I.D.

Neville Brody
faces the future

Barry Diller
mines the home-
shopping market

Muriel Cooper's
Media Lab legacy

David Byrne's
designer label

Machine for Sitting

Herman Miller creates a high-tech seat for all sizes

With this issue I.D. faced the challenge of producing an article about a remarkable person who died unexpectedly as we were in the midst of writing her profile. The subject was Muriel Cooper, director of the Visible Language Workshop at MIT's Media Lab, a woman who, at the age of 68, was at the height of her creative and professional career.

I first encountered Muriel in the back of a convertible. We had arrived at the same moment at the Monterey airport on our way to the TED conference last February, and she'd insisted that several of us accept a lift to the hotel. The car was crammed with the equivalent of a mainframe computer that she and her associate David Small were hauling from Boston for her presentation. As we rode top-down in the balmy night, Muriel was brimming with excitement and nervousness about speaking at this event. As it turned out, she was received with great enthusiasm and a rush of gratifying interest.

I.D. writer-at-large Janet Abrams went to the Media Lab twice last spring to meet Muriel, but with her death on the eve of Memorial Day, the story suddenly assumed a gravity that was not there before. Muriel wasn't solicitous of press attention — she was actually wary of it — so there are few attempts to document the many breakthroughs in digital information graphics she and her students accomplished. Abrams's profile, a trenchant look at Cooper and her discoveries in the graphical galaxies of the electronic frontier, is a major contribution toward the definitive story. Students and colleagues at the Media Lab are charged with carrying it on. For as Media Lab director Nicholas Negroponte said in a statement on her behalf: "Muriel brought her warmth and design expertise to students, and literally invited hundreds to travel along on her quest. Muriel has launched more careers than anybody I know."

On a very different note, contributing editor Rick Poynor checks in with graphic designer Neville Brody to find out just how well he's survived '80s superstardom, while elsewhere we detail the development of a revolutionary (and controversial) office chair designed by Don Chadwick and Bill Stumpf for Herman Miller. Further on, Karrie Jacobs travels to the manicured lawns of West Chester, PA, headquarters of the home-shopping channel QVC and its offspring Q2 and onQ. Touring the well-oiled machine, where design is used to ring up $300 million in yearly sales through the tube, she gains an "unobstructed view of the mercenary soul of the medium." This is a story that will only gain in significance, for on August 4, cable giant Comcast, with the help of John Malone's Liberty Media, agreed to purchase QVC for $46 a share. The retailing revolution of the '90s is well in the works, and the fact that designers are fast being drafted is surely a mixed blessing.

Meanwhile on the homefront, we have long been boosters of the notion that design is gaining in broad-based recognition. That's turned out to be the case with our last issue's Annual Design Review. We were happily surprised to see it featured on "Good Morning America" (you don't get more "broad" than that) and in a full-color spread in *The Washington Post*. Next month I.D. celebrates its birthday with a special 40th anniversary issue. We look forward to sharing the celebration with you.   CHEE PEARLMAN

Forget the landlocked
metaphors of the Information
Highway: get ready for a ride
through the VLW's dynamic
three-dimensional datascape,
in which you swoop in, glide
around or drill down through
elegant structures of visual and
typographic information.

In her last major interview, the director of the Visible
Language Workshop at MIT's Media Lab explained how
interactive media are revolutionizing graphic design.

By Janet Abrams

x

Muriel Cooper's Visible Wisdom

When new land is sighted, the Corps of Engineers is sent out to survey its hills, vales, caves and treacherous rocky shallows. They take theodolites and plumb lines, the tools of their trade, and hike the terrain — one step at a time, with plenty of loose footings and clumsy backward tumbles — then stand in the baking sun measuring its features. Later they translate their notations into maps on which snaking contours and numerals will tell future travelers where to climb for pleasant views, where not to steer a boat, where fresh water may be drunk. When the map is made, few who use it think of the exertions of those who trod the slopes the first time, how they read the land before a path of symbols had been laid for us to follow. Their names are scarcely known; dedication to the tasks at hand diverts them from the limelight they might otherwise enjoy.

One such pioneer was Muriel Cooper, a designer and educator who will be recognized as having charted new territory for design in the changing landscape of electronic communication.

I had the great privilege of meeting Cooper in late April and early May for this profile of her work as director of the Visible Language Workshop at MIT's world-renowned Media Lab. Those two occasions turned out to be her last major interview. Three weeks later, Cooper died suddenly of a heart attack, just as I.D. was arranging to send a photographer to take her portrait. Four hours' worth of tapes now seemed both wretchedly meager — given how much more we could have discussed — but also, under the circumstances, an exceptionally valuable bequest.

The official history of the Media Lab by Stewart Brand (*The Media Lab: Inventing the Future at MIT*, 1989) makes scant reference to this remarkable woman who was, at the time of her death, the only female tenured professor at the Lab. Three entries in the index lead to passing mentions but, despite chapter-length discussions of other departments at this latter-day Bauhaus, not one is devoted to the VLW.

