July 15, 1980

Jeffrey L. Cruikshank
Editor, Plan
School of Architecture & Planning
MIT, 7-233

Visible Language Workshop
Room 5-411
Massachusetts Institute of
Technology
Cambridge, Massachusetts
02139

Dear Jeff:

When you asked me to prepare an article for Plan, I set myself the
task of producing a "graphic" article which would represent the
ideas and concerns of the Visible Language Workshop by virtue of
its form as well as its content.

In a computer electronic age we see print communication as a model
of changing user/maker relationships and the workshop as a place
in which the content, quality and technology of communication inform
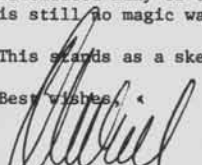each other in education, professional and research programs.

The article, "Words, Images, Tools and Ideas" would try to fulfill
the following criteria:

1. It would make use of the tools, processes and technologies of
graphic arts media as directly as possible and the tools would be
integrated with concept and product. Many of these are in the
workshop. In this case, they include a heavy use of all forms of
photography and our computer graphics system for both images and
typography.

2. The author would be the maker contrary to the specialization
mode which makes the author of the content the author, the author
of the form the designer, and the author of the craft the typo-
grapher/printer.

3. Visual and verbal representation of the ideas would be
synthesized rather than separate.

4. Time would remain as fluid and immediate as possible, leaving
room for feedback and change.

Much of the material was developed together with Professor Ron MacNeil
and the VLW staff. It has been a fascinating opportunity which has
elucidated many of the complexities of authorship into print. There
is still no magic way – but we propose to keep working at it.

This stands as a sketch for the future.

Best wishes,

Professor Muriel Cooper
Director

I. DESIGN SERVICES / MIT PRESS (1952–1974)

01

Selected pamphlets for MIT Office of Publications / Design Services, 1954–7

Soon after graduating from the Massachusetts College of Art and Design (then known as the Massachusetts School of Art), Muriel Cooper began as a freelance designer in MIT's Office of Publications. Posters, pamphlets, and other printed matter at MIT had been diverse in format and poor in quality, prompting the Hungarian émigré György Kepes—a former colleague of László Moholy-Nagy, and since 1947 a professor of visual design at MIT—to recommend that the school hire a dedicated designer.

Kepes and Cooper collaborated on several projects, and Cooper soon headed the office. Renamed "Design Services," it was among the first university design programs in America. Cooper developed a standardized system for these summer pamphlets, which sought to

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make more intelligible the highly complex
language of science... and articulate
in symbolic, graphic form the order
and beauty inherent in the scientist's
abstract vision.
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Cooper's college classmate Jacqueline Casey joined Design Services, which she would later direct until her retirement in 1989. Casey, with Ralph Coburn and Dietmar Winkler, and visiting talent from Europe, was instrumental in introducing modern, "Swiss-style" typography to America. Cooper was at the forefront of both adopting, and reworking, these conventions.

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I was a modernist, but I was an uneasy
Swiss, if you know what I mean.
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02

Photographs from Milan, 1958

Cooper left Design Services to study exhibition design on a Fulbright Fellowship in Milan, where she photographed extensively. Her developing interests in abstraction, transparency, layering, and mobile viewpoints are already visible in these pictures.

Appleyard, Donald, Kevin Lynch, and John R. Myer, The View from the Road. Cambridge: MIT Press, 1964

Cooper's first book for the MIT Press, as the authors put it, considered highway planning as "a problem of designing visual sequences for the observer in motion." For her part, Cooper used visual cues like arrows, and a flip book in the outer margins of the page, to manipulate the directionality and temporality of reading, and to create a "non-narrative... experience of simultaneity."

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The author[s] hated it -- It was out of
the reach of the engineers. Too big, arty.
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03

Presentation boards, sketch, and mechanical artwork for the MIT Press colophon, 1963–4

When MIT reorganized its "Technology Press" as "the MIT Press," director Carroll Bowen consulted America's preeminent graphic designer, Paul Rand. Rand recommended Cooper, who had already worked at MIT Design Services.

After many iterations, Cooper's now-iconic, seven-bar logotype, or colophon, emerged, representing the vertical strokes of the letters "mitp" as a set of abstracted books on a shelf. The serialized products of mass production sit here in a neat row, dematerialized into the pure information of what looks like a machine-readable graphic.

The mark fit the spirit of MIT and the Press, Bowen recalled: "The basic materials were supplied, but intelligence and imagination… produced the end result, information with elegance." Cooper became the Press's first Design Director in 1967.

04

Posters to promote The Bauhaus, 1969

The Bauhaus (1969) assembles nearly 200 archival documents and 800 illustrations, many never
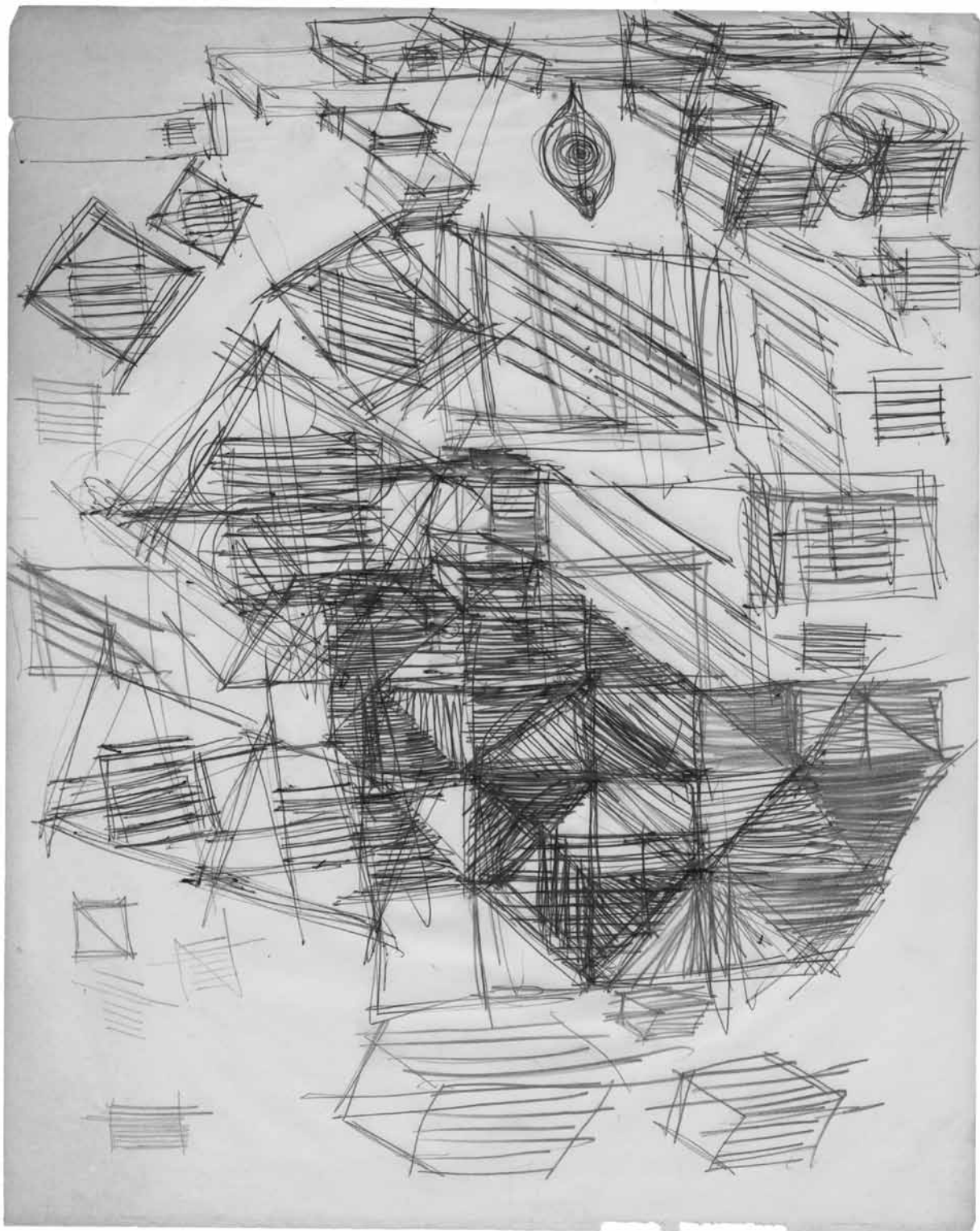
BAUHAUS

THE BAUHAUS:

an idea

an institution

and a magnificent new book

Dear Reader:

1969 is the 50th anniversary of the formal instituting of the
Bauhaus - the embodying of an idea - a major event of the 20th
century that took place in Weimar, Germany in 1919 through the
initiative of the late Walter Gropius. Ever since, the Bauhaus
and its successors have exerted an enormous influence not only
on art but on our environmental style and our life-quality as a
whole. This of course was its programmed intention - to treat
the environment as a totality, to base all the spatial arts on
an underlying science of basic design, to trace out the inter-
relations of art, technology, industry, and social function.
In particular, the famous "Preliminary Course" was designed to
instill in the student a fundamental, objective understanding
of the physical and psychological facts of vision, materials,
and construction, after which he was prepared to practice a
particualr art in a nonimitative way. This course influenced
art schools all over the world. Equally influential was the
Bauhaus mission of fabricating prototype models for industrial
production (models that are also one-of-a-kind objects of art).
These other influences remain strong and vital, and some of the
seminal undertakings of the Bauhaus are just now beginning to
bear mature fruit - total theater and kinetic light shows, to
name but two.

