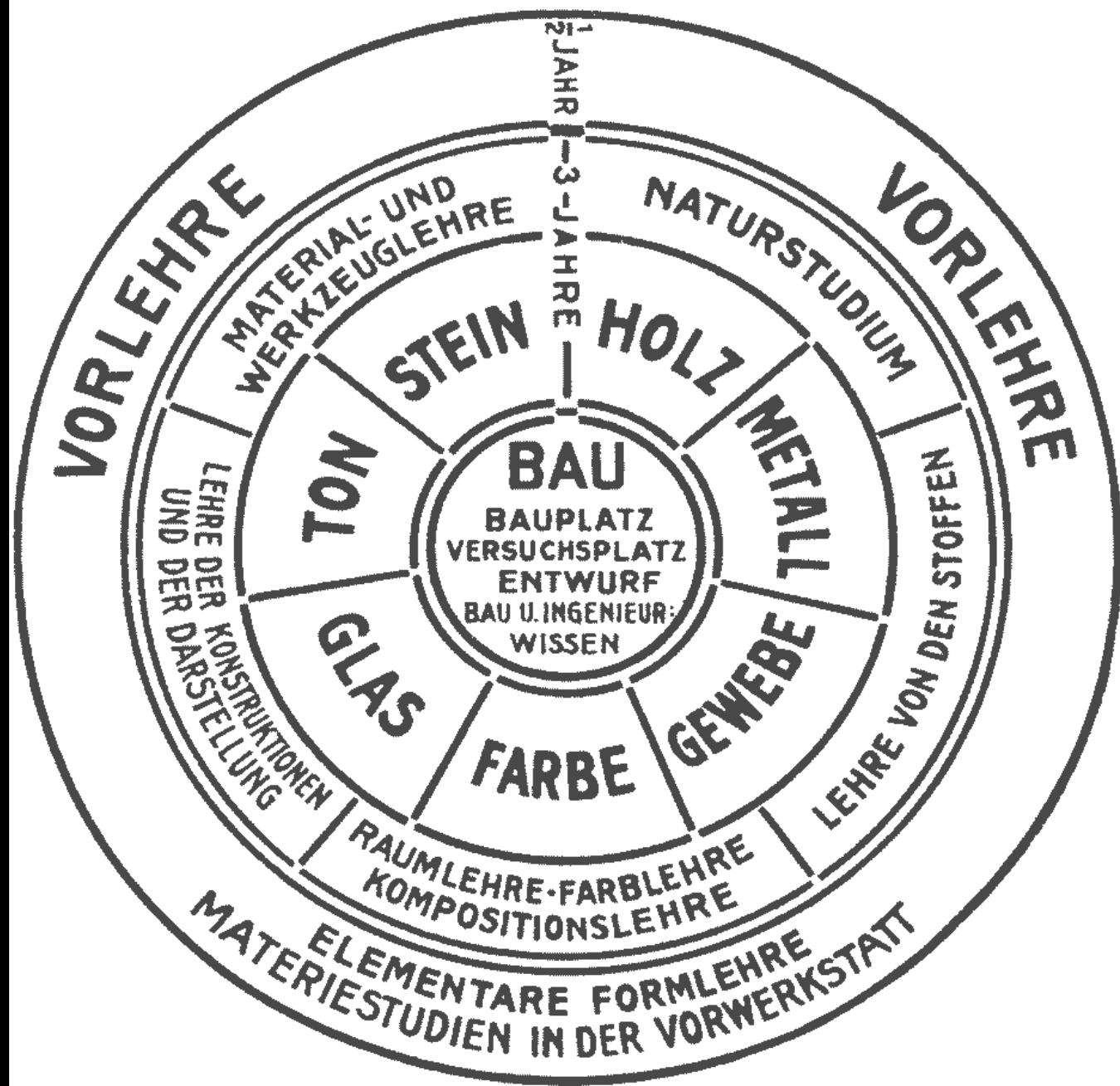
Cathedral and Craft

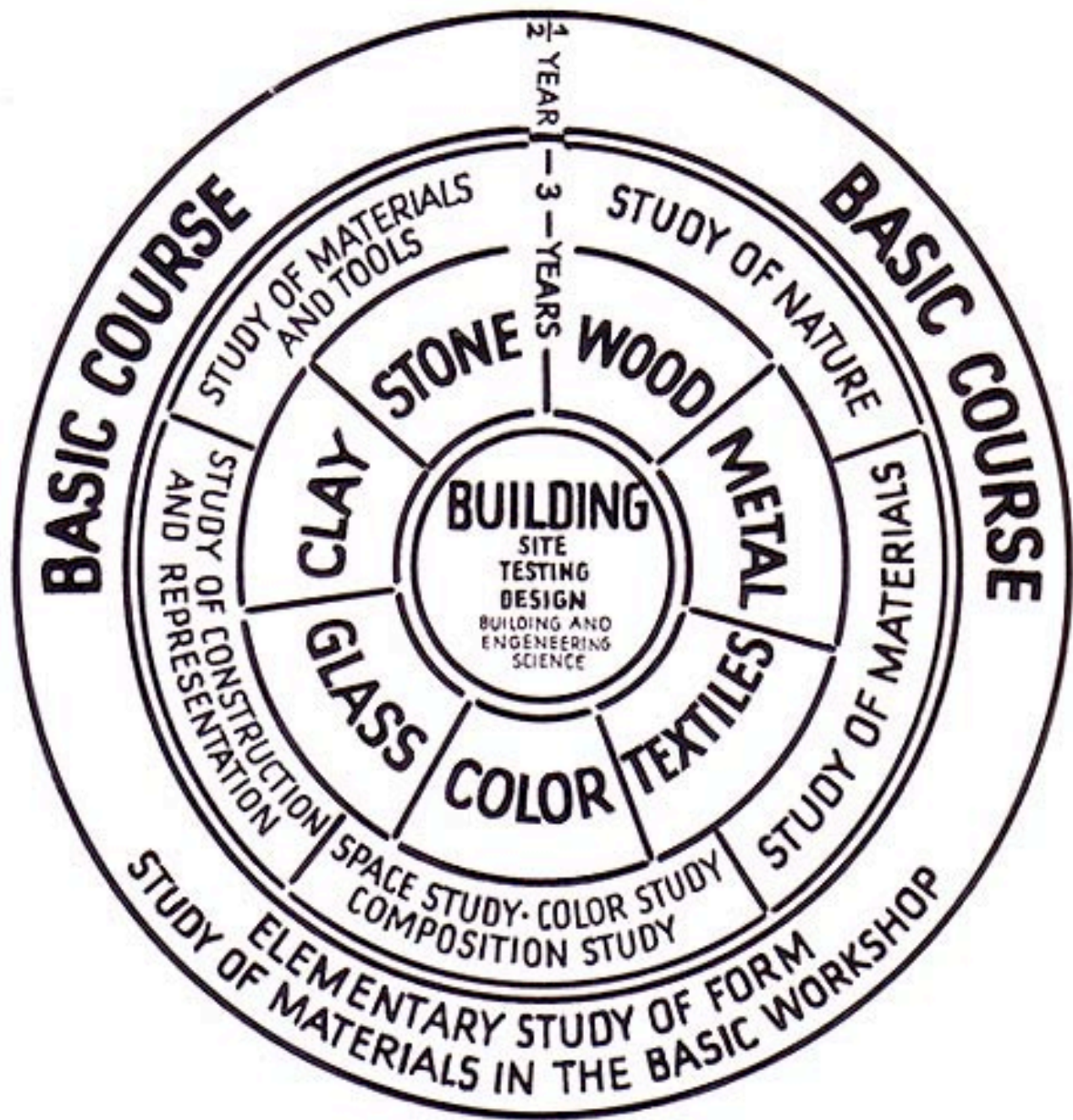


Let us create a new guild of craftsmen, without the class distinctions which raise an arrogant barrier between craftsman and artist. Together let us conceive and create the new building of the future, which will embrace architecture and sculpture and painting in one unity and which will rise one day toward heaven from the hands of a million workers like the crystal symbol of a new faith.

