Interview

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By Pau Alsina, Professor of Humanities and Philology Studies (UOC)

Abstract

In this interview, William J. Mitchell, a renowned US architect and theoretician, and former Dean of the School of Architecture and Planning at MIT, explains his theories on the redefinition of space determined by the changes brought on by IT in society and culture, the relation between networks and architecture, the merging of both virtual and physical spaces, the effects of mobile technologies on the perception of distance and space, the economy of presence in terms of the changes produced by IT, and the re-evaluation of place.

Keywords

architecture, spaces, art and technology, networks, mobile networks, augmented reality

William J. Mitchell is Academic Head of the Program in Media Arts and Sciences, Professor of Architecture and Media Arts and Sciences, and holds the Alexander W. Dreyfoos, Jr. (1954) Professorship at the Media Lab. Formerly Dean of the School of Architecture and Planning at MIT, he also directs the Media Lab's Smart Cities research group, and serves as architectural adviser to the President of MIT.

He teaches courses and conducts research in design theory, computer applications in architecture and urban design, and imaging and image synthesis. A Fellow of the Royal Australian Institute of Architects, Mitchell taught previously at Harvard's Graduate School of Design and at UCLA. His most recent book, *Me++: The Cyborg Self and the Networked City* was published by MIT Press. His earlier books include: *E-Topia: Urban Life, Jim—But Not*

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As We Know It; the edited volume *High Technology and Low-Income Communities* (with Donald A. Schon and Bish Sanyal); *City of Bits: Space, Place, and the Infobahn; Digital Design Media* (with Malcolm McCullough, two editions); *The Reconfigured Eye: Visual Truth in the Post-Photographic Era*; and *The Logic of Architecture: Design, Computation, and Cognition*.

Many of us have avidly read your books, works and reflections on the intersection of art and technology in architecture and how this has developed in terms of computers and the new, constantly changing, computer technologies. One of the highlights of the interesting relationship between art and technology is a discipline with long-established roots: architecture, a key intersection between the arts and technology. How do you think it has changed in terms of computer technology? How is architecture evolving and changing?

Architecture has changed in many ways, but one of the most obvious things that has happened is that the use of computer graphics technology, of CAD systems and that kind of thing, has opened up the possibility for architects to create buildings that are much more complex in their forms, that have curved surfaces, that have non-repeating patterns. For example, and actually not so far from here, in Bilbao, the Guggenheim Museum by Frank Gehry, is a building that would have been completely impossible without the computer. It required the computer to design it. Likewise, the construction process required computers, CAD/CAM is used to fabricate the steel and metal work, and then laser positioning devices are used on site for the layout and positioning, and so on.

This has opened up the possibility for architects to think about buildings in completely new ways. But this is just one of the many, many things.

Another thing that has become possible is a much more sophisticated technical analysis of buildings. So, for example, before the computer, there were no high-rise buildings, no skyscrapers in downtown Los Angeles, and the reason was because of the earthquake problem—nobody felt it was safe to make high-rise buildings. But with the much more sophisticated, very computationally intensive analysis that you can do with a computer, you can, with some considerable confidence, now engineer and build these buildings.

So fundamentally, what it has done is open up new possibilities for architects. Things that were impossible in the past now become possible for architects.

In your book *e-topia* you establish a relationship between digital networks and architecture, an idea you had already worked on in *City of Bits*. How do you study this relationship between digital networks and architecture?

The fundamental thing, as you know, is that they change the way space is used and the way that buildings work. It used to be that the activity of banking was conducted in physical spaces, in small banks on main streets of towns and cities, and all of the functions of the bank were accommodated, so you went to the bank to get money, to deposit money, to interact with the bank manager and so on. What has happened now in the age of computer networking is that the need for that entire type of building has disappeared. You can use automatic teller machines to get cash anywhere, so this is a distributed network, or you can use electronic home banking systems to conduct transactions online. The back-office work is no longer conducted locally; it is conducted in some back-office processing centre or in some foreign country connected by network through e-commerce, and so on. So the demand for space keeps changing.

This university is a very good example of this. A traditional university requires a campus. It requires a lot of space, a lot of buildings. This university actually does not require less space probably, but distributed in a different pattern, so all of the students occupy a small fragment of space, and probably private space, wherever it is. So it is a completely different spatial pattern. You can plan this over and over again with different building types. As you know, in *City of Bits* and *e-topia*, I discussed this process that I called fragmentation, and the recombination of building types and urban patterns. So it used to be that the university campus was a highly centralised thing, and now it is fragmented and recombined with other kinds of space, with domestic space, with office space and so on.