And yet, when Cooper showed the latest work of the VLW at the TED5 conference in Monterey last February, no less than Bill Gates of Microsoft personally asked for a copy of the presentation. As Nicholas Negroponte, director of the Media Lab, comments, "The impact of Muriel's work can be summed up in two words: Beyond Windows. It will be seen as the turning point in interface design. She has broken the flatland of overlapping opaque rectangles with the idea of a galactic universe."

"Muriel was a real pioneer of a new design domain," says Bill Mitchell, dean of MIT's School of Architecture and Planning. "I think she was the first graphic designer to carry out really profound explorations of the new possibilities of electronic media — things like 3-D text. She didn't just see computer-graphics technology as a new tool for handling graphic design work. She understood from the beginning that the digital world opened up a whole domain of issues and problems, and she wanted to understand these problems in a deep and rigorous way."

And in her last few months, with the triumphant presentation at TED5, she had the sweet victory of knowing that she had proven her case. "Her peers had really pooh-poohed her," says Ron MacNeil, cofounder of the VLW and Cooper's closest colleague for over 20 years, alluding to the skepticism among graphic designers about the "Brave New Dynamics" she had for so long talked about but, until this year, not shown. "Conventional 2-D graphic designers use all kinds of tricks to create a sense of dynamics. We've *got* the dynamics. All those stuffed shirts were just brought to their knees. She really felt she had begun to slay the dragons."

"She sat there on stage, looking like everybody's aunt," says TED organizer Richard Saul Wurman, "and took the audience on a trip — stumbling, not particularly articulate — through the projects she and her students have been working on. So many of us know that in this next stage, the answer isn't going to be found by putting a book on the screen. Her presentation captured the dream we all have of flying through information."
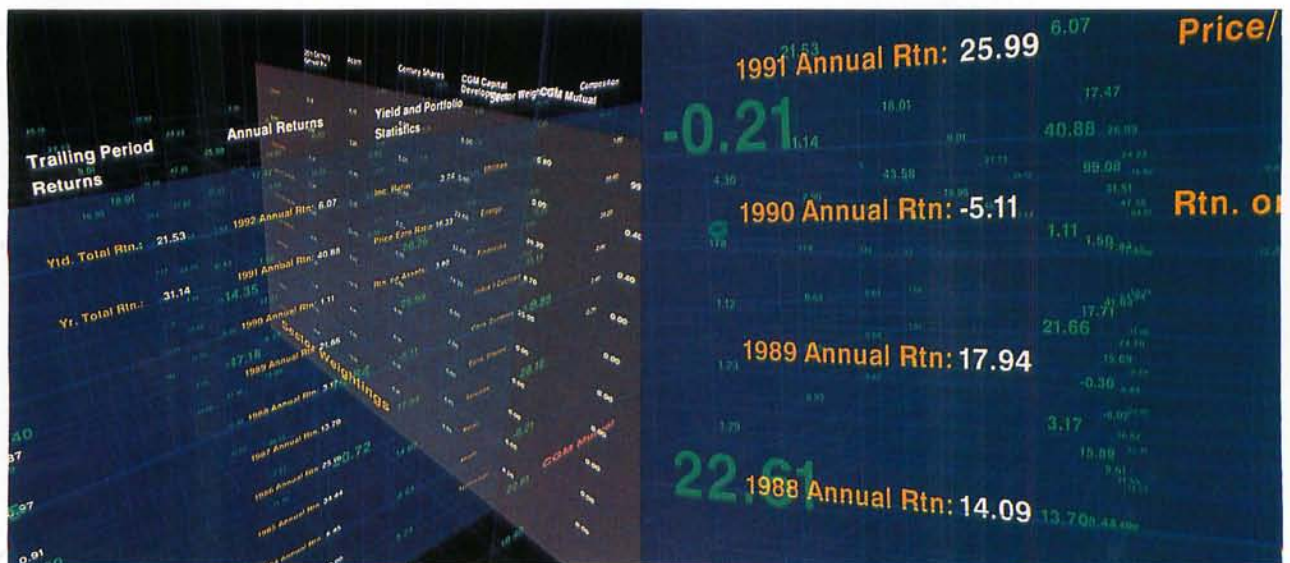
In "Financial Viewpoints," by Lisa Strausfeld, statistics about six different mutual funds are presented on an elaborate grid of intersecting planes, representing seven different attributes such as risk and rate of return. Simple numerical data can be retrieved from individual planes; bar graphs can be pulled up to draw comparisons between attributes on perpendicular axes; and profiles of the fund managers can also be consulted — their photographic portraits, like heraldic banners, providing visual texture in this rigorously rectilinear information space.

Listening to the tapes after Cooper's death, I found myself laughing out loud again at the impish humor of this gentle, gray-haired lady in baggy black sweater and pants, paisley blouse and blue-rimmed spectacles — a wardrobe that had changed in pattern but not pallette when we met again the following week. And I could easily picture her — black-and-white ankle-socked feet up on her desk — giving long, meditative responses to my questions between bites on a hand-held chicken bone (her take-out version of that day's Sponsors' Lunch) while Suki, her omnipresent black poodle, nosed around the book-lined office and eventually went to settle in the kennel under another literature-encrusted desk.