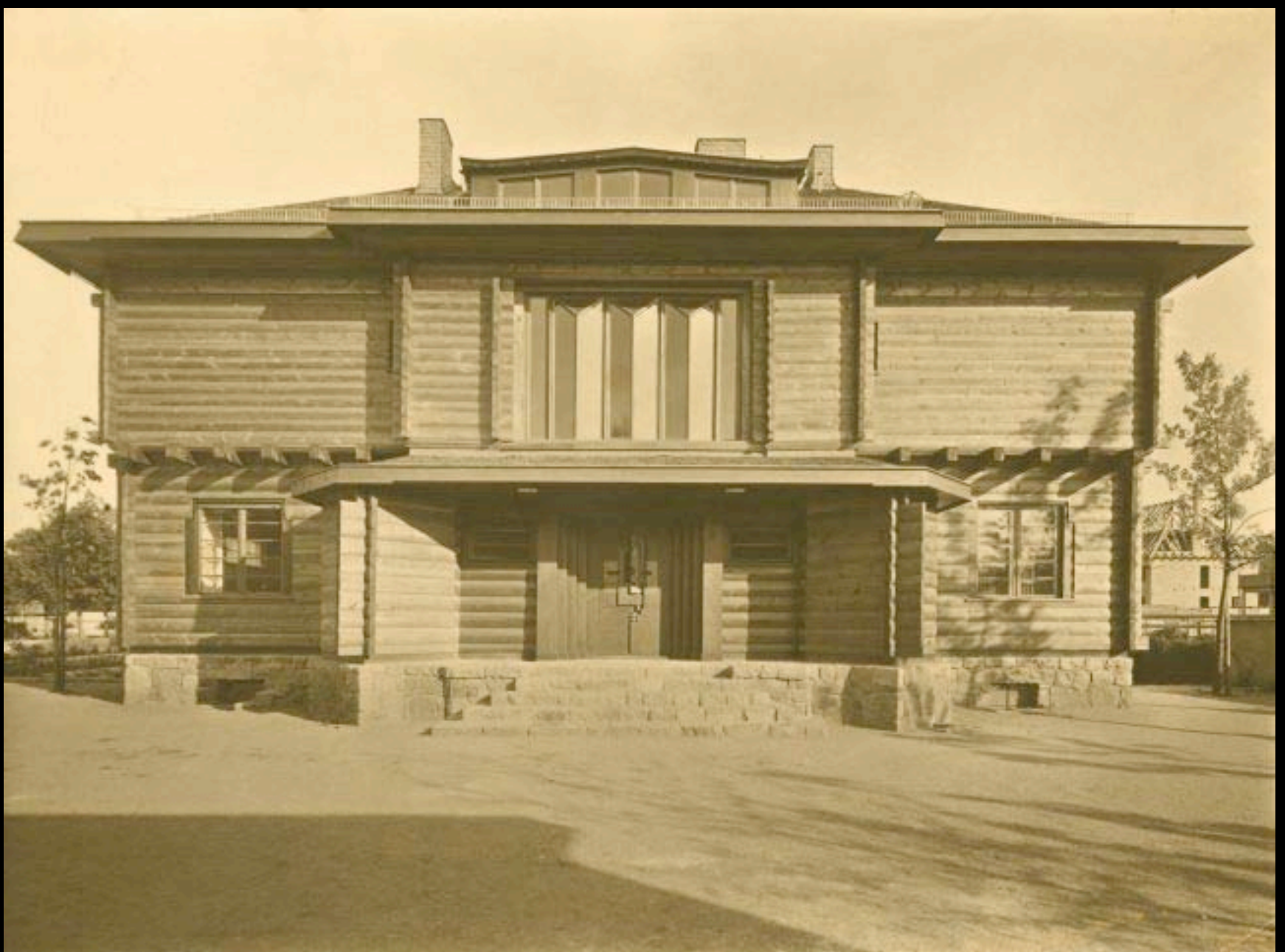
Proclamation of the Weimar Bauhaus, 1919