And yet for all this, the Bauhaus itself has never until now
been thoroughly studied in all its manifestations and succes-
sive phases, in its full unity and continuity. This gap in the
cultural history of our time has now been amply filled with
the publication of a book that encompasses and exhibits the uni-
tary interrelations of all the Bauhaus activities and traces its
continuity from the arts-and-crafts movement of the 19th century
to the happenings of our own present day:

before published. Cooper spent two years on this book alone — an enlarged, revised, and completely redesigned version of an earlier German edition.

To promote the book, Cooper and her staff made posters that restaged The Bauhaus as a mosaic of more than 200 arbitrarily arranged page spreads. The result is a simultaneous, non-linear presentation of the book's content.

For a series featuring key plates from the book, Bauhaus master László Moholy-Nagy is enlarged to heroic scale, dissolving into halftone grain. Moholy-Nagy's media experiments were exemplary for Cooper, who noted in 1989,

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It is not hard to imagine Moholy using
a computer.
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05

The Bauhaus book film (video based on a video by David Small, based on the original film), c.1970

Soon after completing The Bauhaus, Cooper restaged the book as a film, mounting a 16 mm camera to shoot three frames for every page spread. Later used as a teaching tool, the film demonstrates the logic of page flow, and how much can in fact be "read," at high speed, of the book's form and content.

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All of my books explored implicit motion.
The Bauhaus was designed both statically
and filmically with a mental model
of slow motion animation of the page
elements.
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Manuscript of The Bauhaus as shown in the exhibition Book 2000, 1979

Exhibiting two colossal stacks of paper was yet another restaging of The Bauhaus, this time as raw, archival data to be sorted, sifted and selectively surfaced by the design process. Speaking in 1994, Cooper observed:

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Our goal is to make information into some
form of communication, which information
alone is not. Information by itself does
not have the level of "filtering" that
design brings to it.
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The Bauhaus book remained a prototype for years to come, as Cooper thought beyond print:

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Hypertext and hypermedia principles
would extend the editing and authorship
of such an archival database so that a
reader interested in the political and
social influences of the Bauhaus would
be able directly to pursue multimedia
bibliographic information in depth, rather
than referencing footnotes.
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Announcements for The Bauhaus, 1969

Published on the 50th anniversary of the school's founding, The Bauhaus was a major event for English-language scholarship on the legendary school. Dominant as the Bauhaus was for arts pedagogy in the postwar, American and British audiences seeking primary materials had been forced to subsist on the compact and tendentious catalogue for the Museum of Modern Art's 1938 retrospective, edited by Herbert Bayer and Walter and Ise Gropius. Cooper's monument to the Bauhaus remains in print as a standard reference.

Wingler, Hans Maria, ed. The Bauhaus: Weimar, Dessau, Berlin, Chicago, Cambridge: MIT Press, 1969 (hardcover) and 1978 (softcover)

The Bauhaus was an idea of undiminished relevance for Cooper, as much for its pedagogy and emphasis on process as any particular style. And in 1969, the school was hardly ancient history: Many Bauhäusler were still teaching in America (especially in Cambridge), and the book's documents chronicle the school's successor institution in Chicago as late as 1967. Cooper set The Bauhaus in Helvetica — a Swiss typeface only just released in America, rather than a period font — giving the book a strikingly contemporary appearance.

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The people and works of the Bauhaus were
my conceptual and spiritual ancestors,
so I felt a particular bond with the
material.... My approach always emphasized
process over product, and what better
place to express this.
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For the cover of the book's smaller, paperback edition of 1978, Press designer Wendy Richmond,

a student of Cooper's before joining the Press, rendered the title in offset-printed color, shifting and overprinting each plate (cyan, magenta, yellow). This treatment recalls the earlier posters, emulating the layered effect and index of process present in much of Cooper's work.

06

Preliminary mock-ups for Part 1 of Learning from Las Vegas, boards 1–1A, 3–3A, Office of Venturi and Rauch, 1971

These mock-ups reflect the authors' early interest, as they specified, in "a large book." The placement of the so-called "'Edward Ruscha' elevation of the Strip" is a striking inversion of the figure-ground relationship that provoked debate throughout the design process, and a more inventive approach than they would adopt in their "dead-pan" revised edition.

Venturi, Robert, Denise Scott Brown, and Steven Izenour, A Significance for A&P Parking Lots, or Learning from Las Vegas. Cambridge: MIT Press, 1972

Immediately received as a manifesto of Post-modernism, Learning from Las Vegas collects presentation materials from the authors' 1968 studio at the Yale School of Architecture. Students visited Las Vegas to make an "open-minded and nonjudgmental investigation" of urban sprawl as a new typology, and to study "the symbolism of architectural form." Cooper recalled:

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The visual materials were not only
graphically rich but as content-laden as
the text, so the interdependent rhythms
of those relationships were important.
I wanted to arrange visual and verbal
materials spatially in a nonlinear way
to enhance the reader's comprehension.
Creating virtual time and space in two
dimensions has always intrigued me.
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The authors were less intrigued, and published a redesigned and now-standard paperback edition in 1977 to "de-sex" the original. Their preface pans the first edition's "'interesting' Modern styling," citing "the conflict between our critique of Bauhaus design and the latter-day Bauhaus design

of the book." A misguided reference to Cooper's earlier work, the comment also fails to recognize her layout as a subversive departure from, and reworking of, Modernist tenets in its own right.

Cooper set the book's type on an IBM Selectric Composer typewriter; developed—and frequently broke—a sequential grid system, with one column of text for the first part of the book, two columns for the second, and three for the third; and placed numbers referencing figures over lines of text, channeling the signage of the Vegas strip. She proposed a bubble wrap book jacket with fluorescent dots underneath, "in homage to Las Vegas glitz." Instead, the final, glassine dust jacket superimposed the book's section headings on the cover beneath.

07

Poster for "Teaching Children Thinking," MIT Design Services, 1970

In the 1960s, MIT became a hub for research into artificial intelligence (AI), as it had been for Norbert Wiener's elaboration of cybernetics in the immediate postwar. Mathematicians Marvin Minsky and Seymour Papert, active in MIT's Artificial Intelligence Laboratory, convened this conference, at which the LOGO "turtle" was discussed: a robot children could control via a simple programming language designed to teach problem-solving.

Minsky and Papert would become founding members, with Cooper, of the MIT Media Lab a decade later, where their interests in automation, machine-learning and pedagogy converged.

Minsky, Marvin and Seymour Papert. Perceptrons: An Introduction to Computational Geometry, Cambridge: MIT Press, 1969

The authors' major text on AI discusses artificial neural networks, or computational models that imitate the animal nervous system. The awkward, purple-on-red color palette of the cover is a demonstration, referred to in the book, of human perceptual constraints.

Photograph of Muriel Cooper in conversation with unidentified males, c.1972

Cooper worked in an overwhelmingly male environment, and made an effort throughout to mentor young female designers. Larry Cohen and Roger Conover, young Press editors at the time, recall:

She often wandered around barefoot... and climbed up on tables when she was excited about a project... Muriel was clearly in her element, making trouble.

Oppenheim, Alan V., ed. Papers on Digital Signal Processing. Cambridge: MIT Press, 1969

MIT Press's program included collections of technical papers as well as more involved books. The cover of this volume reduces its subject, digital communication, to an essence—a simple binary depicted with supreme graphic economy.