"I have a profound disdain for answers," she told me, early on, winning my instant empathy. This would be no express ride via predigested sound bites along that gleaming mirage known as the Information Highway. Instead it would be a many-branched meander through the perplexities of design in largely uncharted electronic terrain. "We do a lot of groping here," she said. "I don't think there are answers. I think there are thoughts."

We first met at the end of the week in which SIGCHI (Special Interest Group on Computer Human Interaction of the Association for Computing Machines) had just held its annual conference in Boston. The Media Lab, being tech-Mecca, still resembled Grand Central Station on Thanksgiving Eve, awash in international visitors from corporations and academe. No shy, retiring R&D shed this: the Media Lab leads a double life as a scientific research center and its own intellectual cogs-a-whirring self-advertisement: visitor tours and Sponsors' Lunches are as much a part of the daily routine as all-nighters, plastic-boxed meals and eye strain behind permanently drawn venetian blinds.

Meanwhile in the VLW, knots of lingering conference delegates crowded around the computers, watching student-run demonstrations under a clock whose quarter positions inscribe the local credos: CRASH/BURN, DEMO/DIE. Scarcely five minutes went by in front of any given screen before Cooper was interrupted by some or other high-powered telecom exec passing through.

Things were, thankfully, a little calmer when we met again the following week to talk further about the goals of the VLW, its evolution, the delicate but obviously rewarding relationships with sponsors and the excitement of current research. "This year has been a good one," she said. "I think we're on the threshold of some very, very interesting ideas."

Part of the challenge of writing about the VLW (and about the Media Lab in general, as Stewart Brand also found) is that the pioneers of this new technological frontier speak fluently in a coded language replete with terms like "anti-aliased," "bandwidth," "territory," "assertion rules" and "double precision floating point numbers," to name but a few. The uninitiated visitor sits before the screens in the penumbral Workshop, watching hypnotized as words stretch, yawn and flex, simultaneously emitting a baby's nursery yowl, or some other perfectly synchronized sound; as interpenetrating planes of financial data revolve and zoom in *Star Trek*–style deep space; as free-standing lines of type hover in this velvety-black computer universe, then come closer, revealing behind them a fuzzy colored mass that proves (on further zooming) to be another chunk of text...scarcely in focus when yet another typographic nebula looms into view in the infinite beyond.

The elegance and apparent effortlessness of these demonstrations are easy to take for granted. But the more one learns, the more complicated it gets. Only when one catches a VLW grad student switching back and forth on-screen between the demo and its underlying "code" — those hieroglyphic knitting patterns that make things actually happen on a $250,000 Silicon Graphics Inc. Onyx computer with two SGI Reality Engines attached, or a 16,000 microprocessor Connection Machine II — does one begin to appreciate the effort that goes into producing these visual feats.

"Muriel's work can be summed up in two words: Beyond Windows. She has broken the flatland of overlapping rectangles with the idea of a galactic universe," says Nicholas Negroponte, Director of MIT's *Media Lab*.

That process — making lucid what has hitherto been conceptually and visually opaque — is very much at the heart of the VLW's mission. Transparency itself is one of the core themes running through the work. "When you've made something transparent you've hurdled the wall," says MacNeil. "Someone caused it to be conceptually opaque, which means you can't get the information you need. The act of seeing through creates new artifacts."

It would be easy to see Muriel Cooper's career as having been divided into two parts: the conventional print-based graphic designer, followed by the computer graphics cartographer. Certainly, by the time she took up the computer at age 52, Cooper had established a distinguished reputation as a print designer. Among many awards, she received the second AIGA Design Leadership Award for design excellence at MIT, where she worked from 1952–58 and then from 1966–94. There she founded the MIT Office of Publications (now Design Services), and was the first Design and Media Director of the MIT Press, for which she designed over 500 books. She also created the classic MIT Press logo — an abstract play on the vertical strokes of the initial letters — in 1963, while running her own design studio.

But rather than a change of course, Cooper's shift toward computers can be seen as the continuing pursuit, via new technology, of an abiding interest: the relationship of dynamic to static media. She was, as she recalled, "always trying to push some more spatial and dynamic issues into a recalcitrant medium," namely print. Having designed the epic *Bauhaus* book for the MIT Press (published in 1969), she later made a film version that attempted a visual speed-reading of the material to escape the sluggishness of the printed page. And in recent work at the VLW, she was beginning to grapple with the converse: how to translate an interactive experience with a computer onto paper, "without just dumping" — an area known technically as "transcoding." In other words: how to turn time into space.

"Electronic is malleable. Print is rigid," she told me, then backtracked in characteristic fashion. "I guess I'm never sure that print is truly linear: it's more a simultaneous medium. What designers know a lot about is how to control perception attention, how to present information in some way that helps you find what you need, or what it is *they* think you need. Information is only useful when it can be understood."

Design skills have been honed over centuries for the organization of information in the static territory of the printed page. Two dimensions are tough enough, as the history of graphic design amply demonstrates. Now designers must contend with information arriving continuously from sources beyond their immediate or ultimate control. That is, they must find ways of creating intelligible hierarchies to manage material that can no longer be relied on to stand still, fixed in location — and hence, to some extent, in meaning — according to where it is placed on a flat surface.