Lyonel Feininger, Cathedral – Frontispiece of First Bauhaus Manifesto, 1919





Bauhaus curriculum

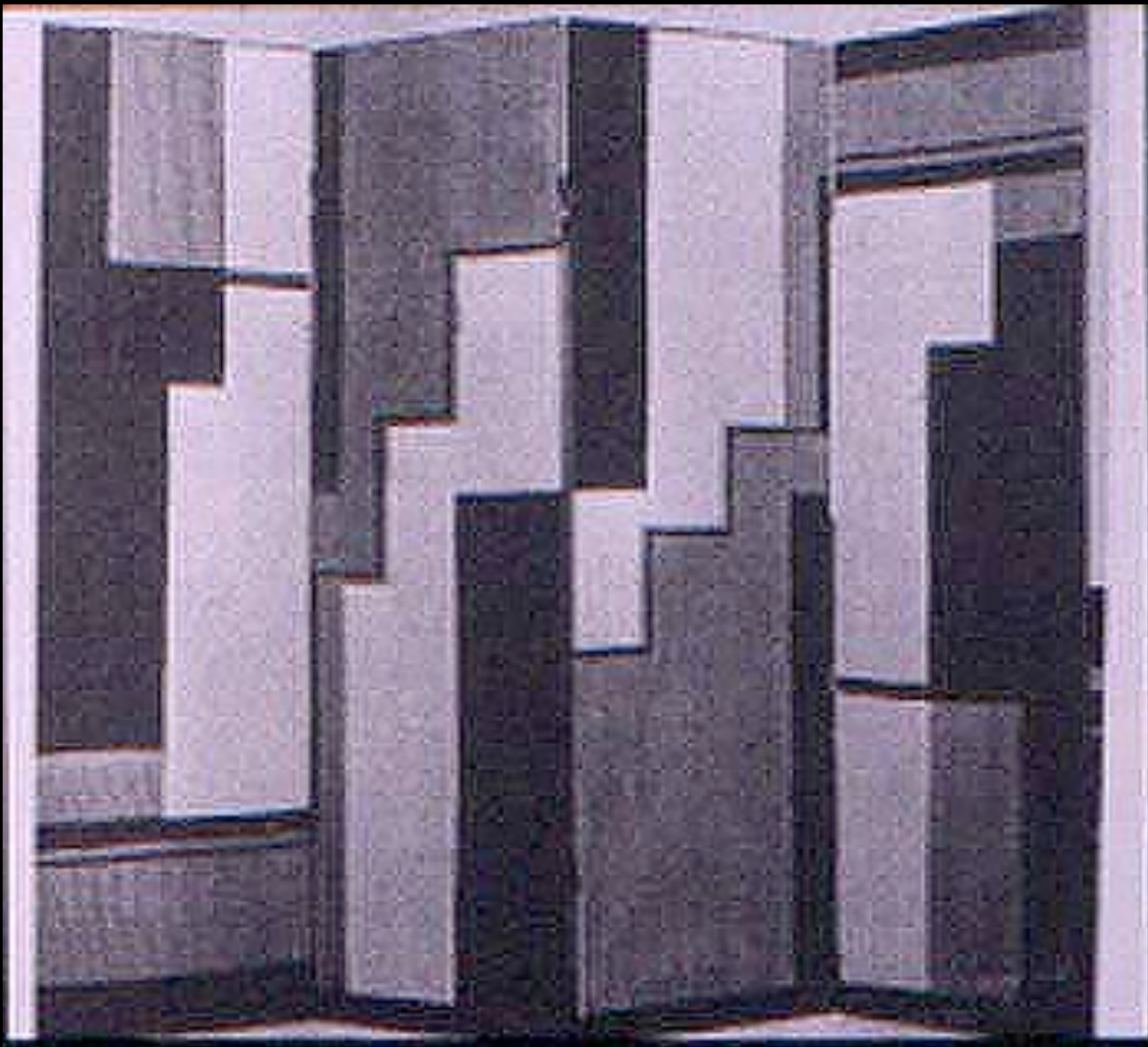


Walter Gropius and Adolf Meyer, Sommerfeld House, Berlin-Dahlem, 1921





Josef Albers, Window from Sommerfeld House



Dorte Helm, Folding screen from Sommerfeld House

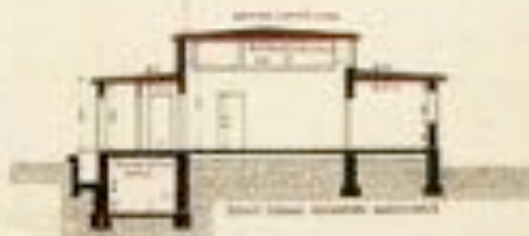


Georg Muche and Adolf Meyer, Haus am Horn, Weimar, 1923

1.0. BESTIMMUNG
 2.0. MATERIAL
 3.0. VERBUND
 4.0. VERBUNDSTÄBE
 5.0. VERBUNDSTÄBE



Grundriss



Gartenplan



Grundriss

ML 5100



AUSSTELLUNG STAATL. BAUGRUND WEIMAR 1923.
 EINFAMILIENHAUS.