Negroponte, Nicholas. The Architecture Machine: Toward a More Human Environment. Cambridge: MIT Press, 1970. Designed with Negroponte

Negroponte founded MIT's Architecture Machine Group (Arch Mach) in 1968 to explore human-computer interactions. He proposes here that architects reject a master-slave relationship with computer-aided design systems, working instead as collaborators, and learning from one another:

Machines that don't learn and merely reflect the in-built prejudices and "default options" of their creators would be unethical robots. But most research is heading in that direction.

Years later, Cooper reflected a similar sentiment:

Some people believe that the computer eventually will think for itself. If so, it is crucial that designers and others with humane intentions be involved in the way it develops.

Cooper enrolled in Negroponte's computer programming class in 1967. While she never learned to code, she immediately grasped the computer's enormous potential for design:

I was convinced that the line between reproduction tools and design would blur when information became electronic and that the lines between designer and artist, author and designer, professional and amateur would also dissolve.

Negroponte introduced computers to the MIT Press, helping Cooper form a research and development unit for new media:

We were actually inventing a primitive form of desktop publishing.

Piene, Otto. More Sky. Cambridge: MIT Press, 1973

Otto Piene's alphabetical list of "things to do," set on an electric typewriter and animated by his own illustrations, is a cry for the artist-planner to widen the scope of art practice, liberating it from its economic bonds, and returning it to the public once again. Piene became director of the Center for Advanced Visual Studies in 1974, where he would collaborate with Cooper and her students.

08

MIT Press catalog, spring supplement, 1967

Cooper devoted attention to all Press communications, and to catalogs in particular. Almost a parody of the Press's standardized design system, this issue treats each book as an equivalent unit within a fully rational program.

Davis, Douglas and Allison Simmons, eds. The New Television: A Public / Private Art. Cambridge: MIT Press, 1977. Designed with Sylvia Steiner

This book was based on a 1974 conference at the Museum of Modern Art called "Open Circuits: An International Conference on the Future of Television." Its high-contrast cover photography of a television screen displaying the book's title encodes the inverse relationship described in the Bauhaus film: If a book can be a kind of moving image, then a moving image can become a book.

Dondis, Donis A. A Primer of Visual Literacy. Cambridge: MIT Press, 1973

Designed with Dondis, a college classmate then teaching graphic design at Boston University, this book evolved from a shared set of references and

pedagogical concerns, and remains in print as a classic, introductory text. Cooper typeset the book on an IBM Composer, yet the result is not immediately recognizable as typewriting. It uses a proportionally-spaced version of Univers, a sans serif typeface designed by Adrian Frutiger, who also designed the Courier typewriter font.

09

MIT Press catalog, 1972

This Press catalog channels Stewart Brand's influential Whole Earth Catalog, with whose "access to tools" mantra Cooper sympathized. (Brand later wrote the most extensive account of the MIT Media Lab, though Cooper's work is strikingly underrepresented.) Cooper recalled:

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The 70s was the period of alternative
book art -- Xerox machines and corner
copy shops were beginning to spread out,
becoming more available. I was at MIT
Press. I got support from the director to
look into other media, electronic media.
I pushed to get computer typesetting in
house, which would give me an opportunity
to explore the medium. I pushed for an
experimental arm of the press that would
do smaller edition experimental books. I
sat in on a seminar session taught by Nick
Negroponte on "Computers in Design." The
course attracted a lot of architects and
engineers. It was the early 70s. So I had
a little support for this R&D unit at MIT
Press. It was eventually shut down for
financial reasons. We did some stuff with
rubber stamping, cut and paste -- it was
the Whole Earth Catalog era.
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10

MIT Press production schedules, c.1975

Describing the oversight of one of the largest academic publishing programs in America, Cooper recalled:

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The bulk of the work was standard and
repetitious, and required a set of
systematic but variable design solutions
for limited budgets. Developing systems
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that would accommodate a wide range of
variable elements was very much like
designing processes.
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These processes are captured in Cooper's production schedules, drawn first by hand, then typeset and coded to be processed by computer.

Muschamp, Herbert. File Under Architecture. Cambridge: MIT Press, 1974

Cooper acted as both designer and typographer of Muschamp's book, achieving quicker feedback and greater control while also cutting costs. Setting type on an IBM Composer enabled her to make quick changes, saving the time and expense of sending corrections back to the type house. Switching out the Composer's various type balls also allowed for this book's eclectic marginalia.

The book is printed on brown kraft paper and bound in corrugated cardboard. It was one of Cooper's personal favorites, and the author saw it as a better argument for the relationship between ephemerality and architecture than he had made in his own writing.

Allen, Edward, ed. The Responsive House. Cambridge: MIT Press, 1974

More economical still than Muschamp's book, the production of this one simply entailed photographing contributors' typewritten notes directly, in all their heterogeneity and roughness, and compiling them with minimal design intervention. The format reflects the informality of the subject: the so-called "Shirt-Sleeve Session" in Responsive Housebuilding, held in MIT's Department of Architecture in 1972. The last paper is a succinct account of Negroponte's architecture machine.

The cover declares "Do Your Own Thing," a slogan that suggests the agency of the new, designer-programmer, and also appears in Piene's book.

11 / 12

MIT Press book flats and dust jackets, 1967–74

Cooper oversaw the production of nearly 500 books, in all areas of the arts and sciences.

Except for her pet projects, cover designs were regularly outsourced to local designers, with some going to now-established figures like a young Katherine McCoy. By standardizing the books' typography, developing grid systems that structured their covers, and designing the process for their production, in an important sense, Cooper authored the design of all of these books, whether or not her graphics appear on the cover.

In addition to occasional conflicts with authors, who had their own preconceived notions of how their books should appear, Cooper also bumped consistently against the limits of the print medium. Years later she recalled a litany of concerns:

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The inequitable constraints placed on
verbal and visual information by the
double page; the early closure demanded
by the mass production cycle; and
the crush of deadlines that prevented
research into new solutions for
communication problems all contributed
to my growing frustration with the print
medium. It was clear that the computer
would soon have a profound impact on
these limitations.
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It was this growing frustration that encouraged Cooper to establish the Visible Language Workshop.

*

II. VISIBLE LANGUAGE WORKSHOP (1974–1985)

13

Messages and Means course poster, c.1974

Messages and Means was the first class Cooper taught at MIT, begun while she was still at the Press. A friend introduced her to Ron MacNeil, a physicist working for the photographer Minor White. MacNeil had convinced his department to purchase a sheet-fed offset printer and found space to house it in the Department of Architecture. A mutual interest in experimental printing, and the possibility of using this press, inspired Messages and Means, a kind of foundation course in graphic design and hands-on production for students across MIT.

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Messages and Means was design and
communication for print that integrated
the reproduction tools as part of the
thinking process and reduced the gap
between process and product.
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This poster uses the "rotation" technique central to the course—a design constraint intended to produce quick, collaborative, and often unexpected results. Four students applied press type to acetate, exposing the printing plate directly from the mechanical artwork. A square sheet of paper was then passed at least four times through the press, changing ink color with each run. The product was known as a "one-night print," initiating students quickly in an otherwise intimidating technology.

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They used the offset printing press
as an artist's tool: they collaborated
on platemaking and they altered the
application of inks -- they rotated the
paper to make printing an interactive
medium.
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Cooper's interests in making and modifying tools, rapid feedback, interactivity, and responsive means of production are met in these prints by her formal interests in transparency and the layering of information, which became even more pronounced in her later work.

Photographs of Messages and Means students in Building 5 workshop, Department of Architecture, c.1975

Messages and Means students learned in a hands-on, workshop environment, working directly with, and in, the means of reproduction. The course was consistently oversubscribed, drawing students from architecture and the visual arts as well as the humanities and sciences.

14

Visible Language Workshop diazotype, c.1976

Co-founded in 1974 by Cooper and MacNeil, the Visible Language Workshop evolved directly from Messages and Means. It was housed within the Department of Architecture, located in MIT's central campus structure, Building 5.

The rotation system was devised to reduce real time spent on the offse
press and to maximize the results.
Square paper is used.
The plate is divided into a grid which generally allows four people
to work on the same plate and produce a four color 'image'.
That image can be cumulative or the same image rotated on itself.

It is a simple and very complex idea. It is used because it provides
immediate and maximum interaction with an offset press which is normall
a mysterious and highly specialized reproduction tool.