Torrents of information already flow through electronic communication channels. Like the swollen Mississippi and its tributaries last summer, these streams are destined to multiply, merge and become ever more inundating. The challenge for designers is no longer just a matter of how you present data once you've fished it from the rapids. Rather, the task is to make it possible to pluck the data you want as it rushes by and eddies into something else; indeed, it is to make discernible the information you might need (before you even know it) amidst this real-time maelstrom.

The primary mission of the VLW is to develop devices and design strategies to filter this potential deluge and siphon it into assimilable gulps. Cooper and her cohorts have so far come up with a vocabulary of graphical principles for manipulating information under constantly changing conditions.

Underlying many of these "computationally expressive tools" (to quote the somewhat cumbersome VLW-speak)

The VLW visitor watches hypnotized as words stretch, yawn and flex, emitting a baby's nursery yowl; as interpenetrating planes of financial data revolve and zoom in *Star Trek*-style deep space.

are the concepts of transparency, adaptability and blur. Translated into everyday language, these terms imply, respectively, that 1) you can see right through the data, as if it were printed on glass, to sequential layers behind; 2) that if there's a change in background color in a dynamic environment, the type "knows" to adjust its own hue so as to remain legible against it; and 3) that fuzzy fields of information come into focus, and therefore become readable, as you approach them.

The nursery sound I "saw" is just one prototype of another typographical tool that opens up a whole new area of design: the conjunction of image and sound. Using this tool, the shape, size, color and translucency of type can be made to change in correspondence with a given sound and its temporal duration. Simple enough to describe. But behind these acrobatics, it takes a very fast set of algorithms to create the number of sizes required for the type to expand and contract, or what Cooper termed "on-the-fly scaling."

"In animation, there are soundtracks that give you emotional and expressive backgrounds. But it really takes a creative designer who knows both sound and type to begin to design some new form of "poster" where the sound is as integral as the visualization," said Cooper. At a basic level, this tool could be used to give an added dimension of personality as people communicate in chat rooms on the Net. What happens when this typographical sound tool is used in relation to a complex piece of information — involving text and video — remains to be determined.

Meanwhile, under the rubric of "behavioral graphics," the VLW has developed a species of "intelligent" type, endowed with its own inherent, but adjustable, physical attributes, such as gravity and bounce, for animation purposes; and "paper" whose "fibers" have differential rates of pigment absorption, allowing variable diffusion of color across its surface — physical characteristics that the computer can model, but that cannot actually be physically produced in the "real world."

A lifelong animation enthusiast, Cooper regarded this technique as a "key component to an overall set of communication vocabularies. Not as in video, not as in scientific visualization or computer animation. Just animation." Asked what is so compelling about it, she began by stating the obvious. "It moves, it tells you much more. I'm more interested in motion than character animation, though that is important as well. Did I love Disney, you mean? Was I turned on by Pinocchio as a child?"

Grinning, she paused for a moment, then revealed a rather different inspiration.

"One of the most important animators in my view was Norman McLaren. In the early years of the Canadian Film Board, McLaren made images that moved by doing this linear scratching on the cel, among other things. He also did soundtracks. They were quite marvelous."

Whatever the underlying source, Cooper always tried to have a student on the VLW team with expertise in animation. Until recently one of its sponsors was Paws Inc., the company behind Garfield the Cat, whose creator, Jim Davis, wanted to find a more efficient way of generating character animations for all the Garfield licensees, which range from Saturday morning television cartoons to cat food. The small size of the company made for an intimate and highly productive sponsor relationship that lasted about three years; among other animation issues, the VLW looked at how to build characterizations for diverse applications while maintaining quality control.

When Paws Inc. withdrew from sponsorship for its own financial reasons, Cooper was determined to find ways of sustaining the animation research. Her strategy under such circumstances was to modify the work just enough so that it had relevance to another unit of the Lab, such as the News in the Future group, and thus became eligible for alternative resources. "If we think the work is important and we have a good person but the funding goes away, then we continue to support it. To some extent we rob Peter to pay Paul, and vice versa."