People still need space – your body is still here, you still need a chair. You still need the space. This process of fragmentation and recombination has happened.

Architecture is also to be found on the internet. What do you think of the metaphors used to describe the Web and the technologies that make it up as an architectonical space?

There is a traditional pattern that you see when new technologies emerge. They are often understood in terms of earlier technologies. So in English, and I don't know about Catalan or Spanish, but in English the automobile was first called the «horseless carriage», so it is like a carriage without a horse, and the radio was first called the «wireless telegraph», it is like a telegraph without wires. So these things were understood in terms of the earlier technology, and the language reflects that and when you find language like «virtual room» and this kind of thing, it is the same kind of thing, exactly the same kind of linguistic construction.

Once you understand the technology a bit better, you begin to break away from these initial metaphors, I think. So we no longer think of an automobile as a horseless carriage, it is a crazy way to think about the automobile. I think the same thing has been happening with the Internet – we began to understand it in terms of these metaphors from architecture, but I think we are transcending those metaphors now. There is no architectural equivalent of Google, for example.

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And what is also interesting is this relationship between the virtual and the real, these new places. Is this what you call «e-topia»?

Yes, that's right, because in Greek, of course, «topia» just means place, and so what «e-topia» means is electronically mediated place. There is also a pun in the title, because in English «utopia» means an ideal place, so by putting «e» in front of it, it remains agnostic about whether it is good or bad. It is just electronic, but who knows whether it is good or bad.

One of the key ideas in *e-topia* and one of the key ideas in my new book called *Me++*, which comes out in a few months, is that, in fact, there is no clear distinction between virtual space and physical space. So virtual space always gets overlaid on physical space and the important thing is the way the two work together. In the early discourse on the World Wide Web there was a lot of discussion in terms of the real world and the virtual world and they were regarded as completely different things, but of course they are not. Your body does not go away when you surf the web. It matters where you are. And so I have been very interested in the way these two things work together, physical space and virtual space.

A couple of months ago I was talking to Peter Anders, who was trying to build buildings that integrated virtual and physical space. Could this relationship between both spaces lead to a new kind of truly integrated building? Likewise, I recently saw an exhibition at ARS Electronica called «Hidden Worlds», focusing on augmented reality, could this be a kind of augmented reality?

Yes. In fact, I think what we have called «augmented reality» has been around for a long time. I think, for example, that radio overlays electronic acoustic space on physical space, and this really changes the space in which things are happening. But now, of course, what is happening is visual overlay in augmented reality. We have had audio overlays for a long time, but now the visual overlays are coming. Yes, this is a very good example, I think, of the combination of physical and virtual.

One thing that I really find interesting is when you talk about networks and these new kinds of network that have singular routes. What does this digital network offer us that other networks did not?

I have argued in *e-topia* that all networks have this fragmentation and recombination effect. At the beginning of the book I talk about the difference between the village well, which is a centralising kind of thing—activity is organised around the village well because people have to come to it—and the introduction of a water supply network. You take the activity of bathing, which is, in a traditional village well structure, centralised and sometimes public, because this is the only place it can happen, but then houses get

private bathrooms when the water supply network comes. This produces a different kind of spatial pattern. This has to do with what is supplied by the network, in this case, water, and, thus, the possibility of washing and cooking and so on.

Of course what the Internet does, as an information network, is fragment and recombine those activities that depend on information.

I mentioned banking; banking is pure information really, it is a pure information activity. Retailing: things like Amazon have changed the pattern. Not that it becomes non-physical; Amazon still has huge warehouses, and transportation is still very important, you physically have to get the book to where it needs to go and so on, but it has changed the pattern.

And then, of course, this university is an example of the way that these networks change the way that a university can organise itself spatially. It is really very interesting.

So what architecture does is try to build buildings and houses that reflect human living patterns, new human living patterns? And now, architects have the task of creating new buildings where people can comfortably live their lives.