The ppofessional designer of user is separated from such communication
tools and an entire intermediate language is devised for the user
and the printer. Once the committment to print is made, there is
no return without great cost. Mistakes are irretrievable. Options
minimal. Creativity is confined to the beginning of the process.
Mass production requires this in order to survive.

Experiment and play as a part of professional discipline is difficult
at best. THis is not only true of an offset press but of all activities
where machines are between the concept and the product.
complete
The re-establishment of a relationship between process and product and
p erson is perhaps the most valuable aspect of this course and the
workshop.
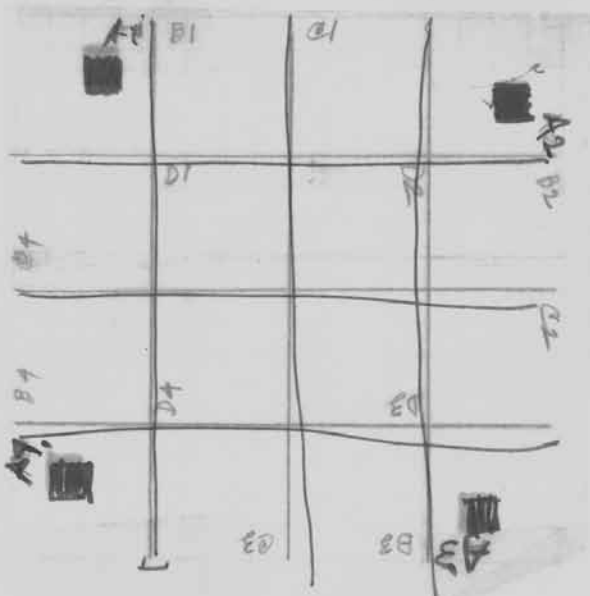
The Visible Language Workshop, a unique
interdisciplinary graphics laboratory,
was founded to explore verbal and visual
communication as information and as art
on both personal and public levels. The
synthesis of concept and production
processes is informed by tradition and
technology.

The diazotype shown is a photographic process
where light-sensitive paper is exposed directly as
a one-to-one contact print—reproduction at its
most direct, efficient, and immediate.

Floorplan of Visible Language Workshop in
Building 5, 1976

The Workshop offered a host of tools for graphic
production including photographic chemistry,
offset printing, thermography, color xerography,
metal, photo-, and digital-typesetting.

In three adjacent classrooms in Building 5, VLW
students circulated constantly between the offset
printing press and the adjacent photographic
pre-press rooms. The trip required leaving one,
walking twenty feet down the hall, and entering
the other, only to arrive on the far side of a shared
wall. In January of 1976, a group of students took
matters into their own hands to re-model this
unfortunate architecture, demolishing a wall that
stood between the two rooms, and fusing the two
spaces into one. The combined workshop mixed
the inks, noise, and paper of offset printing with
photographic enlargers, typesetting machines,
chemicals, and, soon, elaborate computers and
electronics.

Visible Language Workshop course catalog,
1980

VLW courses focused on specific tools of
reproduction, split into three categories: typo-
graphics, photographics, and electrographics.
Typographics dealt with offset printing, or ink
on paper. Photographics involved the light-based
chemical processes of photography. And
electrographics broadly included "processes
and processors that handle images by electronic
phenomena." It incorporated video imaging,
digital hardcopy output, and color and black
and white xerography.

This course catalog, produced on a black and
white photocopier, revels in the machine's low-
resolution grain and muted contrast. A VLW
assignment, "Turning a Copy Machine into a
Medium," reminded students:

Every machine has its own idiosyncrasies.
Each has its own characteristic image,
marks, and controls.... Look carefully;
listen to it. Find out what makes it
work, even in a very general way. What
does it do? How does it interact with
you and your thoughts? Can you make
corrections?

Visible Language Workshop description, 1979

This one-page photocopied document declares:

The electronic revolution has broken
traditional definitions of disciplines
of photography, printmaking, graphic
design, and graphic arts.

While students at the VLW had different
backgrounds, and pursued different interests,
the program encouraged a generalist approach.
Students acted simultaneously as editors,
platemakers, printers, typesetters, and designers.

The shift from a mechanical to an
information society demands new
communication processes, new visual and
verbal languages, and new relationships
of education, practice and production.

Visible Language Workshop mechanical artwork,
c.1980

The name "Visible Language Workshop" self-
consciously connects two trajectories, one past
and one present: "Workshop" invokes the basic
teaching unit of the Bauhaus, a collaborative and
non-hierarchical site for the integration of design,
production and teaching; "Visible Language"
chimes with György Kepes's Language of Vision
(1944) and echoes the name of a graphic design
journal published by the Rhode Island School
of Design since 1967. In its pages, a discourse
around graphics, typography, and reproduction
technologies offered a conceptual spine for the
Workshop's research.

15

Visible Language Workshop letterhead with paste-up dummy, c.1979

Mechanically reproducing a bold, gestural brushstroke for its letterhead, the VLW signaled its simultaneously technical and artistic ambitions. The various color gradients here result from a split-fountain technique on the offset printer.

Annotated draft and printed copy of VLW article for Plan journal, 1980

When asked to submit an article about the Visible Language Workshop for the Department of Architecture's Plan journal, Cooper responded with a 12-page visual essay produced together with students in the Workshop, and using its tools. The first page reproduces a cover letter addressed to the journal's editor, which describes the submission, and serves as a de-facto manifesto.

A draft of the letter shows Cooper's felicitous phrasing taking shape in the margin, including her apt closing line:

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This stands as a sketch for the future.
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16

Messages and Means rotation prints, 1975–84

Reflecting on the pedagogy of the rotation technique, Cooper wrote:

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The process of learning the mechanics
of a machine as potentially threatening
as an offset press while simultaneously
producing your own images on it becomes
an interdependent and independent
microcosm of larger relationships.
It would be difficult to imagine any
activity which would not benefit from an
interdependence which was respectful of
varying competencies. Professionalism
sometimes is exclusive of dialogue.
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17

Posters announcing the exhibition "Experimental Graphics" at the AIGA, New York, designed by

Wendy Richmond and Joel Slayton, 1978

Wendy Richmond studied at the VLW, and later designed book covers for the MIT Press. Cooper taught her how to use printing equipment properly, but also how to subvert it, echoing Moholy-Nagy's admonition to use reproductive tools to productive ends. Here, Richmond and her classmate Joel Slayton thwart the exact reproduction of the offset press by progressively introducing pieces of tape and torn paper. The posters advertise the VLW's first major exhibition at the American Institute of Graphic Arts in New York.

18

Inventory print portfolio, designed by Nathan Felde and Francis Olschafskie at the VLW, 1980

This large pamphlet pictures each of the principal members of the VLW. Cooper appears seated at a terminal, "pounding away at the keyboard of a fifth-generation, electrostatic, computer-driven, digitized phototypesetter." MacNeil is pictured in front of his large-format inkjet printer, "The Airbrush Plotter."

The portfolio was typeset on a Mergenthaler Omnitech 2000 laser phototypesetter in the Workshop, on loan from the German print technology company and VLW sponsor, Hell. A mixed electronic-photographic set-up, the system produced camera-ready type direct from digital data.

Visible Language Workshop Course catalog, 1981

The 3M Color-in-Color machine, an early color photocopier, was a vital tool for Cooper at the MIT Press, and remained so at the VLW.

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The electrographic printer presents
inexpensive, instant graphic gratification
through which thoughts can be translated
to paper as fast as the designer can
think of them.
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19

Poster for "Music in Public Places," MIT Design Services, printed at the VLW, c.1980

VISIBLE LANGUAGE WORKSHOP

BUILDING N51
275 MASS. AVE.