The live computer demo at TED5, developed by Muriel Cooper, David Small and Suguru Ishizaki, presented VLW personnel and research projects in a three-dimensional narrative. The information can be approached from any angle, so type is sometimes reversed or even upside down. Using a high-resolution map of the world, the infinity zoom allows one to scan the entire globe, then zero in progressively on continents, cities and street plans. The TED5 demo illustrated this with a "journey" across the States pinpointing the conference site in Monterey and the VLW's location on the opposite coast.
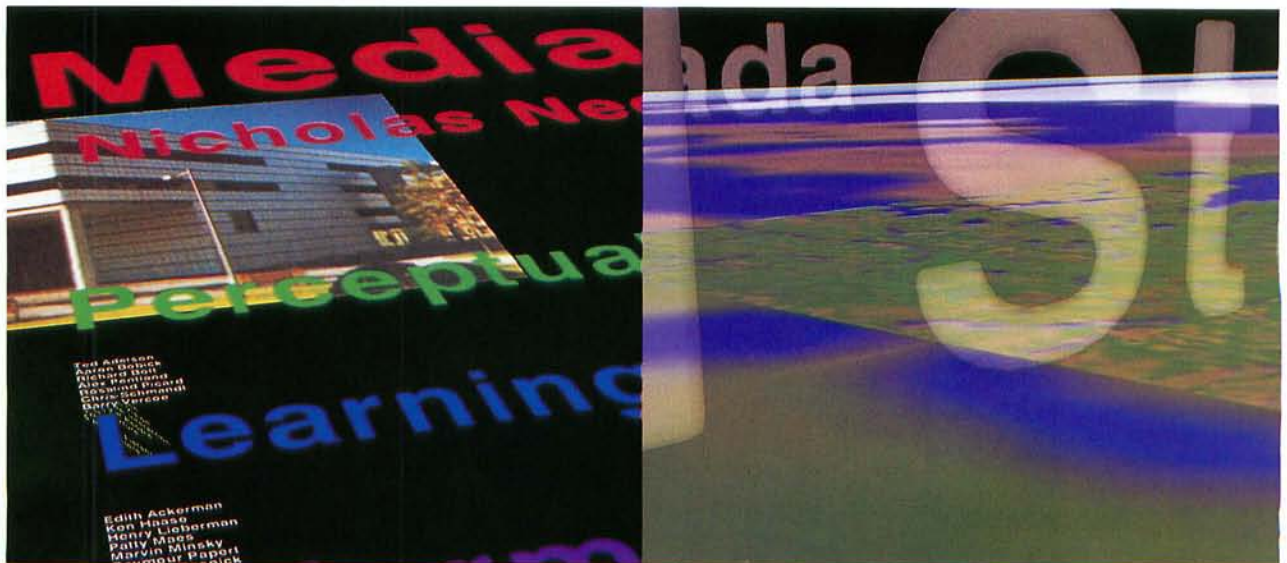
The work shown at TED5 represented a leap in computer typography, a way of superseding the long-standing cliché of interface design with a compelling new allusion. Instead of having opaque panels of information layered one on top of the other like a deck of cards (the accepted, but crude, convention of windows-based software), now, with three-dimensional graphics capable of changing size and orientation in real time, the screen turns into a cockpit windshield, admitting onto a landscape of data one navigates with the press of a button.

According to VLW research specialist David Small, the idea for the TED5 demonstration was conceived on a flight back from Japan in the fall of 1993, with Cooper and Suguru Ishizaki, another of her collaborators, and the second person to earn their Ph.D. from the VLW. "When we got back," Small recalls, "Silicon Graphics had dropped off a Reality Engine for a week for us to play with." The arrival of this machine, with its high-powered computational ability, was what propelled Cooper and her team into a new phase of typographic investigation.

"Nobody had really done high-quality three-dimensional type," Small explains. "I had always had this idea of using fast texture-mapping to do anti-aliased type: to get smooth edges on the type in any arbitrary position and size, you need a machine that can do some of that computation in the hardware."

This is where the Reality Engine comes into its own, capable of making calculations fast enough to give a believable impression of three-dimensional motion.

"Not only can you take a letter and manipulate it in three-dimensions," Small explains, "but on this quarter-of-a-million-dollar computer, you can have a few hundred words on the screen — a few thousand letters — and still do 30 frames per second. If it's that fast, it physically feels three-dimensional. Below that, and you lose the whole visceral feeling."

That feeling, as the TED5 delegates recognized, is just like flying. "Not literal flying," says Small, "but the kind of flying you do in your dreams." Looser, less controlled.

And physically impossible. A corporeal yet out-of-body experience.

"When Muriel got her hands on a SGI Reality Engine, that really was a turnaround," says professor Steven Benton, head of the Media Lab's Information and Entertainment division, which incorporates the VLW. "She started using it for three-dimensional graphics and the infinity zoom idea just blew her away. She was absolutely fascinated by being able to zoom in and out by factors of thousands, like some kind of hovercraft. Once somebody showed her what it could do, she didn't stop playing with it."
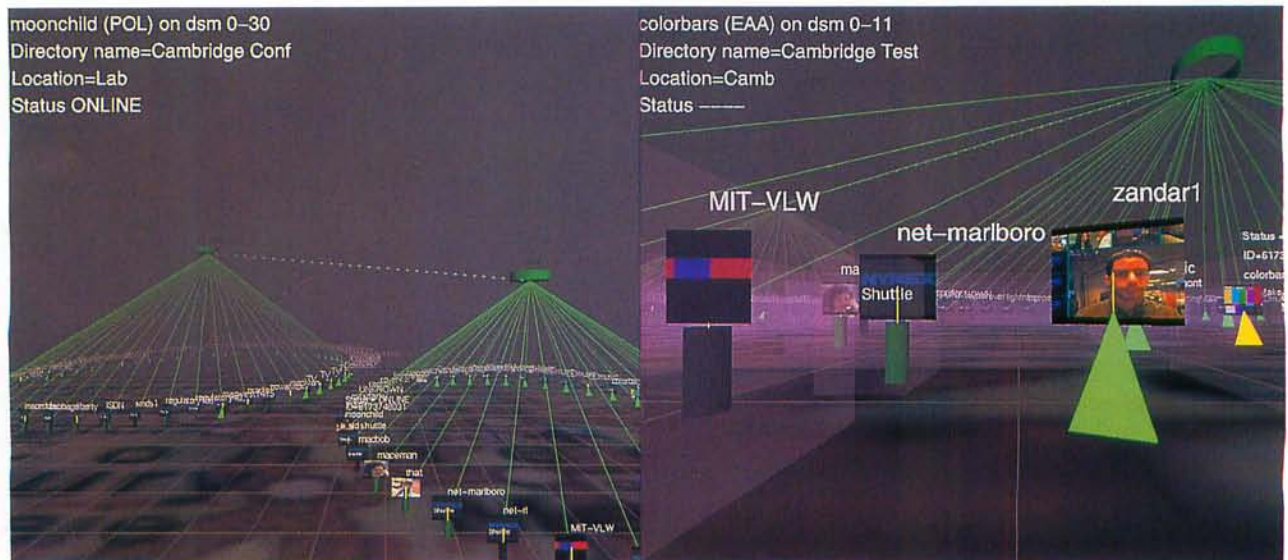
Here was a woman, hooked on computers and what they could do, yet she herself could not write "code." "I've tried to learn to program many, many times, and it frustrates the living hell out of me," she confessed. I asked several people whether it was significant that she was not a code writer.