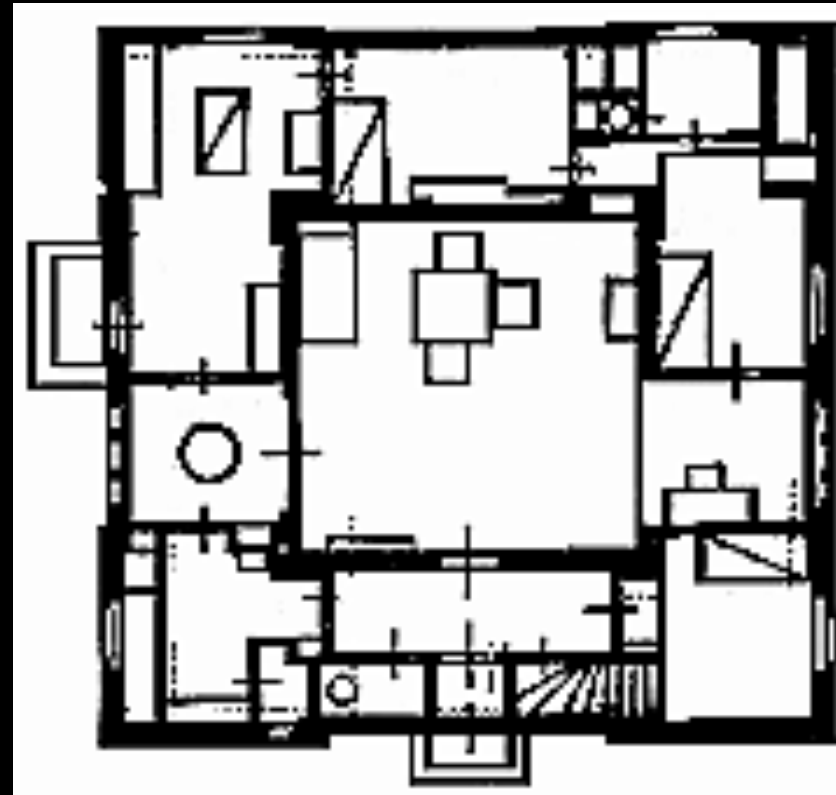


VERBUNDSTÄBE

VERBUNDSTÄBE

VERBUNDSTÄBE

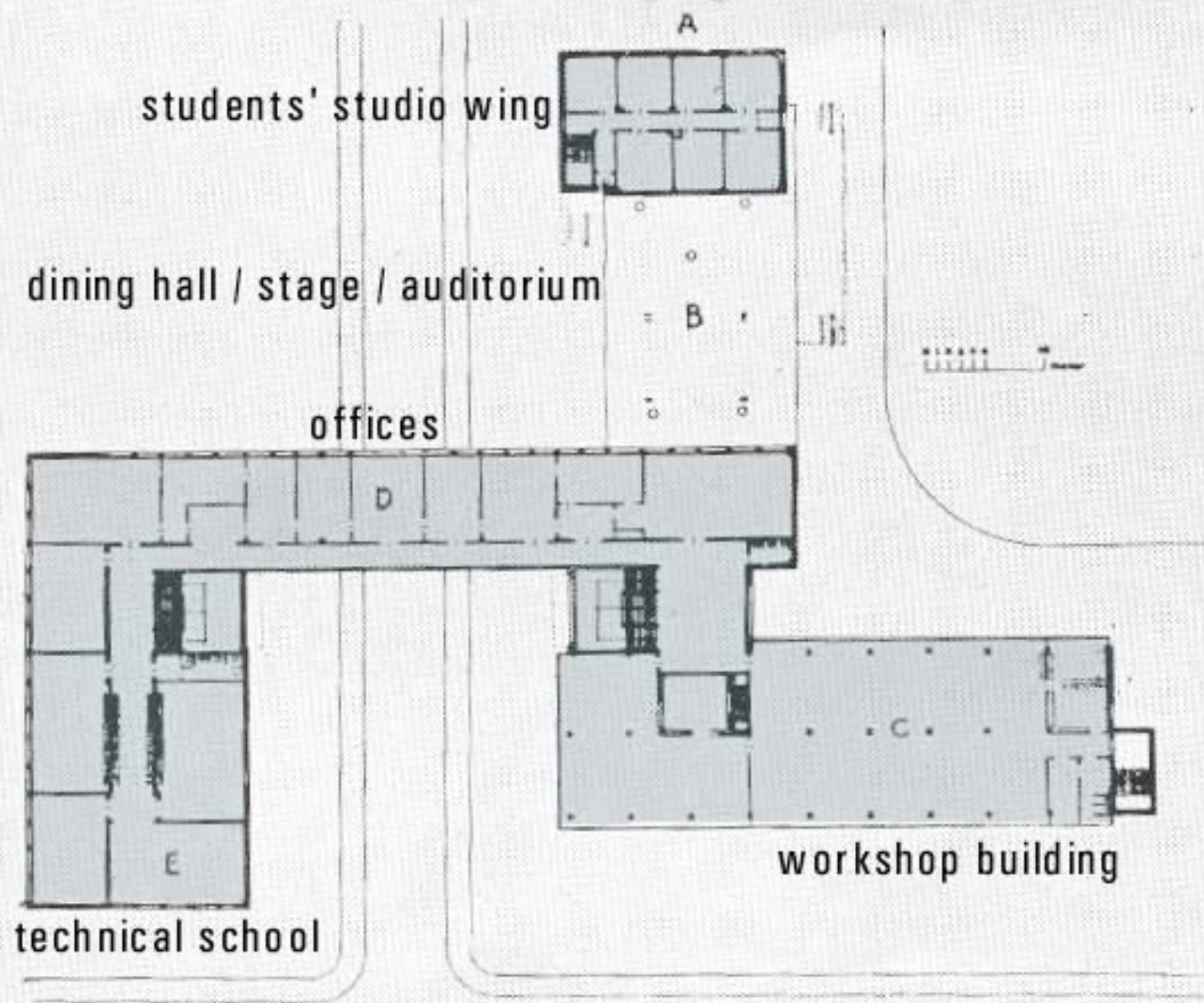


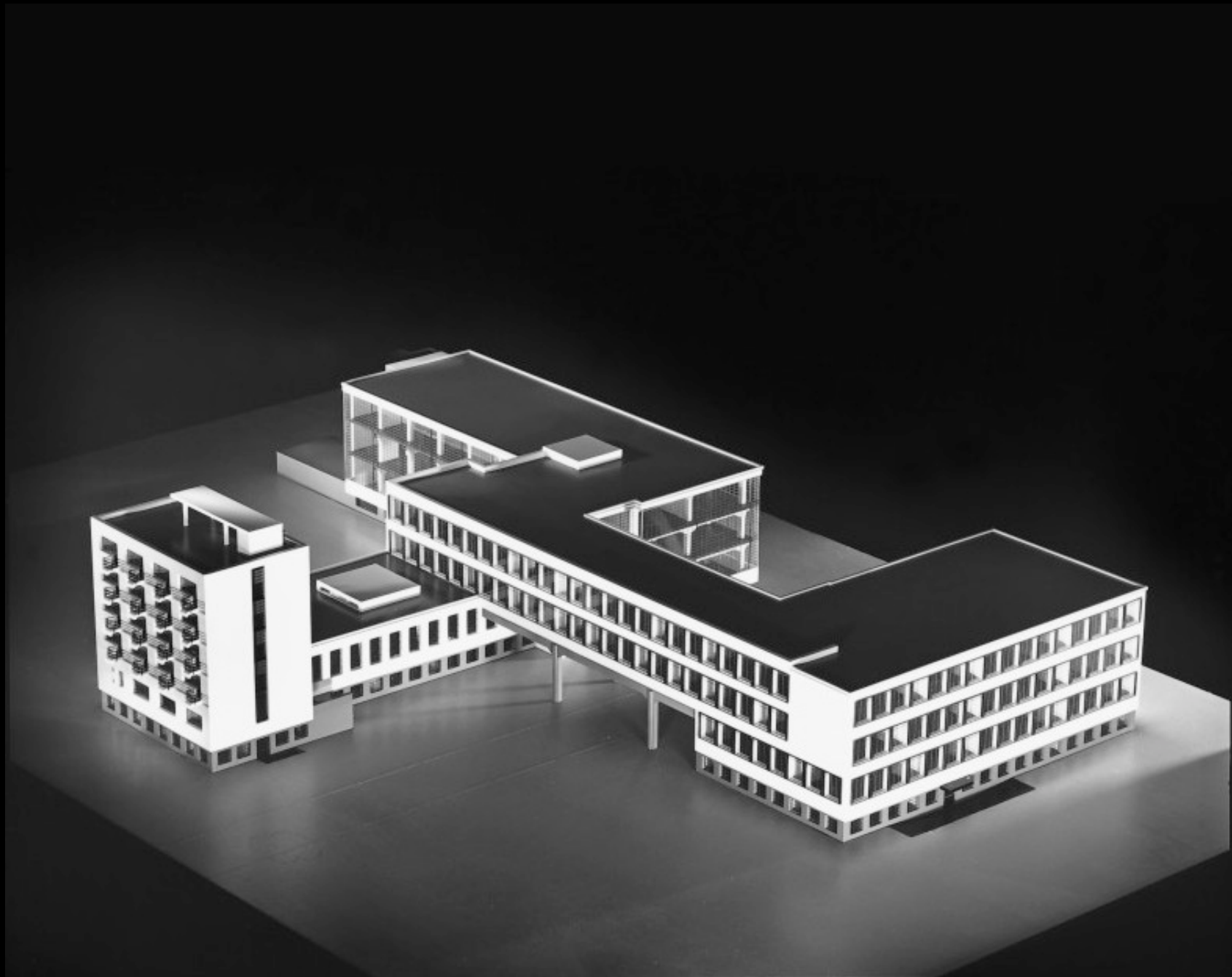






Walter Gropius, Bauhaus School, Dessau, 1926



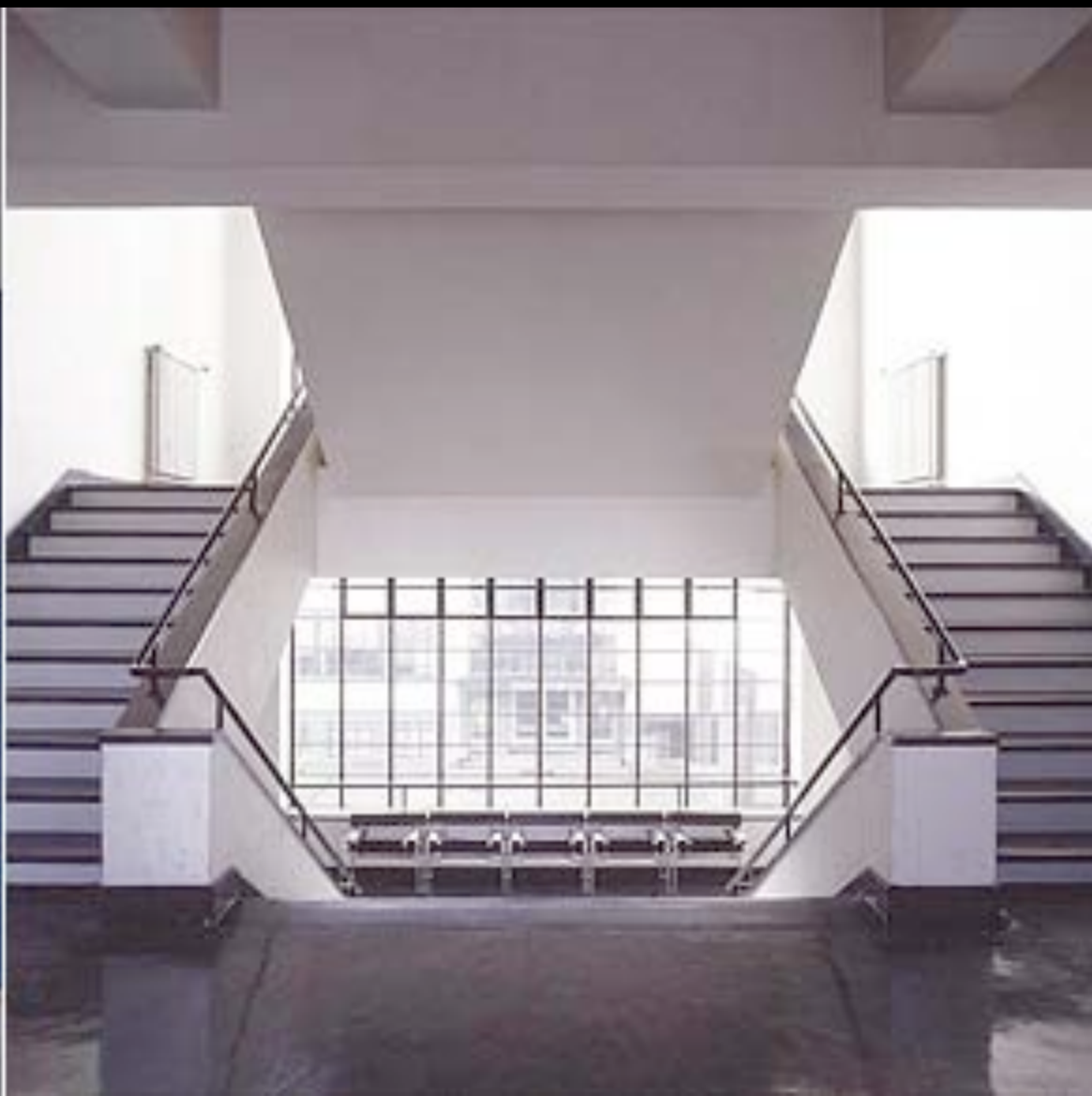






@hustleandflow







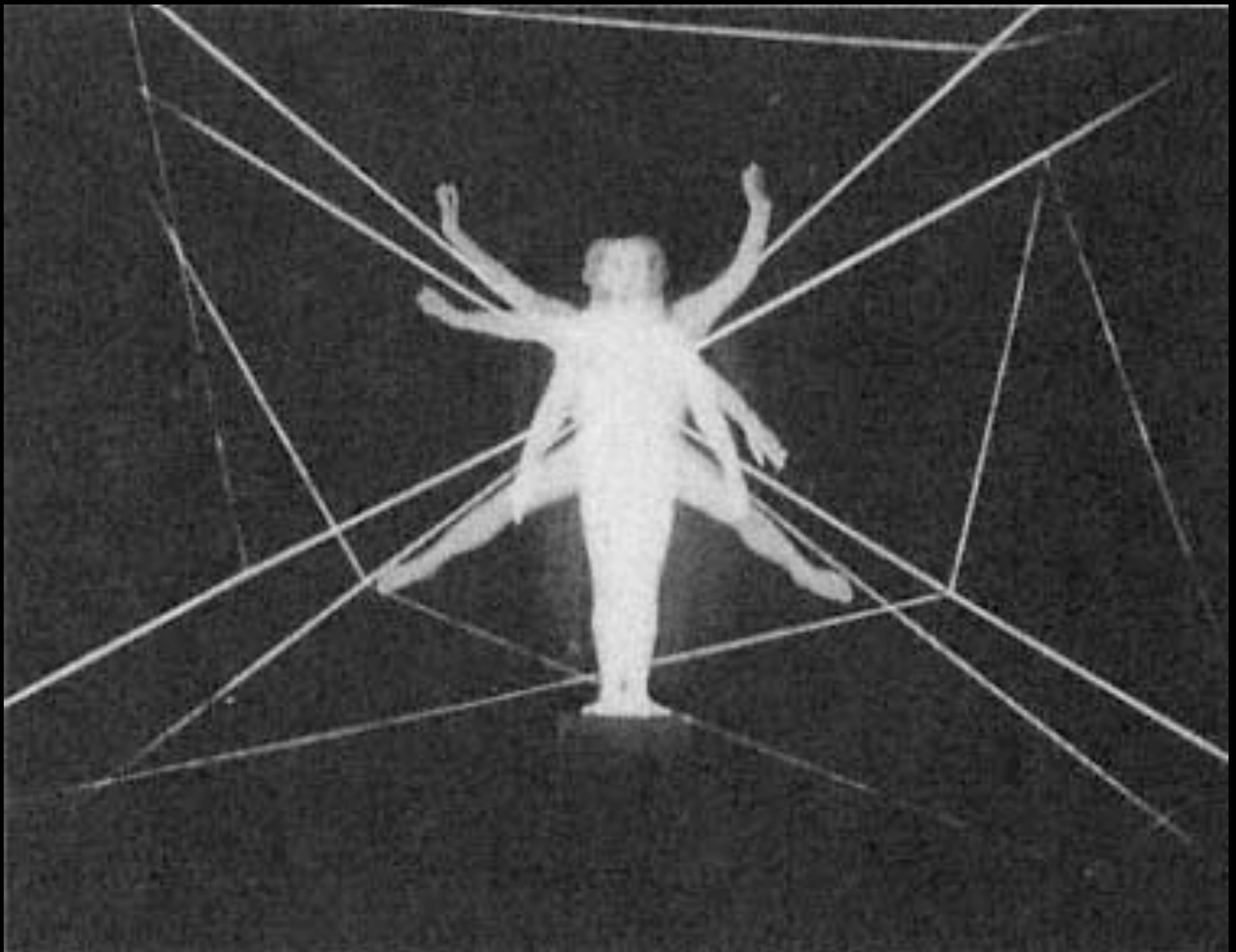




Auditorium, Marcel Breuer designed chairs



Walter Gropius, Master House: Duplex, 1926



Experimental Dance, Bauhaus, 1927

Architecture
and/as
Object

El Lissitzky, cover of *Veshch/Gegenstand/Objet*, 1922

Der neue kollektive, internationale Stil ist ein Produkt gemeinsamen Schaffens. Alle, die an seiner Durchbildung teilhaben, sind Freunde und Mitkämpfer des

„GEGENSTANDES“

Das Baufieber, wie wir es heute durchleben, ist so groß, daß sich für alle Arbeit finden wird. Wir gründen keine Sekte, wir begnügen uns nicht mit Surrogaten für das Kollektiv in Gestalt von verschiedenen Richtungen und Schulen. Wir streben danach, die Arbeit aller, die wirklich arbeitswillig sind und nicht nur von den Renten vergangener Generationen zehren wollen, zusammenzufassen.