TYPOGRAPHY AND WORD PROCESSING

COMPUTER GRAPHICS AREA

TERMINAL ROOM

COMPUTER ROOM

PLOTTER

ELECTROGRAPHICS

ITEK CAMERA

WORKSPACE

PRINTING EQUIPMENT

WET PROCESSES AREA

KITCHEN

VLW OFFICES

DARKROOM

ELECTROGRAPHICS

ELECTROGRAPHICS

RAMP

CAGE

SUMMER SESSION STUDIOS

BATHROOM

CONSTRUCTION

MASSACHUSETTS AVENUE

LECTURE HALL
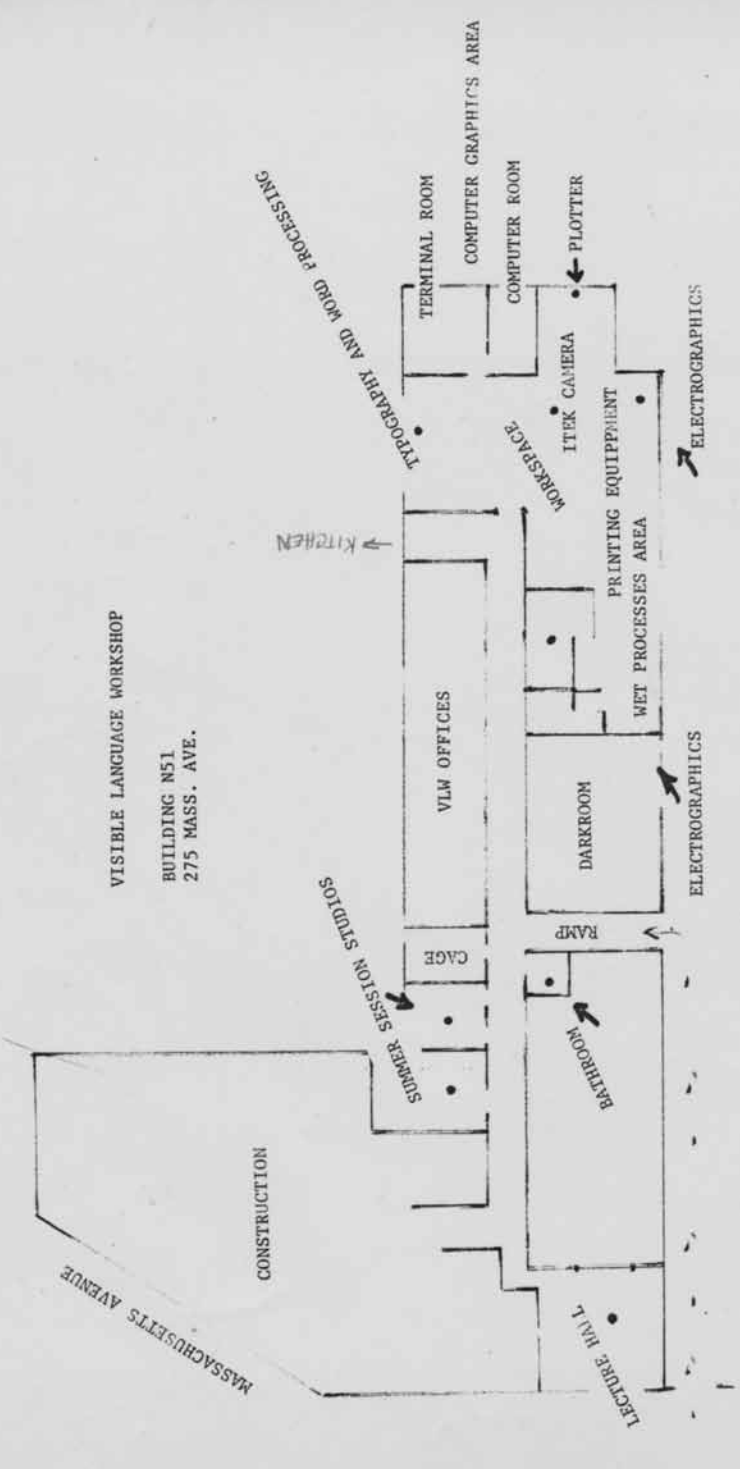
VLW Full Color Interactive System
11.12.80

DMA

300 Meg
Disk Drive

Tape Drive

MUX

Perkin
Elmer
3220
CPU

Terminals

Tablet

Grinnel
Frame Buffer

512 x 512
R 8 bits
K 8
Overlay
3 bits

Color
Monitor

Printer

XYZ Plotter

Joystick   Video Input

High Resolution
Camera
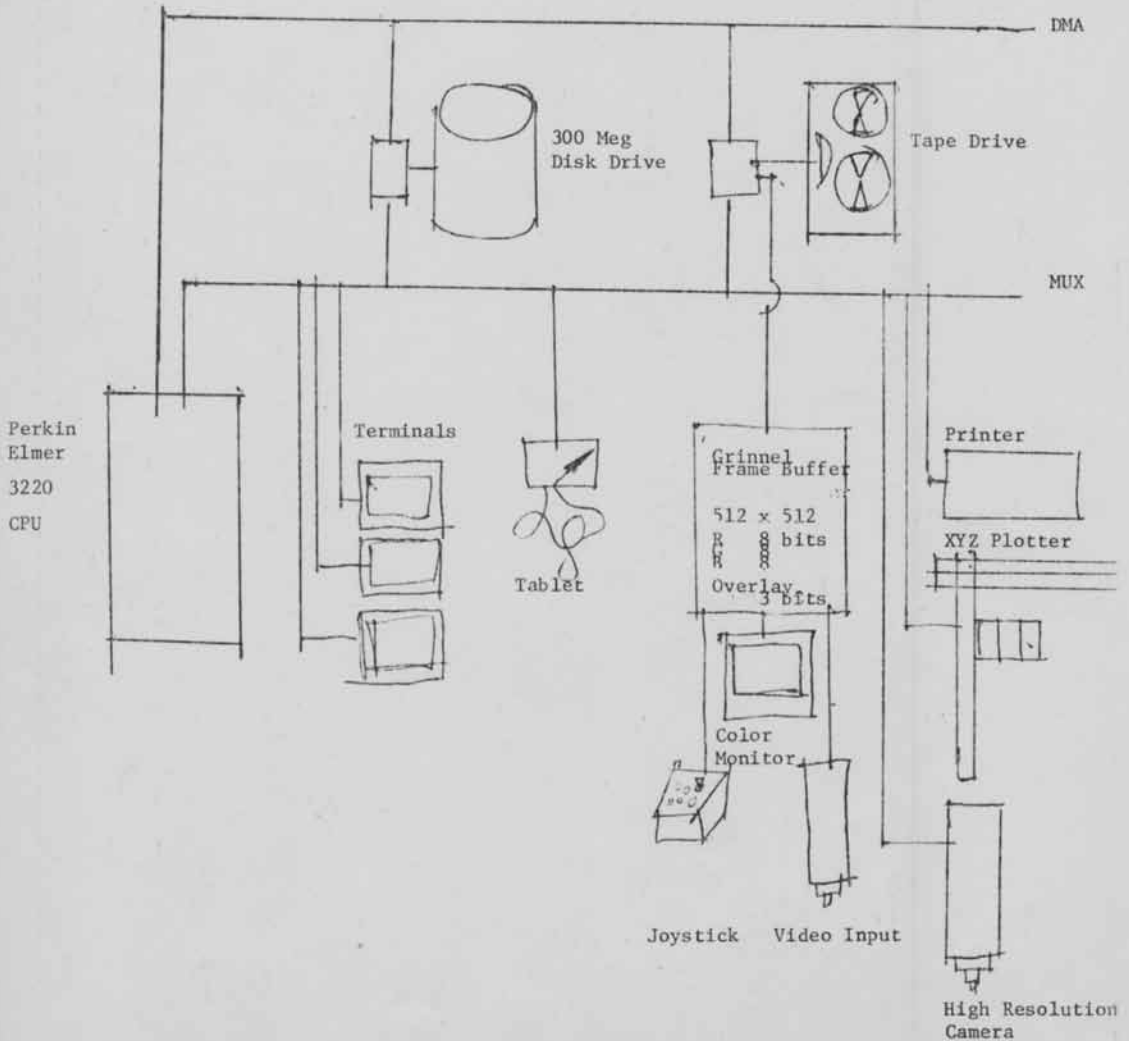
Posters for campus-wide events, designed by Jacqueline Casey, Ralph Coburn and the members of MIT Design Services, were often produced at the Visible Language Workshop, where students output film, made printing plates, and ran the offset press. This poster is produced as an overprinted, double split-fountain print. Typically printed the night before the event, posters' success was gauged by how many were left in the hallways the day after.

```
Practical production... will be the
cornerstone against which course work will
be sharpened and from which it will gain
its edge.
```

Polaroid hand print, Ron MacNeil, c.1976

MacNeil and Cooper established Messages and Means out of a shared frustration at the limitations imposed on their respective media: For MacNeil, a young photographer, it was existing film formats that dictated the look of his final product, while for Cooper it was the physical constraints and mass production cycles of the book.