"No. Nor is Marvin Minsky nor is Seymour Papert nor am I," came the emphatic reply from *nicholas @hq. media.mit.edu*, aka Nicholas Negroponte, referring to two Media Lab colleagues. "Muriel's difference was as a person, not that she was not a computer scientist. She saw things differently. That perspective is worth the world."

"Not only was she not a coder," says Benton, "she was not mathematical. All she knew was what she wanted to see, and she couldn't know that until she saw it." He regards Cooper as the last in a line of "pioneer artists" on MIT's faculty, including Minor White, Richard Leacock and Gyorgy Kepes.

"She was a klutz!" says MacNeil, affectionately, when asked to define their division of labor. "She was the design brilliance and administrative muscle. I was the guy that built the tools, the technical underpinning. She had learned how to think visually, to create multilayered schemes of possibilities in her head, which is what writing software is. Because she was a completely original thinker, she just refused to learn somebody else's symbology. It was just anathema to her."

An experimental videoconferencing system connects the Media Lab with NYNEX corporate offices in White Plains, New York. In this project, "Network Multiviews," by Rob Silvers, the network can be viewed as a two-dimensional plan, or as three-dimensional office architecture — giving the user a sense of where their teleconference colleagues are located in "real space." The carousellike structures of green lines represent clusters of individuals connected to the system from within their cellular offices, each of whom is visible, at the appropriate scale, in a video image.

moonchild (POL) on dsm 0–30
Directory name=Cambridge Conf
Location=Lab
Status ONLINE

colorbars (EAA) on dsm 0–11
Directory name=Cambridge Test
Location=Camb
Status ------

MIT–VLW
net–marlboro
zandar1
Shuttle

Cooper's first encounter with computer programming was a summer course run by Negroponte around 1967, while she was a conventional print designer at the MIT Office of Publications. It was not a promising start.

"Nicholas invited me and Ralph Coburn [another MIT designer] to be design shills, basically. I nearly died. We were in this big room with these teletype machines doing Fortran and there was nothing visual about anything. You had to translate any idea you had into this highly codified symbolic language that didn't make any goddam sense to me, and I was crazy."

So how did she get over the trauma of Fortran in a room full of nothing visual?

"We cheated! *Ha ha ha!*" She let out an uproarious chuckle. Negroponte recalls that the pair of them "clowned around with a simple time-sharing system, and got it to draw simple pictures with letters, overprinting for graytone."

However frustrating and bewildering that course, Cooper came out of it with "a conviction, naive as it could be, that there lay in computers the possibility of a huge amount of flexibility that the publishing procedure did not have. At that time, 20 years ago," she recalled, "you sent out for type and paid $2,000 or $3,000 a pop for a book. You could never change your mind at that price. Every time you made a design decision, you narrowed down, because the production process was closing you in. It seemed to me that something as trivial, in retrospect, as computer composition would begin to allow you some flexibility of design thinking. Remember, this is long before Apple."

Later on, Negroponte (then at the Architecture Machine Group, one of the precursors of the Media Lab) sent over a couple of Imlac machines and a pair of students to work in Muriel's department at the MIT Press, which she had now labeled the Media Department, "in the hopes that I would get into media, not just publishing." They spent nights experimenting and scoping out the idea of desktop publishing using the Imlac, which combined an eight-bit computer with a high-resolution stroke font display — an early antecedent of the personal computer. "The machine could lay stuff out: it could flow a manuscript into columns, and the kids created a few little tools that allowed you to make it wider, shorter, maybe fool with the leading. But it had no real graphical capability. Still, it was very clear to me, without really understanding computers, that there was a huge potential."

The next significant turning point was the arrival of a 3M color copier, the first of its kind. The experimental printmaker Tom Norton made a deal with 3M to loan the new machine to Cooper's department, using the MIT Press as a showcase to try selling it. "That really started off my own little Media Lab," said Cooper. Through Norton, she met Ron MacNeil, a physicist and photographer who had helped Minor White set up his photographic studio at MIT, and together, in 1978, they founded the Visible Language Workshop.