Yes. A good way to think about architecture is as a system of enclosures and networks. So this room is an enclosure, and protects us from the weather and provides acoustic privacy and some other kind of things. Then, it is supplied by networks: there is an electrical supply network, there is an air network, there is an information network. What has happened historically is that buildings have acquired more and more sophisticated networks. So before the Industrial Revolution, most buildings had no networks, nothing, just the shell, just the enclosures. And then with the Industrial Revolution came water supply, energy supply, heating and ventilation, all of these kinds of things. So you can see how buildings acquired a kind of mechanical physiology at this point.

Now, along with these kinds of information networks, buildings also acquire a kind of nervous system. So all these things, all of these pieces—the enclosure, the different kinds of supply networks, the addition of intelligence—work together as a kind of nervous system.

You also talk about a new economy of presence where information is becoming increasingly important, where the virtual becomes real, and the real, virtual. The new economy of presence is changing, what does this mean?

Well, it is very obvious in the context of this university, but there are now many ways to make yourself present: you can do what we are doing right now, which is face-to-face and synchronous, which is very good but extremely expensive and difficult to arrange—I had to fly across the Atlantic to make this possible. There is, let's say, video-conferencing, which is still synchronous, but spa-

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tially distributed. Then you get things like, for example, if I pin this on a notice board, I can go away, we transfer the message in an asynchronous way, you can come along later and read the message—at the same place, because I left it in that place, so it is spatially connected. Or things like e-mail and the web, and all of the things this university really depends on are both asynchronous and spatially distributed.

If you take something like e-mail, it is not as good for most purposes as face-to-face interaction, but it is much cheaper and much more convenient, it is asynchronous. So what I stated in terms of the economy of presence is that there is not a simple replacement. One thing does not replace another, but we continue to make choices in our daily lives from among these different modes of communication. We try to find the right kind of mixture and the right kind of combination, and there are very interesting combinations. So when I ask people, typically in an audience, when I talk about this, «what's the most common use of e-mail?», for most of them it is to arrange face-to-face meetings. And this makes absolute sense, because you use low cost asynchronous interaction to organise very high cost synchronous interaction. Because the most precious resource we have is space-time, so you use the other kinds of communication to optimise the use of it.

That's the economy of presence: this idea that we use all of these modes, which have different cost structures and values, and we are constantly making choices from among these modes of communication.

Likewise, this means that there are changes in education and in the meaning of public space...

Yes, it does. And the other very interesting thing for me is that people used to assume that these modes of communication were mutually exclusive. So if you are making a telephone call you are not interacting face-to-face, or if you are typing an e-mail message you were not doing something else. Actually, what is happening now is that a lot of people, particularly young people, are using these things simultaneously. So if I go into my daughter's dormitory room, for example, I find a group of people there, so there is some face-to-face interaction going on, they have their computers going and are sending e-mail and sending chat, instant chat, and they are talking on the telephone, and all of these things are happening simultaneously, so you get these very complicated combinations happening… Yes, multimodal and multitasking, very characteristic.

And this has led us to what you call the quality of the place, and the re-evaluation of place as a key subject in Knowledge Society... What do you think of Barcelona in terms of this quality of place?

I think cities like Barcelona have a huge advantage in this era, if you have a good climate and good cultural conditions, interesting surroundings and the possibility of recreation, and these are all things that Barcelona does have. There is a very high quality of life and a very good climate, which makes it extremely attractive in principle as a talent magnet. It used to be that you needed to be near the centre of technology or you needed to be near where a particular resource was produced and so on, so that was what determined people's location. But now, there are a lot of circumstances where you can work… From the point of view of the work it does not matter where you are, but from the point of view of you it matters a lot. So I can do my e-mail just as easily here in Barcelona, as I can do it in an office at MIT, but maybe sitting in the sunshine here is a lot more pleasant for me.

Interestingly enough, people used to think that electronic communication would mean that anything can happen anywhere, but that is not what happens. What really happens is when you have freedom of location you choose the places that have some special quality that are attractive, that have high quality of life, that have good climate. So I think it increases the value of really high quality places and decreases the value, let's say, of low quality places from a human point of view, so there is a kind of amplifying effect on the quality of place.

And so in that context Barcelona is fantastic. Cleveland, maybe, not so fantastic. Texas…

Right, so, does this have some kind of relation with the ArchNet project you have been working on, a way of cooperating and working together around the globe, and the Virtual Design Studio? Are new ways of organising individual and collaborative work on the horizon?

