TOWARDS THE POST DIGITAL ERA

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ABSTRACT

The digital era has added little value so far to the quality of design. What were the problems? What hope is there for the post digital era?

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Added value

To add value in computer aided design means at the very least doing something more effectively, obvious examples include improving the quality of design, improving the design process, providing better analysis of building performance, better modelling of appearance, allowing more accurate building information, providing opportunities for public or user involvement in the design process, opening up new vocabularies of forms or building process or technologies, being able to design quicker, encouraging more environmentally responsible architecture or just making more profit for the designer. Over the last thirty years a variety of CAD techniques have been developed that have addressed these and other issues but usually in a fragmented and partial manner. Much of the promise of proprietary systems has not been realised and many academic dreams unfulfilled. I think it is time to take stock of what has been achieved and to try to describe the characteristics that we might desire of future systems and identify new avenues of research.

Active and passive tools

It is useful to differentiate between passive and active design tools. There was a time when those, often wishing to be dismissive of the potential of computer aided design or feeling threatened by it, talked of computers being "just a tool". They were almost certainly talking of passive design tools, and indeed may not have been aware of other kinds. Active tools, had they known of them, might have scared them into taking an altogether more aggressive stance. Passive tools were not a threat to their outdated work methods and could be safely relegated to a technician.

But however useful passive tools such as drafting systems and modellers may be they add relatively little to the design process itself. They may indeed take away from it. On the other hand active tools such as generative systems have the potential to add great value to the design process itself.

Was the problem ever clearly defined?

I do not think that it is essential to have a clearly defined problem to get a good solution. In fact architectural and design problems tend to be categorised as ill-defined as part of their charm. But in the case of CAD it was not clear what the problem was at all. Can anyone remember what it was about designing that needed aiding before computer aided design came along to provide this aid? Aid that was not needed, in the minds of many practitioners who were more or less driven by market forces into the use of computers they didn't want, could not afford nor could see what they had to offer. No wonder we have now inherited a very confused position.

Those who took a different view were either those who regarded the existing design process as fundamentally flawed and ineffective or those who had an agenda which implied a radically different approach. In my case I embraced both these imperatives for the use of the computer.

I had a problem which has been stretching available computer power for thirty years. But I think I was lucky to have such a problem that needed an aid. For me the computer was never just a tool but was an indispensable enabling device that continually inspired me to push my demands further.

So computers were the answer, but what was the problem?
A thought experiment: At the Architectural Association in London in the late 80s to mid 90s I ran a series of exercises called "computing without computers". You had to forget limitations of memory and speed, idiotic programs and clumsy and inappropriate interfaces. Instead you imagined you had unlimited computer power, intelligent software that would do anything that you desired and any form of input and output devices that you could dream up. The question was "As a designer, what are you going to use this for?" As we move into the post digital era we will have such devices and the whole emphasis will be on integrating them into our society, our lives, our ecology, our future, and our creative activities.

[The Conference presentation of this paper will be illustrated at this point by a series of examples of work originating from these thought experiments]

A world in bits?
The end of the 20th C is characterised by everything falling to bits! This is manifest by a general tendency to reductionism and by an obsession with digital technology. The trend is epitomised by "City of Bits" and "Being Digital". Perhaps these outbursts by Mitchell and Negroponte represent the end of that line of thought. Reducing the dynamic range of music to 16 bits may solve some quality problems but it has bred a generation that has not heard the dynamic range of analogue sound. The gradual introduction of 20 and 24 bit systems is a partial (or bitty) way of producing a simulation of analogue sound. So too gradually the dreaded screen jaggies of curves and diagonals are being successively approximated with more and more pixels until a visual deception of smoothness is produced - a very crude solution. At the turn of the century we can still only read part of a page on our word processor (this was also a problem with early hammer action typewriters at the end of the 19th C). Quartz clocked computerised watches have gone through that dreadful stage when people told you the time was 14.37! Mainly the quartz/computer technology is used to drive stepper motors to display the more rapidly assimilated and relativistic system of the traditional clock face. The watch industry has thus simultaneously demonstrated its innate conservatism but also being largely gnome rather than nerd driven they have resisted technological purism and been able to combine the best of both worlds.

There is a lesson here for architecture as we move into the post digital era!

The convergence of the virtual and the actual.
I believe that we are experiencing a convergence of the virtual and the actual.

Remember the binary system of on/off, 0 or 1, true or false, was only introduced because transistor technology at the beginning of the computer era was unable to cope with subtle differentiations of voltage. So instead of developing better transistor technology large number of crude devices were thrown together to form families of logic gates which then underpinned a whole generation of machine code level languages. This thinking has infected the fundamental structure of computer languages ever since. Worse still the infection has spread too much related thinking in areas such as CAD.

New analogue techniques, new chemical and biological forms of computers will soon free us from the tyrannies of the digital world that dominated the end of this century. Different forms of logic will be possible and we can break from the Cartesian display format of the screen and use relative rather than absolute systems. Subtle chemical gradations of meaning and colour will replace binary thinking and pixellated displays. But can the nerds change their thinking to match the new possibilities? May be not. Maybe the train-spotters with their obsessions with chip numbers, clock rates, gigabytes of dates and megabits of bandwidth will go along with their puerile technobabble. But who will be the new appropriators of this technology? I believe it will come from those who have real problems to solve in the real world and can see the solution in a marriage of the virtual and the actual.

The alternative scenario is horrific. Wide scale information pollution. Information everywhere but with all intelligence and meaning lost. "Data, data everywhere but not a thought to think!" (Apologies to the originator of this quote – I have lost the reference) An endless field of white noise of information. Do those talking of an "information economy" really know what they are talking about?

And the post digital era?
I view the future scenario as mainly positive – but with some warnings.