Pursuing his interest in experimental printing, MacNeil made this project while studying for an MFA at the Rhode Island School of Design. MacNeil photographed his hand, offset printed the image onto a thin sheet of PVC plastic, and heat-formed this over a plaster cast of his other hand, producing the trompe l'oeil photo-sculpture documented in this large Polaroid. MIT's motto, "Mens et Manus" (mind and hand) echoes not only the Messages and Means course title, but also the multiply mediated manual trace of the artist in MacNeil's photograph.

MacNeil's elaborate photographic work at the time required days in the darkroom to produce a single image. Down the hall at the Architecture Machine Group, Negroponte and others were experimenting with early color frame buffers and producing similar effects in a matter of minutes. MacNeil apprenticed himself to Arch Mach, spending six months learning the rudiments of computer programming and electrical engineering. He left with a teletype interface board, a 16-line machine language program, and cast-off computers to run his later electronic experiments.

20

Photographs of the Visible Language Workshop in Building N51, c.1980

In 1980, the VLW moved to a larger, more polished space in MIT's Building N51 on Massachusetts Avenue, co-located with the Center for Advanced Visual Studies. The new VLW facility provided ample room not only for its offset printers and photographic darkroom, but also for the various electronic equipment (computers, typesetters, printers) that became central to the Workshop.

After initial forays into computer programming and imaging, MacNeil approached the head of the Outdoor Advertising Association and offered to apply computer imaging to the task of painting billboards. The group enthusiastically supported MacNeil and the VLW to develop an architecturally-scaled inkjet printer. An initial $50,000 investment led to nearly $500,000 in project funding—a substantial enough sum to be the VLW's principle source of funding over the coming years. Significant investment in computers and electronics, otherwise prohibitively expensive, was now possible.

21

Self-portrait with Polaroid SX-70, video imaged and printed at the VLW, c.1982

This composite picture registers at least three different photographic times and as many imaging feedback loops. The finished print was made on the large-format Polaroid printer which appeared in the Workshop around 1982. Workshop coordinator Rob Haimes suggests that it may have been part of the Slow-scan image transmission experiments at the VLW; curved monitor faces and video scan lines confirm this. The stacked pictures are from around 1972, when the Polaroid SX-70 instant camera Cooper holds was released. MacNeil suspects these images were frames captured by a Portapak black-and-white video camera system, also a brand-new technology in 1972. Around ten years later, frames from the video would have been transmitted as audio tones, displayed on a video monitor, and captured by a large-format Polaroid camera. While all of this imaging proceeded, Cooper is shown

taking a picture. What would soon appear on the photograph emerging from her camera remained outside of this image's frame.

From approximately the same period as this portrait, Cooper wrote a bio for herself. Allowed 250 words, she used 65:

```
Muriel Cooper/first designer/art director
MIT Office of Publications | Fulbright
Scholarship, Milan, Italy/ Consulting
firm Muriel Cooper Media Design | Media
Director MIT Press/ currently Director
Visible Language Workshop | Associate
Professor Department of Architecture/
Special Projects Director MIT Press.

Her concerns have always been with
beginnings and process. | More with change
and technology and their meanings to human
communication than with rigorous graphic
design theory and style.
```

Photograph of Ron MacNeil at computer with Airbrush Plotter, c.1981

"The Airbrush Plotter" was a perpetual work-in-progress at the VLW. Funded by the Outdoor Advertising Association, it was cobbled together using rejected computer chips from Fairchild and National Semiconductor. The Airbrush Plotter combined digital image capture, image processing software, and large-format digital output. Capture was handled by a line-scanning chip bolted to the film-plane of a Nikon camera and moved via a stepping motor. A hacked one-color print head produced the output using airbrush inks. A homemade proto-Photoshop "paintbox" application called SYS—developed by MacNeil, Rob Faught, and other VLW students over several years—handled image processing.

Here, MacNeil sits at the terminal, running an early version of the software, which shows a frame-buffered image of what is being output on the plotter behind. He recalls the setup:

```
The pieces of SYS were a 32 bit Super
Mini (128K of core memory, but cost of
$125K), a 300MB hard drive as big as a
refrigerator on its back, a full color
frame buffer with real time frame grabber
```

(640 x 480) and a virtual disk image
management system that let us zoom in and
out of a 2K by 7K image sliced as many
ways as you wanted.

22

Exhibition poster and mechanical artwork for *Asterisk, designed by Otto Piene, printed at the Visible Language Workshop, 1974

Otto Piene became director of MIT's Center for Advanced Visual Studies in 1974, the same year that Cooper and MacNeil founded the VLW. Piene succeeded CAVS founder György Kepes, and proposed a distinctly less technophilic vision of the arts. The VLW produced the posters that Piene designed for his large, happening-like projects and group exhibitions. CAVS hosted a range of contemporary artists, especially those working in new media, as this poster reflects.

For the poster, a small sketch by Piene was photostatically enlarged, output to film, masked, burned onto printing plates, and offset printed at the VLW. The resulting poster synthesizes what is said, how it is being said, and how it is produced.

Alcove south

Research Topics at the Visible Language Workshop video, 1986

This summary of current VLW projects shows rules-based, artificial intelligence software tools developed to improve both on-screen graphics and the computer interface, effectively designing new design tools. As Cooper put it, recalling her hands-on approach to print production:

```
We hope to make the tools and to use them.
```

Describing the status quo, she lamented:

```
You have to drag yourself through this
hideous wilderness of alphanumeric data
that has never been filtered, graphically,
in any sense. And it's tedious, and
it's ugly and it's counterproductive --
it's very hard to find things. Design
has functioned in the print world as a
graphic, editorial filter.
```

An "intelligent page program," for example, takes raw, unfiltered data and formats it based on a user-established "style guide." Another program can design typefaces by extrapolating from user-input letters. And a voice-activated business card design system inputs data into templates and "gets creative" with a preferred style. Design tools, Cooper believed, should be configurable by, and learn from, their users.

```
If you look at the computer as an
environment in which you do multiple
tasks, and which is ubiquitous in your
life, then it's even more important that
this personalization and configuarability
take place. Because today I may want to
work on music and then go to my cookbook.
And then read my newspaper -- or design my
newspaper!
```

Alcove west

Slides with variable layouts for the cover of Design Quarterly no.142 "Computers and Design," 1989

The Walker Art Center devoted an issue of its journal Design Quarterly to Cooper, the VLW and the Media Lab. It begins with one of Cooper's only published essays, entitled "The New Graphics," in which she discusses the VLW's recent work and the role of artificial intelligence in design.

For the issue's cover, nine of the images here were tiled to show variable layouts of the same visual and verbal elements. Cooper used software by VLW student Suguru Ishizaki to demonstrate how the elements on an electronic page could change size, position, color and translucency:

```
Each frame will change as the "reader"
browses in real time with text and image
cues dependent on the linkages that
have been designed for browsing. On one
level this series is analogous to a book
printed on transparent paper, but it takes
advantage of the potential for change
inherent in the computer.
```

Alcove north

Presentation at TED conference video, 1994

To demonstrate recent research at the Visible Language Workshop, Cooper and her student David Small frantically prepared Information Landscapes in the three nights leading up to the 5th Technology Entertainment and Design conference in Monterey, California. This TED talk, decidedly casual in its format, started with Cooper removing her shoes and getting comfortable.

*

III. THE MEDIA LAB (1985–1994)

23

Large-format Polaroid digital print, 1983

Polaroid Corporation was based around the corner from the VLW, and equipped them with its latest technologies. One such apparatus was a 20×24" experimental camera that printed direct from a computer file to instant photographic paper. MacNeil recalls:

```
You would send a color signal to this
amazingly sharp flat screen full tone
scope and it would do the rotating
filter-wheel dance to get all the colors.
```

In this inside-out camera, the screen displays a digital image and provides the light source used to expose a sheet of instant photographic paper. The large, high resolution digital print was ready in a matter of minutes. Digital Polaroid quickly became a primary output tool at the VLW.

