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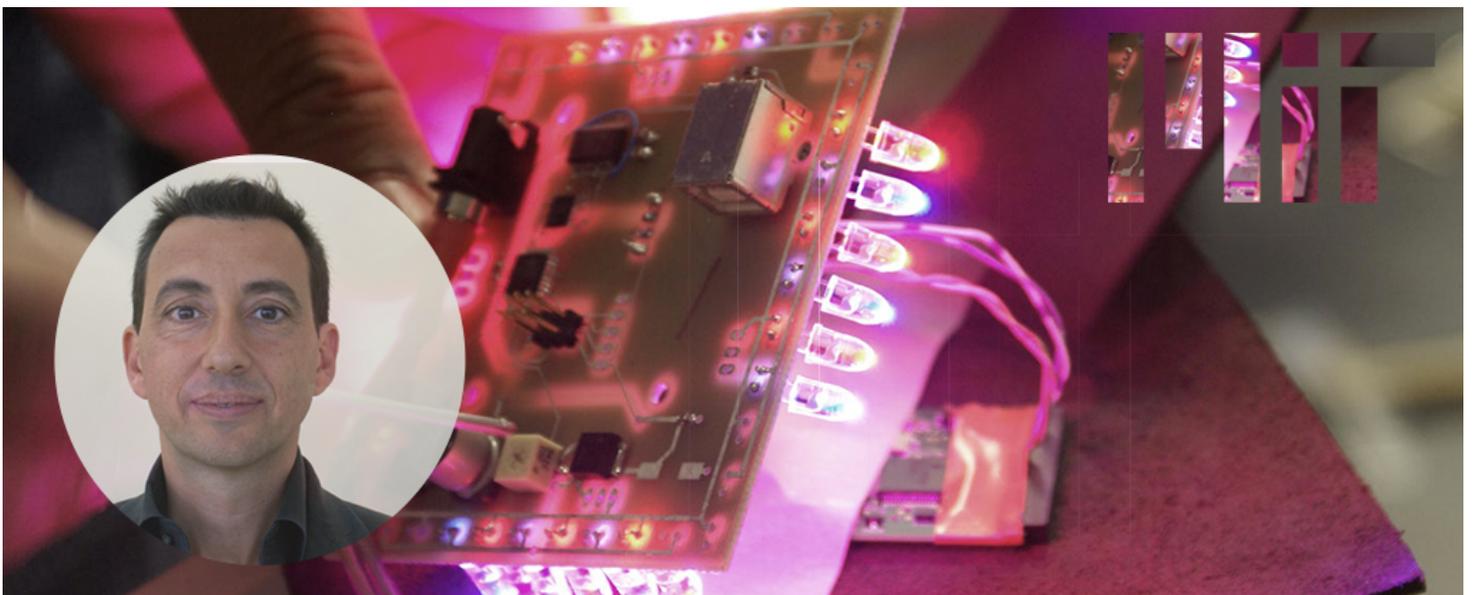
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DESIGN

To create great designs, he always begins with problem making

A meeting with Federico Casalegno





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We met Prof. Federico Casalegno, founder and director of the Design Lab at the Massachusetts Institute of Technology (MIT)

What is the best way to meet human needs with technological innovation? For Federico Casalegno, it requires creating technologies and services for humans, not expecting humans to adapt to technologies created in a vacuum, for their own sake. To succeed begins with understanding society, culture, and behaviors.

How did you get to where you are today?

My intellectual and academic background is in the social sciences and design. My primary interest was to understand human behavior in the context of the evolution of new technologies, and I wanted to model how this would affect society. While earning my PhD communication science in Paris with Michel Maffesoli—a groundbreaking sociologist who studied human relationships and connectivity in communities—I began to work with Philips Design in Holland, which at the time was a leader in applying design thinking and user-centered design to make innovation thrive in a unique way. In 2000, after getting my PhD, I came to MIT and began to work with the late Bill Mitchell, who pioneered the integration of design with computing and other technologies. Together, Bill and I created what is now called the Design Lab, where I've been ever since, leading applied research and design projects.

How did you perceive the difference between the social sciences you were studying and the technology-centered design field in which you were working?

I see design as playing a distinct role in advancing knowledge and creating human benefit—a role that complements science and technological innovation. This does not happen automatically: for design to fulfill this role, designers must concern themselves with the social, cultural, and spatial situating of technologies so they optimally meet specific human needs.

How do you use design thinking in your work?

People typically define “design thinking” as a method or process for solving problems creatively and

practically, usually by matching human needs with something technologically feasible. We come at it differently in the Lab, setting as our starting point not problem solving but problem making. In other words, our first step is to try to understand the complex experiences and needs of humans and from there identify—or make—what the problem really is. Only then we switch to exploring how to create a solution. Taking this approach means never starting with an engineering or technology perspective and simply converting it into a specific solution, which I believe makes our designs truly human-centered. It is important to point out again that we always begin with problem making. If a company comes to us and asks us to design a car, we push back. We don't reject the car as a solution; we want to explore the problem before embracing that solution. When we do that, we make tremendous discoveries that can lead to truly human-centered designs: for instance, that the problem is really that the mobility system needs to be redesigned, and that a new car may not even belong in that system. I wouldn't go so far as to say ours is a completely unique method, but it is how we work. We have a set of tools we use that enable us to understand human needs and behaviors: we capture information, create what we call an "experience map," and from there we ideate, prototype, and then deploy. It's always an iterative process, and we creatively design the tools that we need to understand, prototype, or deploy customized solutions.