Jenen aber, die nicht gewöhnt sind zu arbeiten, sondern nur genießend zu staunen, jenen, die nur konsumieren, aber nichts schaffen wollen, wird der

„GEGENSTAND“

fade und dürftig erscheinen.

Man suche in ihm weder nach philosophischer Orientierung, noch nach eleganter Lüsternheit. Der

„GEGENSTAND“

ist ein sachliches Organ, ein Bote der Technik, ein Preisverzeichnis für neue „Gegenstände“ und ein Aufruf von noch nicht ausgeführten Gegenständen.

Aus der schwülen Dampfhülle des weißgebluteten Rußlands und des feist gewordenen, hindämmernden Europas tönt der Kampfruf:

LASST DOCH ENDLICH ALLES
DEKLARIEREN UND WIDERLE-
GEN! AUF! SCHAFFT

„GEGENSTÄNDE“

НИ РОЗА

НИ МАШИНА

НЕ ЯВЛЯЮТСЯ ТЕМОЙ

ПОЭЗИИ

ИЛИ

ЖИВОПИСИ

ОНИ УЧАТ МАСТЕРА

СТРУКТУРЕ

И

СОЗИДАНИЮ

nous ne nous contentons pas de contrefaçons de collectivité sous l'aspect de directions et d'écoles diverses.

Nous tâcherons d'unifier et de coordonner les travaux de tous ceux qui désirent vraiment travailler au lieu de se contenter de la rente que leur lèguent les générations précédentes.

