Deeply CONNECTED?

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Before Facebook, Twitter and Linkedin, the notion that everyone and everything was inter-connected with each other wasn't quite as self-evident as it now seems. 'Six degrees of separation' was how it was popularly couched. There was the play and the film of the same name and then along came the trivia game 'Six Degrees of Kevin Bacon' – which required that a group of players connect any film actor in history to Kevin Bacon in as few steps as possible. At the time, the idea seemed little more than a bit of a laugh. But then, in the mid-1990s, it occurred to a couple of US-based mathematicians that some bigger truths might well lurk beneath the levity.

Professor Steven Strogatz and Professor Duncan Watts were curious to find out if there was a pattern behind the apparent random connections between people and events – much as six degrees of separation suggested – and stumbled upon a mathematical formula that explained it.

At that stage, the importance of networks was already well understood, but the relatively short distance between any given points wasn't.

They discovered that the formula worked to explain the links between Kevin Bacon (using Bacon was purely arbitrary, any heavily-employed Hollywood actor would have worked equally well) and his links with any one of thousands of film actors in the world.

Strogatz and Watts also discovered it worked for America's massive power grid, which has 5000 power plants over the entire country that had gradually and haphazardly grown together over many years. Although it appeared to be a random, and deeply complex system, the scientists discovered it only took a few steps to link any given power plant in the grid to any other one.

Strogatz and Watts had uncovered the invisible links that make our large world small – although it didn't quite tell the whole story.

Enter Hungarian scientist, Professor Albert-László Barabási who built on Strogatz and Watts' formula with the discovery that the links they had identified were also held together by a number of 'hubs', each with a huge number of connections.

Barabási's brainwave came in the relatively early days of the internet. Barabási's formula suggested networks were organised around a series of hubs. Previously it had been assumed that the links between countless web pages was entirely random. Now it is understood that the internet's fundamental nature is to have a few bigger websites that link to an almost infinitely complex network of other sites. Barabási's discovery had effectively predicted the existence of supersites like YouTube, eBay and Wikipedia.

More than that, Barabási had found the underlying formula linking all things. He had discovered that a connected world of networks dominate our society, our economy, and our environment – Network Theory – and these networks are organised around a series of hubs.

Understand what and where the hubs are in any given system, and you also understand the quickest routes between any two or more points in three dimensions.

It was a new way of seeing the world that had implications for all systems and relationships – and is increasingly being applied to all sorts of relationships and human activity – including the design process.

And this is precisely what has occurred to Sydney-based design firm, bangdesign.

As bang's David Granger explains, Network Theory has given them an effective way to explain to clients how they work. That is, to explain what are the not-necessarily-apparent methods that lead to the end products – bang design's furniture, interiors, exhibition spaces, objects – and which forms the very essence of what it is they do.

"The design process is a very difficult idea to visualise – and even more difficult to explain in simple terms," he says. "bangdesign's hard-won philosophy, and way of working has always had a strong inner logic to it, but trying to explain to others exactly what it is we do, has at times eluded us."

Granger says that bang has spent the last 20 years refining and improving its design process: "the process of finding links and understanding needs", as he describes it, "and we discovered I guess, by stumbling on Network Theory, the science behind our design process. It's a process of mapping the complex network of influence, and needs that will ultimately come together to make up a solution.

"Instead of thinking of the design process as a lineal one (that is, as a direct journey from brief to solution), it's actually the understanding of the three-dimensional network of inter-connected opportunities, often linked in surprising ways," says Granger. "The truth is that good designers somehow manage to wrestle a new or underlying order and logic from apparently random relationships and things.

Often the solution appears obvious once it is manifest, yet somehow it hadn't occurred to anyone."

Bangdesign call this process "joining the dots in three dimensions".

And this works on many levels – be it an emotive issue or an environmental one. "It might be materials," adds bang's Bryan Marshall. "It might be production technique, it might be economic, it might be commercial, it might be to do with transportation. If you have a little bit of data about all of those things and understand the links."