How do prototyping and deployment inform your work?

In all our work, we embrace the MIT motto: Mens et manus. It means "mind and hand."

Ours is not a laboratory doing basic research; we design and make things to be deployed in the real world. For us, it is fundamental to merge advanced research—often our own—with hands-on work, and so from ideation we go on to active prototyping at all levels, which we see as a way to think, trigger ideas, and imagine new solutions to what we have "made" as the problem. We are very comfortable with all sorts of prototypes, everything from the infinitely small to the relatively gigantic. For instance, we do a lot of work in bio-design and so have prototyped bacteria. We've prototyped small physical objects using bacteria as sensors, wearables devices, a full scale sustainable home and large physical spaces – a 250-square-meters branch for a bank where we tested spaces and digital experiences. This has been at the core of the Design Lab's activities from the beginning: we have always prototyped and deployed as a way of learning, critically thinking, and experimenting. Making is embedded into our critical approach and ideation process, and we use prototypes as a way to create and invent, as steps in the direction of a solution.

Why is this particular design approach so important today?

Once upon a time, management consultants established a model: there is a problem—we know what it is—and here's the solution. That same approach doesn't really work in design, but yet it has persisted in much of the design world. Human society is far too complex for such simplistic linearity. Our approach to design thinking actually takes account for all the aspects of that complexity, which is the outcome of a synergistic relationship between physical space, human behaviors, existing technologies, and so on. Our approach requires adopting the perspective of problem making in an ecosystem as a way of finding potential solutions, whether they are products, services, technologies, or whatever. We don't design products, but ecosystems of these relationships.

How do you go about doing the research you've described? Do you ask people what they need?

Our research never involves the “user surveys” that so many designers glorify. We are absolutely devoted to understanding needs, but we never ask people what they want. As a famous quote attributed to Henry Ford (that he probably never actually uttered) puts it: “If I had asked people what they wanted, they would have said faster horses.”

How, then, do we understand needs? We do so by observing people. Our research approach, which comes from my training in the social sciences, is qualitative, ethnographic research. Market researchers ask you what you think you need—and often do so in ways so directed that it leads them to the answers they've already decided they're seeking. In contrast, we observe and listen. We don't construct specific, highly practical surveys. Our goal is to uncover behavior of others.

The user survey approach results in quantitative, statistical measures of wants. Our approach uncovers true behavior that can inform human-centered design, because we are inspired by all the silent signals that emerge in a living society that is in continual flux but at the same time exhibits foundational things that matter to our work.

Observing, talking to, and empathizing with people are how we build up our understanding of the world, from which we figure out the problems and design solutions. We never ask people what they want as a solution. And when we do design, we always concern ourselves not only with how humans and technology will interact, but also most importantly with how humans will interact with each other.

It sounds as if you are pushing the boundaries of design with this perspective. I'd go farther than push: I

believe that design, by its very nature, breaks boundaries. That is why the Design Lab is organized as a collection of multidisciplinary research and project teams that are consciously unconstrained by the traditional boundaries between the design, planning, and engineering professions and disciplines.

This, though, is not about making sure all the relevant disciplines “touch” our work, but about melding disciplines together so that the contributions made by project participants transcend their individual disciplines. We also break boundaries by involving so many of the emerging possibilities afforded by new information technologies; new material, fabrication, and construction technologies; new ways of providing functionality at micro and nano scales; new techniques for engineering biological materials and structures; and new planning and management strategies. And we work with these at every imaginable scale.

At the end, then, what is most important for a designer?

A designer has to be a leader. A designer must have a strong attitude about what design as a discipline is, where designs should come from, and what purpose they should serve. A designer must be informed by the real world—not a perceived, statistical world—precisely because the design is for that real world, a real world not of statistics but of people. I do not want to leave the impression, though, that everything we do is about combining social science and technology. Design is also art. The aesthetic is an important and characterizing element of design. We not only design beautiful things, but the elegance of the solution—the balance between form and function—is also part of the project, reflected across all phases and outputs. Both aesthetics and elegance are core functions of every object, interface, and design, of every product and every service. We aim through design to deliver not only a solution to a real problem, but to deliver a delightful human experience.

Federico Casalegno, Associate Professor of the Practice, is the Founder and Executive Director of the MIT Design Lab at the Massachusetts Institute of Technology, SHASS, CMS/W. He has been awarded honorary professorships by the Glasgow School of Art, University of Glasgow and the Jiangnan University School of Design in Wuxi, China. Prof. Casalegno holds a Ph.D. in Communication from the Sorbonne University, Paris V, and he is the founder of Innovation by Design, a consultancy design studio based in Boston, Milan and Seoul.

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