Anti-Aliasing Tests, c.1983

The VLW's graphic paintbox application, SYS, used a crude typewriter font in its interface suited to the task of limited graphic display but lacking the nuance of printed typography. Meanwhile, beginning in 1973, Nicholas Negroponte, William Donelson, and others in the Architecture Machine Group had developed an "anti-aliasing" technique for displaying the fine curves of letterforms on the coarse mesh of a computer screen. Their solution required digitized bitmaps of each letter to be detailed pixel by pixel, their edges painted as a range of greyscale pixels brokering the contrast between white letters and a black screen.

verkürzen

= foreshorten

5.1 Understanding text as a graphical event

"CAR WARS" said a poster, with text receding into one-point perspective, followed by the name and address of a used car lot offering galactic loans and astronomical discounts. Such metaphors find more sober application in spatial data management, where text can live in three dimensional space. Perusal is akin to driving up to a billboard, gaining increasing detail up to the copyright in the corner. In this section, we focus upon text as a graphical statement, both in concert and contradiction with semantics. We are concerned with the automatic augmentation of communication through enhancements.

We note the recent study of Reich and Cherry (1977) in which they varied the size of printed words in sentences in a picture verification task thusly: the picture was of a boy and a girl, where the boy was taller/shorter than the girl. Sentences were of the form, e.g., "John is taller than Sue." The size of the type in which nouns or adjectives in the sentences were printed was varied congruently or incongruently with the meaning of the sentence.

The important finding was that congruent sentences were evaluated more rapidly than incongruent sentences irrespective of the locus of the size change, indicating a "Stroop-like" effect not confined to a single word, but generalizing to the entire sentence.

We term departures from a regularized font, spacing, and formatting, "dynamic text." Not only can dynamic text depart from the statically usual, but it can modulate in real-time before the reader, even as a function of where he is looking (Cf. Gould, 1974). Consider a text line where any word may dynamically change in size, shape, color, luminosity. This additional dimension, call it "Z," can be an intrinsically "non-spatial" dimension (color, luminosity), or can be along spatial dimensions into or across the page, exhibiting actual movement. Why should text move or change? We see at least five reasons: to convey information that itself is changing, to pace the observer, to save "real estate," to amplify, and to be attention getting. Each reason can be

Reich, S.S. & Cherry, C.; "A direct access from graphics to meaning: a study of the stroop effect in sentences", paper presented at the Conference on Processing of Visible Language, Eindhoven The Netherlands, September, 1977.

Stroop effect: Stroop (1935) found that the naming of the color in which a word was printed was interfered with if the word were a color name. Such "congruity effects" have been discovered in many other contexts, such as when the relative placement of an arrow on a rectangular field can interact with rapid response as to which way the arrow is pointing.

Stroop, J.R.; "Studies of interference in serial verbal reactions", Journal of Experimental Psychology, 1935, 18, 643-662.

By 1982, the remaining crudeness of onscreen typography "drove Muriel nuts," as MacNeil recalls, and the VLW initiated experiments to digitize serif typefaces for onscreen use. One of these legibility exercises uses an excerpt from Lewis Carrol's Through the Looking Glass. These 8 × 10" digital prints were produced on a second, smaller Polaroid instant printer in the Workshop. In a memo from 1979 to Cooper and others, Negroponte outlined new possibilities for type on the screen which the VLW would soon take up:

```
Fonts should not be fixed sizes, their
greytones should not be hand edited, and
most importantly, they should not be
forced to fall on pixel boundaries. New
opportunities include: transparent fonts,
colored fonts, and TV-specific fonts.
```

24

Books without Pages, Proposal to the National Science Foundation by Nicholas Negroponte, Richard Bolt, and Muriel Cooper, 1978

The Architecture Machine Group, founded in 1968 to explore the human-computer interface, was a vital forerunner to the MIT Media Lab, and its collaboration with the VLW on this project set the tone for the Media Lab's interdisciplinary research. Books without Pages proposes a series of studies to understand both how "soft copy" text, on-screen, can become more legible, and what a personal computer interface should look like.

The printed book, which Cooper described as "the best random access tool yet available," offers a productive model for on-screen reading. The discrete, "syntactic chunks" of a book page—as opposed to the status quo of endlessly scrolling, unformatted text—help orient the reader, giving her a "sense of place" within the text. The authors simulated this with a crude, on-screen page-flipping animation that was the first of its kind.

At the heart of the project was the Spatial Data Management System (SDMS), an information environment conceived for the home or office. In this "media room," users sat in a customized Eames lounge chair, with integrated controls, facing a rear-projection screen. The premise

was that real space provides a straightforward mnemonic device for storage, and that natural gestures should enable navigation through this space.

Data were stored on Videodisc, an optical storage format which allowed users to jump to any point (random-access), and to move forward or back at variable speed. Multi-modal inputs, of both voice command and touch, guaranteed redundancy, aiming to approximate human interaction. Thirty years before the first iPhone, the authors wrote:

```
When the reader indicates that he wants to
turn the page, he indicates by a simple
finger-gesture captured on a small touch-
sensitive pad located on the arm of the
chair in which he is sitting.
```

The National Science Foundation did not see the proposal's merit, but Books without Pages won funding instead from the Office of Naval Research and the Defense Advanced Research Projects Agency (DARPA), inaugurating the corporate and government defense sponsorship model on which the Media Lab would depend.

Of the Media Lab's broader interest in artificial intelligence research, Cooper later noted:

```
The thrust of this long-term research
has intellectual underpinnings that
are supported by government and industry,
and one must be alert to the intentions
that drive such support. There is an
inevitable Jekyll-Hyde syndrome that
must be recognized and managed by
us all.
```

The legacy of Books without Pages is in its early understanding, well before the personal computer or graphical user interface, that computers will play a role in the average home, and that they will be judged by the quality of their interfaces. The authors predicted, accurately:

```
Such startling advances and cost reductions
are occurring in microelectronics that
we believe future systems will not be
characterized by their memory size or
processing speed. Instead, the human
interface will become the major measure,
```

calibrated in very subjective units, so
sensory and personalized that it will be
evaluated by feelings and perceptions.
Is it easy to use? Does it feel good?
Is it pleasurable?

25

Large-format Polaroid digital prints, Slow-scan
transmission, c.1982

In 1982 the Visible Language Workshop began
experimenting with a low-bandwidth image
transmission system called Slow-scan. It was a
25-year-old technology, earlier used to transmit
images from space. Slow-scan encodes video
images as a sequence of audio tones, broadcast
over standard shortwave radio frequencies,
received, and decoded back into picture data.

Slow-scan was first used at the VLW to transmit
images back and forth with CAVS, located in the
same building. For example, a black and white
image was sent from CAVS, computer processed
at the VLW, and a color image was returned. MIT
architecture students used Slow-scan to transmit
site photographs back to the VLW, where they
were annotated and returned, and arts students
transmitted images across larger distances for
exhibitions around the world. Many of these
transmitted images were output on a Polaroid
digital printer. MacNeil observes:

In time, images stay on the screen. And
now they travel through networks. I think
what Muriel finally discovered was the
act of communication design in the process
of radical change away from creating
single artifacts to creating design
processes that need to have a life of
their own over these networks.

26

Muriel Cooper at three-screen workstation, 1989

Graphic artists' workstations capable of intelligent
image processing, design assistance, and real-
time feedback were a persistent research focus
at the VLW from the early 1980s, inspiring a
series of projects around "The Ultimate Designer
Workstation." Here, Cooper uses software

developed by Alka Badshah for IBM intended
to help the designer evaluate plausible choices
and iterate quickly through alternatives. MacNeil
recalls that the frame rate was agonizingly slow,
never approaching the responsive graphic tool
that Cooper had in mind:

You can just hear Muriel cursing as
something goes wrong and it will take her
much too long to fix it.

Responsive Typography, c.1989

Cooper described the shifting stakes for design
given changes in technology:

You're not just talking about how the
information appears on the screen, you're
talking about how it's designed into the
architecture of the machine, and of the
language. You have different capabilities,
different constraints and variables than
you have in any other medium, and nobody
even knows what they are yet.

Consistent digital experiments at the VLW
interrogated the screen as typography's new,
native environment. This still output from an
animated demonstration imagined typography
that communicates not only through the static
forms of the letters but also through their
behavior. Dynamic typography would respond
instantly to the changing conditions of its digital
context using movement, color, and transparency
to inflect meaning.

35mm slide image of computer graphics, c.1988

VLW students wrote software hacks for SYS to
extend its image processing capabilities. Like what
would be called "filters" in Photoshop, these small
plug-in applications added discrete tools both
useful and whimsical. One such hack was "Warp,"
programmed by Rob Faught. Warp used the
drawing tablet input device to manipulate digital
image data. A wavy line drawn on the tablet offset
onscreen image pixels in a corresponding manner.