Not that what bangdesign does is fundamentally any different to a multitude of other designers' processes, but as Granger maintains "we've always been pre-meditated about this way of thinking. We've always set out to be diverse," he says, and the 20-year partnership he has shared with co-director Marshall in the company "has really honed our skills in this approach" (only now they have a label for it).

It also explains why some of the best ideas can seem so deceptively simple – at least in retrospect. "And that's because they are well-resolved and well-considered," explains Marshall, "and based on greater insight. The very nature of Network Theory stimulates the mind to explore more, and consider more options – how there may be connections to a better answer that is beautifully obvious once discovered, but seemingly elusive to begin with."

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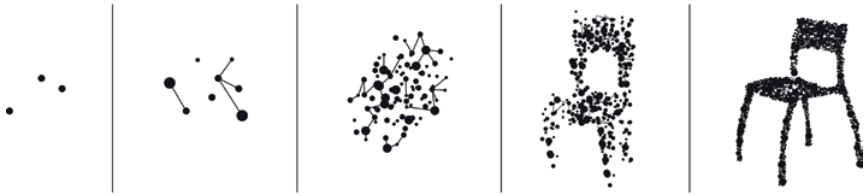
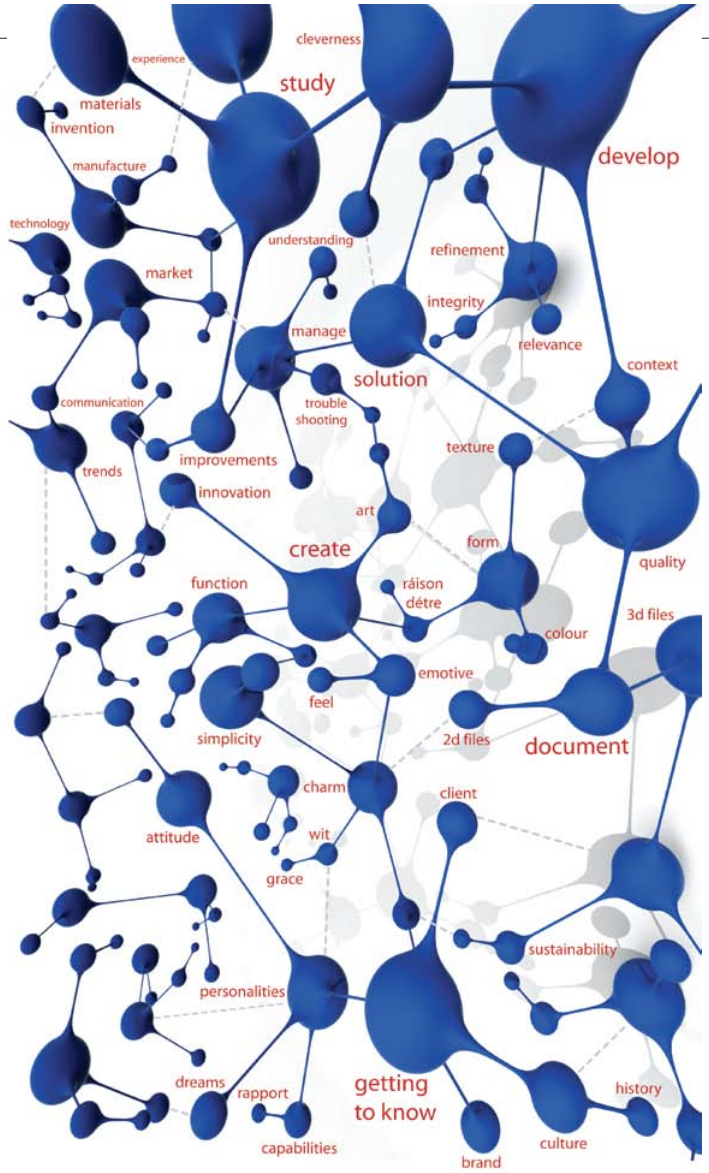
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