What Cooper brought to the Media Lab was a background not only as a practicing designer, but also as an art school teacher. The atmosphere of an atelier permeates the VLW; its physical layout (and hence, social organization) has influenced other sections of the Media Lab, where personal office cubicles have gradually come to be replaced by its more open arrangement of workstations. The physical environment was related to Cooper's idiosyncratic teaching style, as Small recounts.

"She was a different kind of teacher: very reluctant to tell you what to do. Once you've started with the assumption that there's no right or wrong way of doing anything, what becomes more important is getting students to think on their own. Muriel set up the right kind of environment for that: the space encourages interaction. Even naming it a workshop, not a lab, was important."

Cooper appreciated the skills of designers and programmers in equal measure, and at the VLW nurtured a cadre of people possessing both — graduate students,

"When she got her hands on a Silicon Graphics Inc. Reality Engine, that really was a turnaround," says Professor Steven Benton. "Once somebody showed her what it could do, she didn't stop playing with it."

Muriel Cooper's Visible Wisdom

55 ◀ pursuing either a Master's or Ph.D. degree in Media Arts and Sciences, and research associates. Only 10 or so students are enrolled at any given time, and they are recruited from all over the world, from diverse backgrounds that may include some design, though this is not a prerequisite. Those not already fluent in computer science are expected to acquire sufficient software skills before they arrive.

"My model is very much more an art school, or a design school, where you don't give recipes for things," But it's not purely a studio, because there's a lot of rigor in making a machine do something you want it to do."

As is the case throughout the Media Lab, VLW projects are supported by sponsorship from government departments and an array of international media conglomerates, hardware and software companies. The work shown at TED5, for example, was funded by NYNEX, the Joint National Intelligence Development Staff, the Department of Transportation, Alenia (part of an Italian aerospace and electronics company), the Advanced Research Projects Administration and the News in the Future Consortium (a cluster of some 20 sponsors that runs the gamut from Advance Publications to Ziff-Davis).

Sponsors generally fund experimental research that would be too expensive to support in-house; in return, they get the rights to advanced concepts from which they can then develop commercial applications. "It's cheaper for them to sponsor us than to set up a laboratory to explore ideas that may or may not work," said Cooper. "We make mistakes, and it's less costly for them to see our mistakes. So in fact this place is more of a crucible than a crystal ball. They can take code away but they understand it's a group of concepts."

The Joint National Intelligence Development Staff approached the VLW to find more efficient ways of sifting through vast amounts of information, and turning it into reports of various lengths, from long-term research to short-term executive briefings. "One of the things we made very clear with these people in the beginning is that we would not take on secret information. This is an open shop. So we're working with news. You know what one of their major news sources is?"

The answer is about as far from the realm of spy thrillers as could be imagined.

"CNN! If all we did was find a new way to browse and gather and generate new information out of CNN material, the intelligence agents would be happy."

With "spooks" as sponsors, issues of command and control implicit in all VLW work — who gets access to information, how fast and to what end? — are perhaps more apparent than in projects sponsored by entertainment or publishing enterprises. This is clearly sensitive terrain, but Cooper endeavored to clarify her ethical position by drawing a careful distinction between the graphical representation of data and its semantic content.

"The electronic environment seems to me to have significantly different characteristics than any medium we've communicated in before. There are problems that come out of that. Information to me, on one level, is information. A table to do with tanks and a table to do with poverty in New York City are both statistics, and to some extent they're both content-free. That is not to say the real subjects are content-free. Content makes a *huge* difference. But the visualization of numerical statistics is a formal design problem that can be dealt with no matter what the subject. As far as the Command and Control stuff goes, I try to make generic information environments that we can study, and they can use for whatever they damn please."

Ron MacNeil recalls a visit to the VLW by General Max Thurman, who had led the Panama Invasion, during one of the Media Lab's ARPA open days, which are among its more elaborate "full-dress" demonstrations. "We were very sensitive about not having aspects of standard military language in the demo, so we modeled moose migrations. We were trying to show ways of interacting with this graphical environment using objects on the screen that had some intelligence: you could tell them to do something by pointing, drawing and using hand gestures. So we had these wonderful creatures — an endangered species — roaming the screen. After a while watching the demo, General Thurman said, 'Enough of the mooses. Show me the Ruskies!'"

Driving to her house, to fetch tapes she had forgotten to bring in for a colleague, Cooper talked about several epiphanies that changed the direction of her career. There was the spring-cleaning when she went through a closetful of carefully saved pieces of graphics, and realized that she didn't care about any one of them "because they didn't have much content." That propelled her move from graphic design into editorial design, but in time, she grew frustrated by book design as well.