Celui qui a l'habitude non de travailler, mais d'admirer, l'éternel consommateur, qui ne produit rien trouvera

„L'OBJET“

ennuyeux et misérable.

„L'OBJET“ n'aura ni orientation philosophique, ni grâce languissante.

„L'OBJET“

est un organe d'affaires, le messenger de la technique, le prix-courant des choses nouvelles, et l'esquisse de choses encore non réalisées.

Dans l'atmosphère étouffante, dans la Russie épuisée, l'Europe repue et somnolente, un seul cri s'élève: VITE, CESSEZ DE DECLARER ET DE CONTREDIRE, FAITES

DES OBJETS.

„ВЕЩЬ“

деловой орган, вестник техники, ПРЕЙС-КУРАНТ новых ВЕЩЕЙ, и чертежи вещей еще не осуществленных.

Среди духоты и, обескровленной России, ожившей дремлющей Европы один клич: скорей БРОСЬТЕ ДЕЛАРИРОВАТЬ И ОПРОВЕРГАТЬ, ДЕЛАЙТЕ

ВЕЩИ!

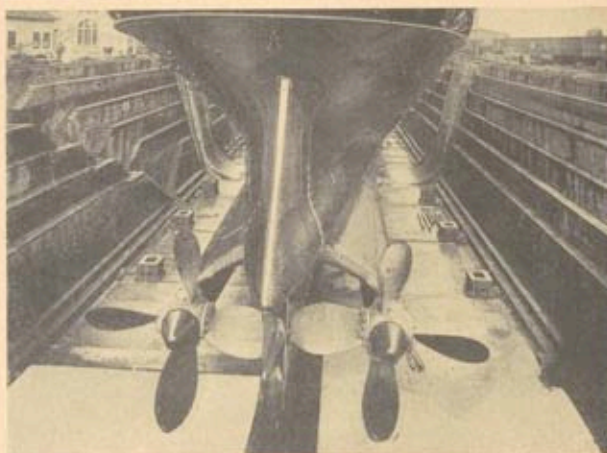
ВМЕСТО ПИСЬМА В РОССИЮ

(„ВЕЩЬ“ ДОБАДЕТ СКОРЕЕ ПИСЬМА)

ДРУЗЬЯ „ВЕЩИ“

ШАНТЕ СКОРЕЕ

СТИХИ
И
ПРОЗУ
СТАТИИ
И
ФОТОГРАФИИ
КНИЖКИ
ЖУРНАЛЫ
ЗАМЕТКИ



**ПАРФЕНОН
И
АПОЛЛОН
XX**

Veshch/Objet/Gegenstand,
no. 1-2

Existenzminimum

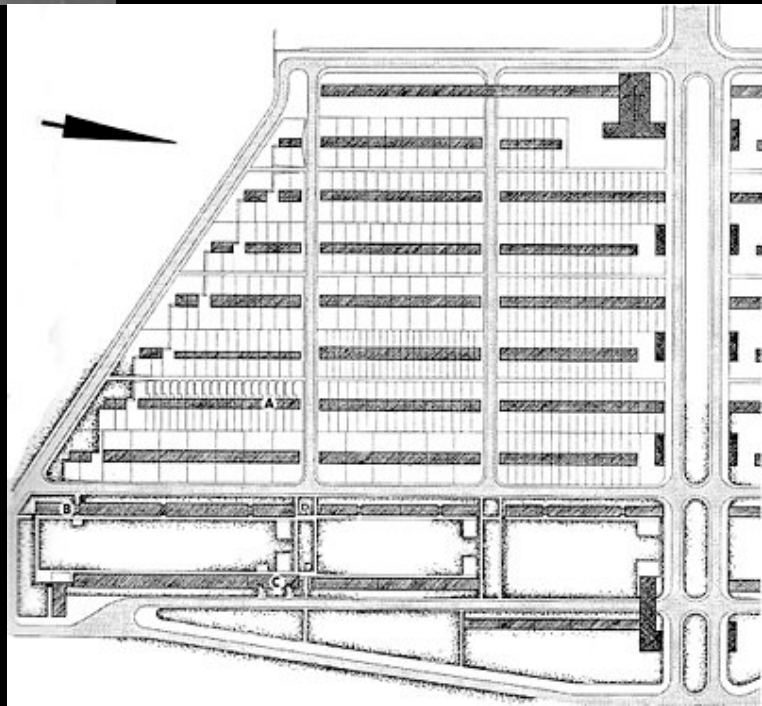


Detail from Bauatelier Gropius 1927-8



Gropius, Dammerstock, 1927-29, Karlsruhe, Germany

Zeilenbau

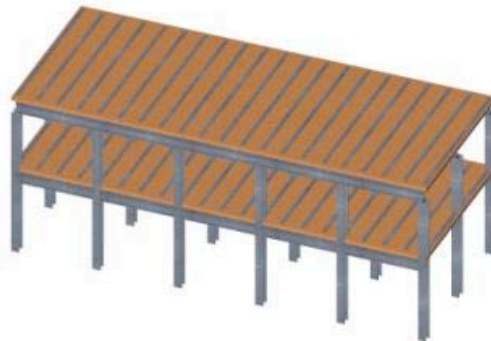




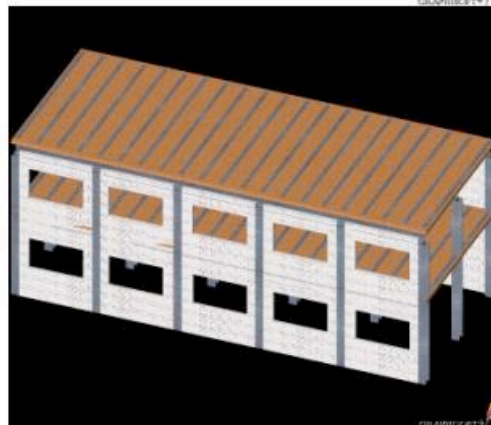
ANSI-ZIS 11210101 (ANSI-ZIS 11210101) ist ein technischer Zeichnungsstandard.



Week 1



Week 2



Week 3

New Objectivity
Functionalism
Factory as Prototype



Walter Gropius, Faguswerk Shoe Last Factory, Alfeld-an-der-Lane, Germany, 1914







Walter Gropius, Bauhaus School, Dessau, 1926

BIOCENTRISM

AND THE

BAUHAUS



Gyorgy Kepes (1906-2001)

László Moholy-Nagy (1895-1946)