Filtering effects were never limited to software,
or any one particular medium, in the VLW. This
image, one from a series of long-exposure 35 mm
slide photographs shot direct from a computer

Print

The content
quality and technology
of visual and verbal
communication Electrographics Typography
is explored and
tested in a hands on
setting of educational Computers
professional and research programs
that provide a learning triangle
of experience theory and application

A rich array of reproduction tools are used
generatively in non linear ways
to explicate the premise
that theory and practice together inform
the understanding of both process and product
in the development and use of tools

GRAB REV SAVE LOAD SCALE RTCH BBTFR WARP LAOUT INIT

screen, is typical. It captures illuminated pixels on film, blurred by the movement of the camera.

3D Program Representation, Henry Lieberman, c.1991

Media Lab researcher Henry Lieberman developed these "cereal boxes" for Cooper as an abstract, three-dimensional, and animated representation of computer programs:

```
Muriel was a non-technical person, and
made attempts from time to time to learn
to program, but without success. However,
she had extremely good intuitions about
programming and had a programmer's way
of thinking about design problems (hence
"Visible Language"). Because she was such
a visual thinker, she was flabbergasted
to the point of being offended that
programming wasn't as visual as it had the
potential to be. It was my small attempt
to render programming a little bit more
visible for her.
```

27

MIT Media Lab promotional Laser Disc, dual-channel audio (English and Japanese), Jacket by Betsy Hacker, MIT Design Services; Video text produced at the Visible Language Workshop, 1986

The Media Laboratory, as Cooper described it

```
is a pioneering interdisciplinary center
that is a response to the information
revolution, much as the Bauhaus was a
response to the industrial revolution.
```

Already taking shape by 1980, the Media Lab officially opened its doors in the I.M. Pei-designed Jerome Wiesner Building in 1985. This promotional Laser Disc, with an introduction by Walter Cronkite, describes the Lab's aims and research divisions, which included tools for early-childhood education (based on Minsky and Papert's earlier work), news delivery services, natural voice-user interfaces, synthetic holography, research into new approaches to television and movies, and full media environments. Cooper's VLW was a founding division of the Lab, and is the subject of the chapter "Graphic and Typographic Interfaces."

Given her long-held concerns, Cooper was in good company in an environment wholly focused on humanizing the man-machine interface.

The disc lists Media Lab sponsors around its hub. Its sleeve shows the atrium of the new Wiesner Building and Kenneth Noland's striped supergraphic, which inspired the Lab's visual identity.

MIT Media Lab 5th anniversary booklet, 1990

The three overlapping circles shown in this booklet are a stylized version of what Cooper called the Lab's "teething rings." Negroponte used this diagram of predicted media convergence to convince MIT and prospective sponsors of the Media Lab's urgency. Each circle represents a major media industry: computing; the broadcast and motion picture industry; and print and publishing. During the Lab's gestation in the late 1970s, these entities barely overlapped in either business practices or technology standards. Yet the Lab was founded on the assumption that "Being Digital," in Negroponte's 1984 phrase, would mean convergence.

VLW student David Small and Jacqueline Casey of MIT's Design Services produced the booklet's cover graphic using a Connection Machine, the Lab's massively parallel supercomputer. It simulates the behavior of pigment and water on paper fibers, with the varnish layer on top indicating the areas where the paper would be most wet. The Lab's sponsorship model is also reflected in the long list of funders at the end of the booklet.

Opposite entry

Spatial Data Management System demonstration video, William Donelson, 1980

The "Media Room" of the Spatial Data Management System (SDMS) is given a demonstration here as a user reclines in the customized Eames Lounge Chair, surrounded by an interface comprising trackpads, a touchscreen, and a large rear-projection screen. The SDMS was Donelson's Master Thesis, completed in 1978, and evolved to form the core of Negroponte, Bolt and Cooper's Books without Pages project.

Information Landscapes, Muriel Cooper, David Small, Suguru Ishizaki, Lisa Strausfeld, 1994

This series of demos presents "intelligent type" in deep, three-dimensional space. Words advance or recede, and can spin, blur and adapt by changing color or transparency. Formally, the effect might recall film title sequences, but Information Landscapes is an interactive user interface. Here the "viewer" is a "user."

Information Landscapes creates a space that allows the user to orient herself within it, seeing where she is going and where she has been. As Cooper said, "Information is of absolutely no use if you can't find your way through it." While hyperlinks organize information based on sequencing and branching structures, this environment, Cooper believed, would release one from such constraints.

The effect of 3D motion would not have been possible without the processing power of the Media Lab's newly acquired Silicon Graphics Reality Engine, a quarter-million dollar computer:

```
3D has always interested us, but only
recently have we had the power to explore
the boundaries between two-dimensional and
three-dimensional design information. We
are looking for new design principles and
we're not at all sure what they are.
```

Presented publicly at the 5th TED conference, designers and technologists received Information Landscapes as an epiphany. It is difficult not to consider it Cooper's culminating work, as she died of a heart attack just a few months later. TED founder Richard Saul Wurman dedicated his book Information Architects (1996) to her, and her "real-time display of heavenly navigation." Negroponte eulogized Cooper by saying:

```
She has broken the flatland of overlapping
opaque rectangles with the idea of a
galactic universe.
```

Information Landscapes represents both a path not taken in interface design, and one we are only now beginning to travel.

*

<u>Messages and Means: Muriel Cooper at MIT</u>

February 25–March 28, 2014
Arthur Ross Architecture Gallery
Columbia University
Tuesday–Saturday, 12–6 pm
www.arthurrossarchitecturegallery.org

Muriel Cooper worked across four decades at the Massachusetts Institute of Technology in overlapping roles as a graphic designer, teacher, and researcher. Spanning the transition from print, to early explorations of digital typography, to fully evolved information environments, Cooper's tenure at MIT maps onto one of the most dynamic periods of the school's technical, conceptual and theoretical development.

As the first Design Director of the MIT Press, Cooper established a comprehensive publishing program and designed books like <u>The Bauhaus</u> (1969) and <u>Learning from Las Vegas</u> (1972). As co-founder of the Visible Language Workshop, she taught experimental printing, tested large-format Polaroid photography, and integrated video systems in MIT's Department of Architecture. And at the MIT Media Lab, she developed some of the earliest computer interfaces and educated a generation of designers. Throughout, her approach remained consistent: creating tools and systems for rapid feedback, dissolving boundaries between design and production, and restlessly seeking out new problems.

```
There is still no magic way -- but we propose
to keep working at it.
```

*

Curators: David Reinfurt and Robert Wiesenberger
Associate Curator: Mark Wasiuta
Exhibition Design: Adam M. Bandler and Mark Wasiuta
Graphic Design: David Reinfurt
Director of Exhibitions: Mark Wasiuta
Exhibitions Coordinator: Adam M. Bandler
Assistant Coordinator: Nina Kolowratnik
Exhibitions Assistants: Michelle Mortensen, Katie Zaeh
CCCP Assistants: Katia Davidson, Elis Mendoza
Exhibitions Crew: Melissa Loyola Agosto, Shalini Amin, Rebecca Book, Dichen Ding, Albert Franco, Nile Greenberg, John Lee, Emily Elizabeth Mohr, Megan Murdock, Sareeta Patel, Brittany Roy, Edward Yim

Muriel Ruth Cooper

1925 Born, Brookline, Mass.
1943–44 Attended Ohio State University
1944–48 Transferred to Mass. School of Art degree in General Design
1948–49 Worked in New York ad agencies
1949–51 Returned to Mass. School of Art to earn B.F.A. and B.S. in Teacher Education
1951 Designer, Institute of Contemporary Art, Boston
1952–58 Art Director and Designer, MIT Office of Publications / Design Services
1958 Fulbright Scholarship in Milan
1958 Established Muriel Cooper Media Design
1960–62 Freelance design for the MIT Press
1962 Teaching at Mass. School of Art, Appointed staff at the MIT Press
1967 Named first Design Director / Media Director at the MIT Press
1973 Appointed Lecturer in the Department of Architecture at MIT
1974 Established Visible Language Workshop in the Dept. of Architecture (Building 5)
1977 Appointed Assistant Professor
1980 VLW moved to building N51 on Mass Ave.
1981 Appointed Associate Professor
1985 VLW moved to E15, the MIT Media Lab's Wiesner Building
1988 First woman tenured at the MIT Media Lab
1994 Died, age 68