"Too often the role of the designer is to clothe a set of messages they've had no participation in. Here is a book. You didn't write it. You don't change it except in so far as you present the information somebody else has generated. You're not really collaborating either, because the
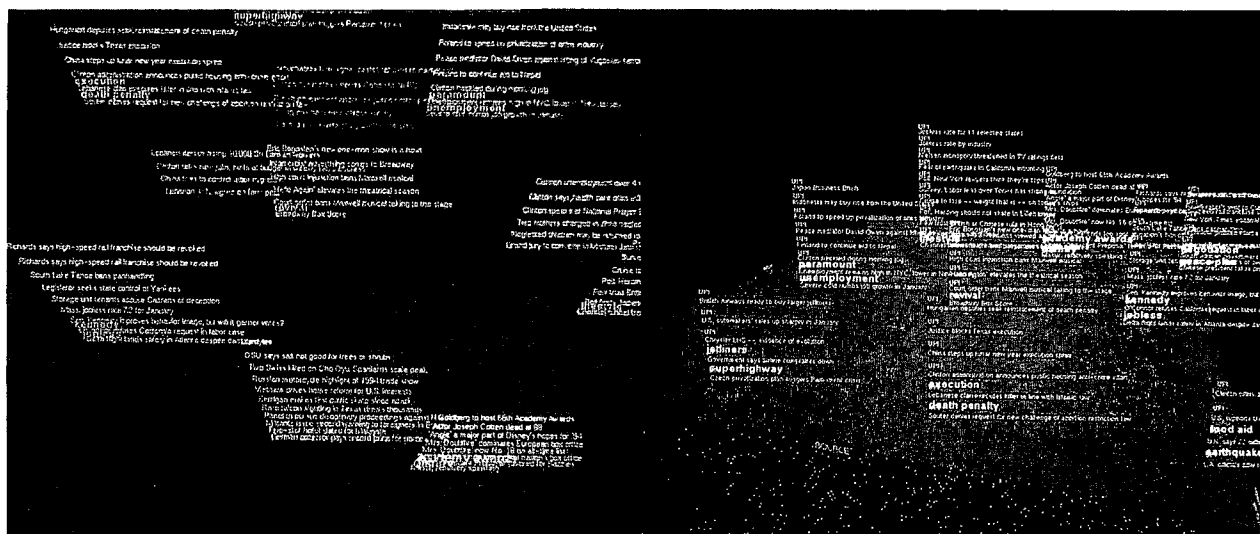
stuff is there, an accomplished fact. I decided I had to wash that out of my head and impose my own problems."

After several years gestating a text, authors tend to have their own view of what their book should look like, which can lead to some interesting battles of wits. "I had that experience in spades with Denise Scott Brown and Robert Venturi," Cooper recalled, speaking of the original edition of *Learning From Las Vegas*, published by MIT Press in 1972. Cooper even proposed a bubble-wrap cover, in homage to Las Vegas's glitz — a suggestion the authors firmly rejected.

"What they wanted most was a Duck, not a Decorated Shed. I gave them a Duck," Cooper went on, referring to the dichotomy between two types of symbolic architecture posited in the book, the former being a literal representation of its function. "I thought: 'God, this is wonderful material. I'm not gonna let them screw it.' *Hah*! You should have seen it! Well, they hated it! I loved it."

Denise Scott Brown, for her part, remembers "a plain disagreement of philosophy between us about the design, and a strong diversion between its content and its cover. We had a tug of war all along. She was still into Bauhaus design, when that was the very thing we were criticizing in the book. In the end it's a Bauhaus book on the inside, and a proto post-modernist book on the outside."

I wondered whether Cooper had writing ambitions of her own.

"Yes, I would like to write a book. I always use Gyorgy Kepes's *The Language of Vision* as a model."

What would it take for her to write the book? Without missing a beat, she answered with another question.

"A brain transplant?"

On the way back to the Lab, Cooper reminisced about early teaching at the Massachusetts College of Art, where the students "froze" when faced with unfamiliar technology, but sprang to life in a class doing interactive printmaking — rotating the plates, changing the fonts and the inks as it moved through. That experience clearly catalyzed her belief in using technology as "a partner in

the creative process."

She also talked, hesitantly, about what it was like to be a woman in what is still predominantly a man's world. "I think that's been something of a problem in the Media Lab, though it's changed a lot. You start a meeting and — unless you're much stronger than I am — the conversation almost inevitably dissipates into equipment discussion. And they couldn't be happier. But I'm a terrible toy freak, too. I love little computers, lots of audio-visual equipment, you name it. As one of my old friends used to say, 'Remember, there's no depression so deep that it cannot be solved by a new piece of equipment.'"

At one point I asked if she minded telling me her age.

"No. 68. Much to my surprise."

How old did she feel?

"About 13. I don't know. I'll walk down the street and look at myself off chance in a reflection in a mirror or someplace, and I'll think, 'Oh, my Jesus, who is that person?' It has very little relation to how I feel. Most of the time."

She suddenly drew pensive. "Does it matter? I don't know." She paused. "Do I have to have this in the article?"

I said it was up to her.

"Well, I'm a little superstitious. In the sense that there is an awful lot I'd like to do. The worst thing about age, never mind the small indignities of wrinkles and bone loss and possible glaucoma, is that" — and here she raised her voice to a clarion call, addressed to herself — "you damn well better get going. Because you don't know what's going to happen."

Did she consider herself a success?

"On occasion. Has it made a difference? Some days I think it might have. Other days, I think not at all. There's a lot to be accomplished." ✦

Muriel Cooper was awarded a 1994 Chrysler Award for Innovation in Design as this article went to press. The $10,000 prize will go toward an endowed chair in her name at the Media Lab, founded by her colleagues and students.