Yes. I am interested in using electronic technology not only to replace physical places and physical campuses, but actually to do things that are impossible in these contexts. So, one of them I mentioned to you briefly, and I am not going to describe it again, is to teach students to deal with cultural differences. In design this is very important, because people from different cultural contexts frame problems differently, have different priorities, have different values that they bring to the table. One of the most important skills of a designer in a globalising world is to understand how to work in different cultural contexts. So my friend Frank Gehry, for example, has an office in Santa Monica, but he does projects here in Catalonia, so he has to understand the cultural context very well and we need to train students to be able do this.

One very effective way to do so, is to create design projects that students work on cooperatively, in teams scattered around the world. So you might have students in Japan working with students from MIT, for example, and they have to negotiate the cultural differences and figure out how to work together and this is an extremely important part of the learning experience. As they are not on anybody's home territory, but because it is in cyberspace, neutral space, nobody has the home ground advantage; they really have to figure it out.

One example is, MIT students typically are very articulate verbally, very aggressive verbally, very direct: «This is wrong», «This

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is right», that kind of thing. Whereas Japanese students are exactly the opposite, they are very indirect, they'll never say no directly, they are not confrontational… So how do these groups of people try to work together when they are not in one place or the other? Because if you are in Japan—if I go to Japan—I adapt the style, out of cultural deference and so on, or if Japanese students come to MIT they quickly learn to be much more aggressive and direct. But when they are interacting in virtual space it is nobody's home territory, so it makes the cultural differences very obvious and they need to work these things out. This is an extremely interesting thing. So this is one thing.

The ArchNet project has a different set of interesting factors. The idea is that there be a bottom-up collection of intellectual property and that it be available on a broad scale. It is a new mode of research. At the core of the ArchNet is a huge image library and architectural work, and the idea of ArchNet is that everybody has digital cameras and can very effectively document the work in their own areas. Students in Barcelona might document work in Barcelona; students in Boston might document work in Boston, and everybody puts it into a central online repository, so the whole thing adds up very quickly to a very large-scale resource.

It is a very effective way to divide labour. Because in the old way, before the electronic era, every school of architecture had a slide library of 35-mm slides, and every school spent their resources trying to duplicate essentially the same collection. It was very inefficient.

Could you tell us more about your new book, *Me++*? It is related to the cellular and mobile technologies, and how these are changing the conception of space.

It is about the combination of wireless technology, miniaturisation and mobility, these three things coming together. The mobile phone is an extremely good example of this, because the telephone used to be part of the architecture, it was attached to the wall, and a telephone call was place-to-place, you knew probably where the phone was going to ring, but you did not know who was going to answer it.

Now it is completely the opposite. Now the telephone is part of your body, it is in your clothing, it is in your pocket, and telephone calls are person-to-person, you know who is going to answer, but you do not know where they are. So it is the exact reversal of the situation. Everybody knows now, particularly here where everybody has a mobile phone, that this changes the social

use of the communications technology in some very, very fundamental ways.

It also has to do with miniaturisation, so it is not only that these are wirelessly connected, it is also that they are small. If they were big, if you could not move the thing, then wireless connection would be meaningless.

Likewise, it also relates to mobility. If people did not move around, it would not matter that you could not be wirelessly connected. If you sat in your office all day then you might as well have a wired phone.

So this combination of three things is what *Me++* is about and the way it produces different patterns of use of urban space, the way people use the space differently. A very good and simple example to help understand this is to think about how people arrange meetings in cities. If you think about a traditional plaza or a traditional piazza in a traditional town, for example, usually the way these things worked in most countries—I think in Spain, certainly in Italy this is the case—people traditionally would show up in a piazza at a particular time of day, and circulate around, and you would bump into everybody and you would do your business and so on.

Now, the piazza looks exactly the same, but people just call up and chat on their mobile telephones, right? And they say they will meet at a certain café. So it is much more ad hoc. It is a much more flexible schedule. You still need these meeting places, you still need these identifiable meeting places, but you use the electronic technology to coordinate the meeting and, thus, the use of the space is very different. In places I know in Italy you do not see this traditional walk around the piazza in the evening so much, it is very different.

Many thanks for your time and for your answers. It has been a pleasure to talk to you. We will keep reading your books and trying to understand the redefinition of space within the Knowledge Society. I hope you enjoy your visit to our university here in Barcelona and hope to see you back here again soon.

Related links
William J. Mitchell's site
http://web.media.mit.edu/~wjm/

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