**The experience of space is not a privilege of
the gifted few, but a biological function.**

-- László Moholy-Nagy

Detail of Moholy-Nagy's "Light Prop," 1930

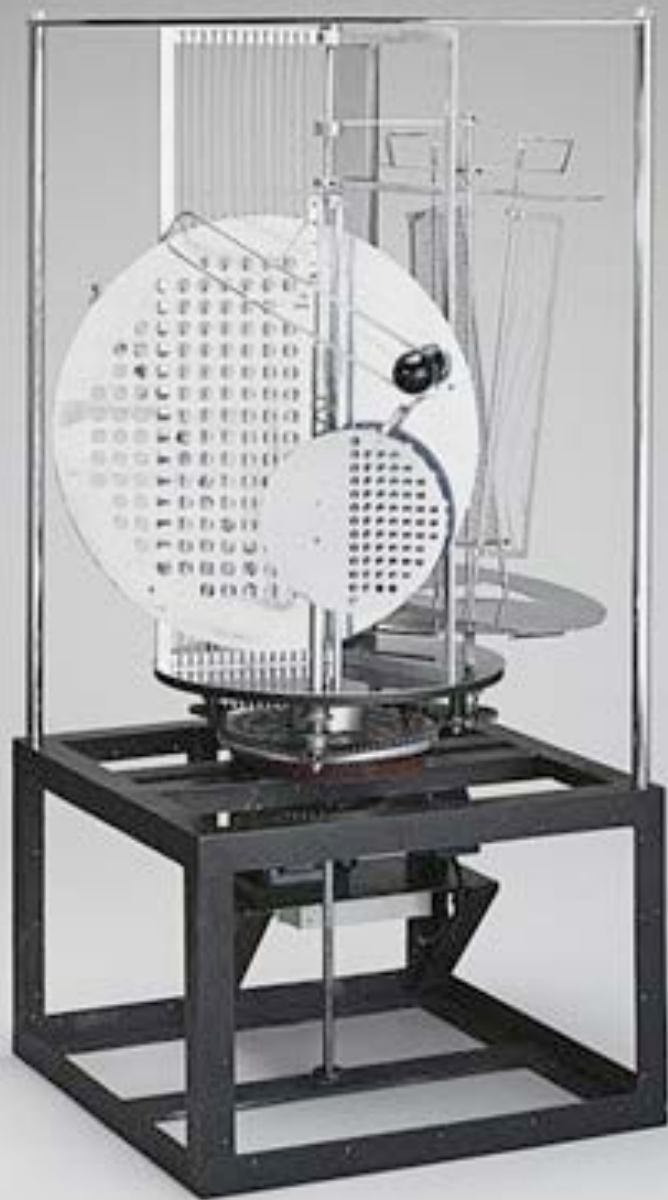


Laszlo Moholy-Nagy, Photogram,
1926

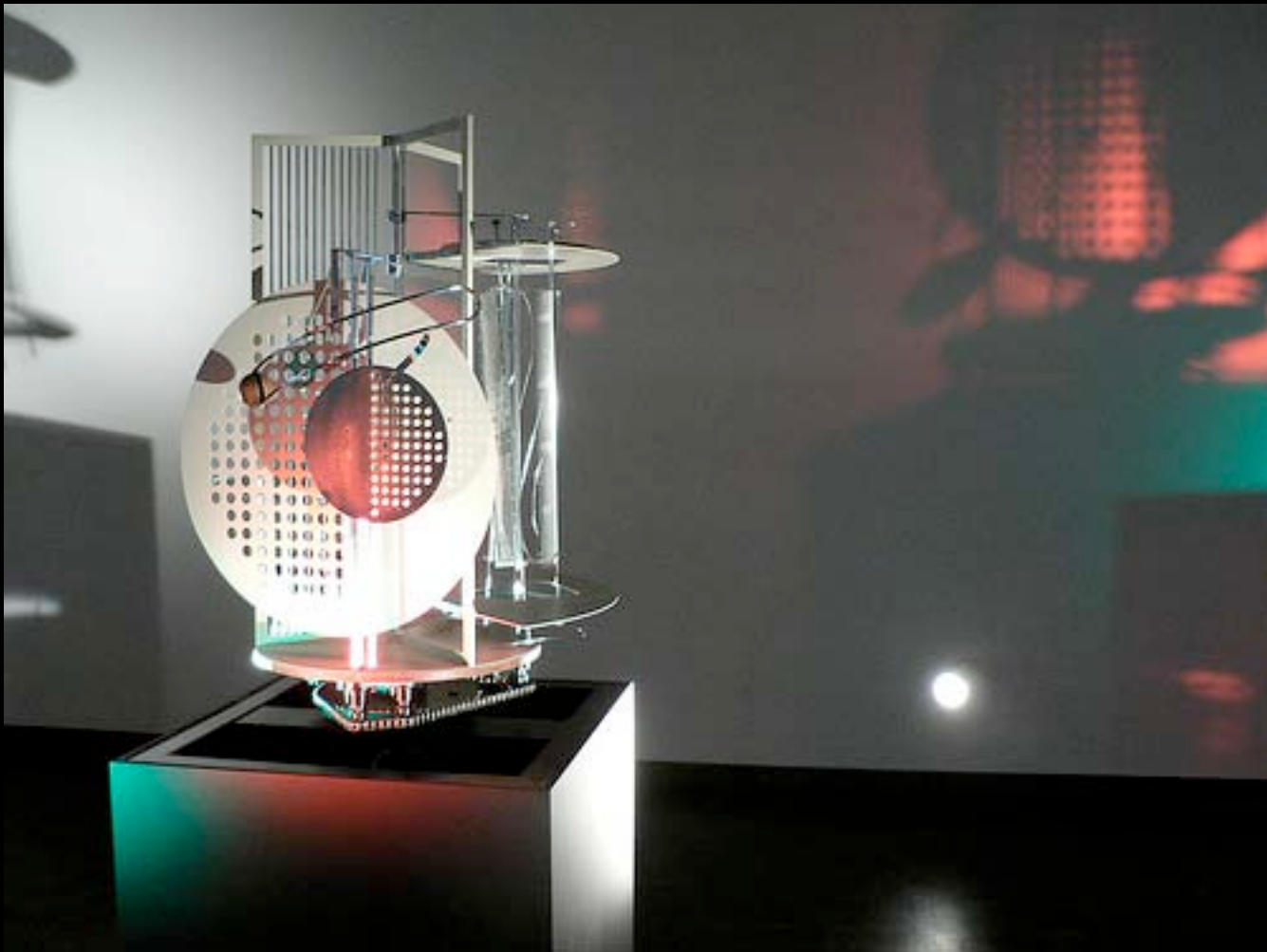
Laszlo Moholy-Nagy, *The New Vision*, c. 1928

The New Vision was written to inform laymen and artists about the basic elements of the Bauhaus education: the merging of theory and practice in design.

- America is the bearer of a new civilization whose task is simultaneously to cultivate and to industrialize a continent. It is the ideal ground on which to work out an educational principle which strives for the closest connection between art, science, and technology.
- To reach this objective one of the problems of Bauhaus education is to keep alive in grown-ups the child's sincerity of emotion, his truth of observation, his fantasy and his creativeness. That is why the Bauhaus does not employ a rigid teaching system. Teachers and students in close collaboration are bound to find new ways of handling materials, tools and machines for their designs.
- At present in art education we are striving toward the timeless biological elements of expression which are meaningful to all people and useful to all people. This is the first step to a creativeness for everyone, before culture (values of historic development) can be introduced. We are therefore less interested in the immediate production of the "objective" quality of expression usually called "art", than in the ABC of expression itself.

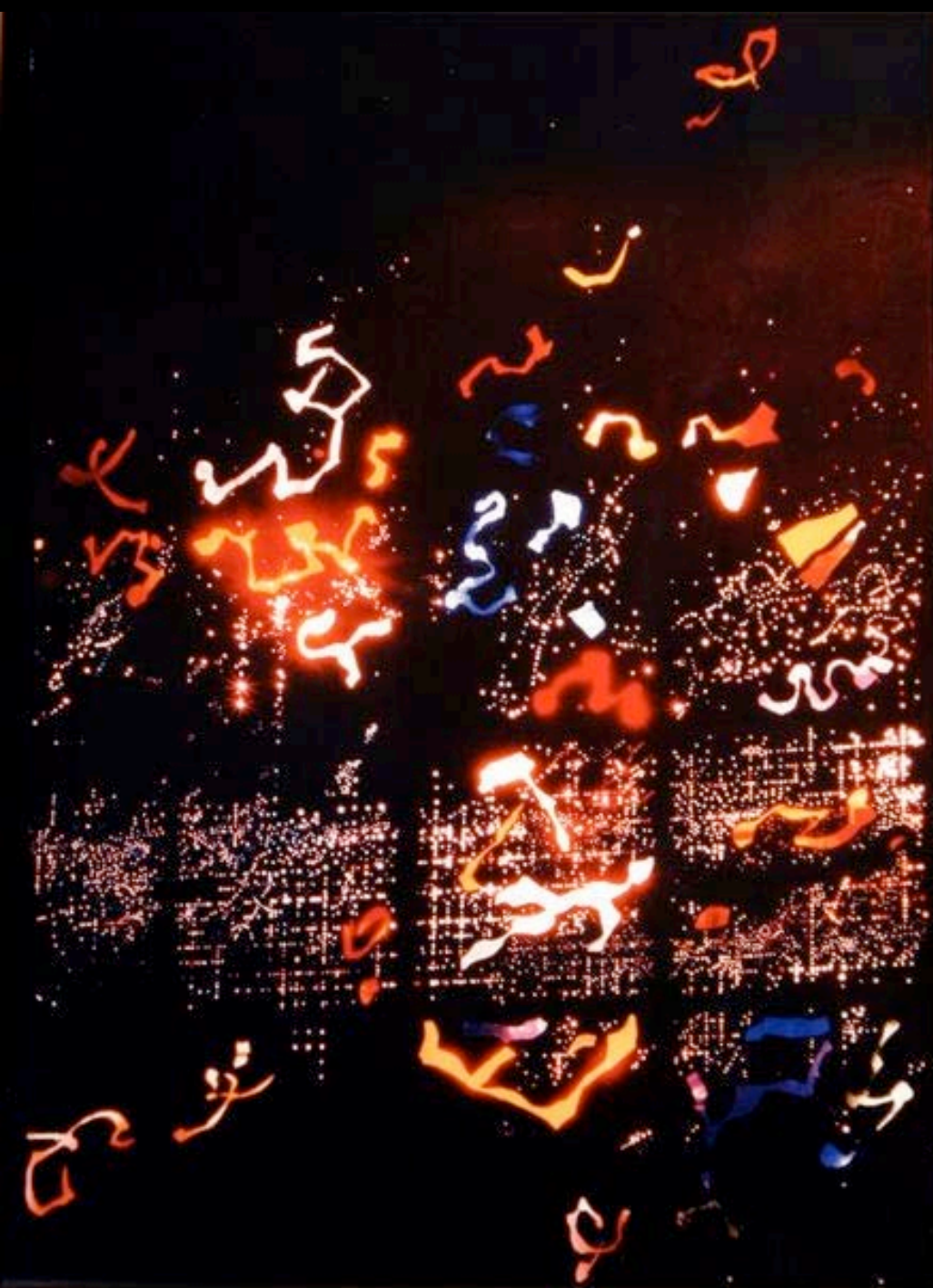


Laszlo Moholy-Nagy, Light-Space Modulator, 1923-30

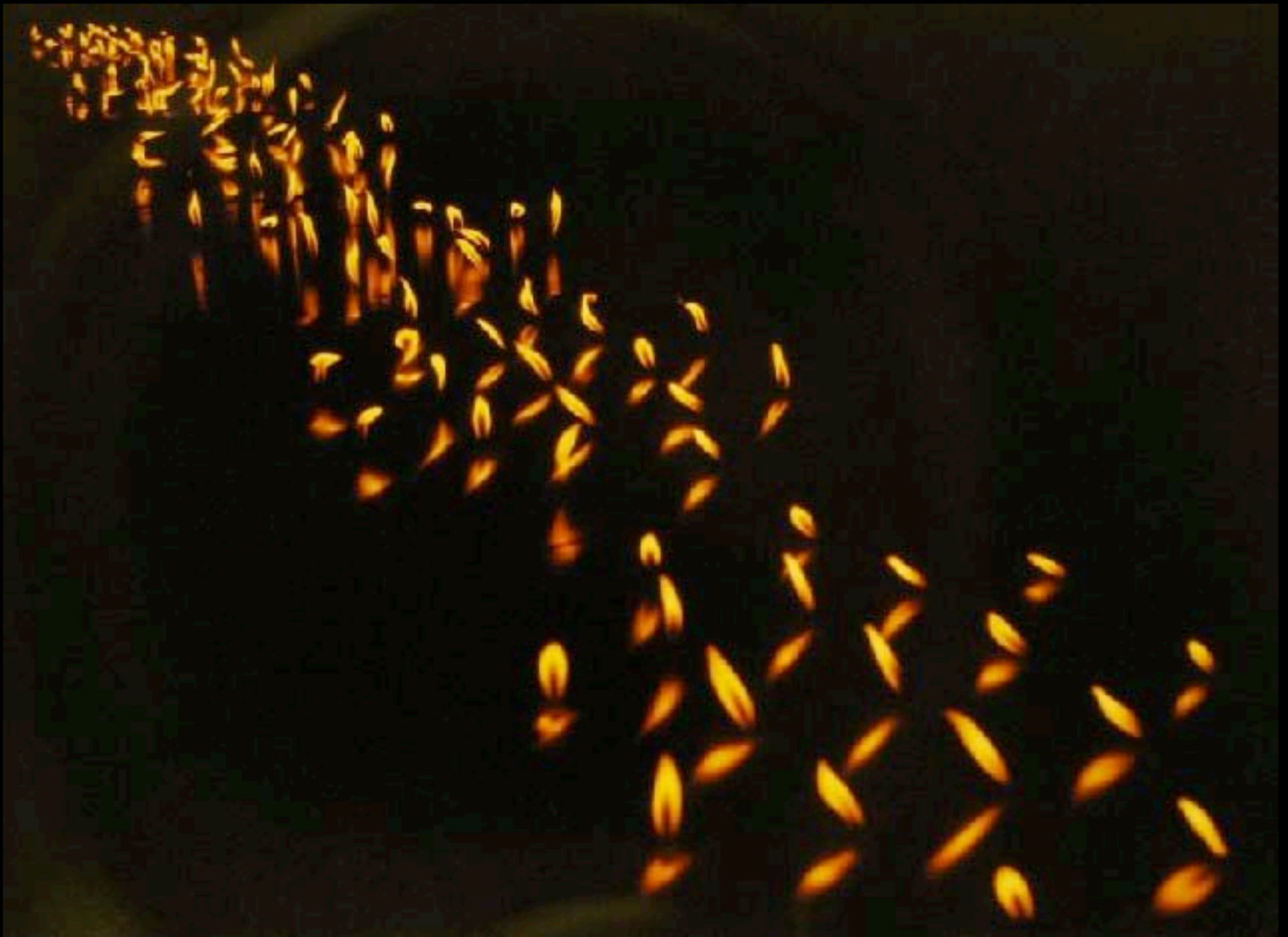


Laszlo Moholy-Nagy, Light-Space Modulator, 1923-30

<https://www.youtube.com/watch?v=QYNO3DLIZe0>



Gyorgy Kepes's programmed light mural in the KLM ticket office, 5th ave. New York 1959



Kepes and Paul Earls, Flame Orchard, 1969

FUNCTIONALISM IN DESIGN

- Arts & Crafts
- Expressionism
- New Objectivity/Neue Sachlichkeit
- Biocentrism
- Systems Aesthetics
- Cybernetics