

## Racing technology might have unintended consequences

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<http://tulsabeacon.com/racing-technology-might-have-unintended-consequences/>

In a blog in [MetropolisMag.com](#), author Neil Chambers explains the major leaps of technology that have taken place in the profession of architecture in recent decades, and how the next leap will drastically change how architecture is performed.

He calls the thousands of years of hand drawing Architecture 1.0, which lasted until the early 1980's when Architecture 2.0 ushered in the age of CAD (computer aided drafting), and more recently BIM (building information modeling).

Architecture 3.0, as Chambers terms it, promises to bring in a completely new method of designing buildings.

My career has spanned over the first two eras. After I graduated from The University of Illinois in 1977, I hand-drafted drawings until 1984, when I began to use a somewhat primitive form of CAD. In 1996, I began using AutoCAD, which has grown in its sophistication and complexity ever since.

While CAD is generally 3D capable, it is for the most part used in a 2D environment for drawing production. In CAD, you typically draw two-dimensionally first, then move to 3D. With BIM you draw three-dimensionally first (using intelligent objects), then “extract” 2D drawings from the three-dimensional models.

BIM software and computers capable of running it are relatively expensive, but the real cost is in the learning curve. CAD was very easy to learn; BIM is far more complicated, so much so that vendors tell us to expect about six months of use before we become proficient.

If the leap from hand drawing to CAD was a factor of ten, and the leap from CAD to BIM was a hundred, the next leap will be a factor of one thousand. Why? You guessed it – sustainability.

The new technology for architecture will integrate many disciplines of design and engineering in order to accomplish buildings that are predictably energy-efficient and can prove in advance its low impact on the environment.

Chambers writes, “For Architecture 3.0 to come alive, energy modeling and other sustainability-minded analyses need to be used as early as pre-conceptual, conceptual, and schematic design phases. Second, programs that evaluate climate, energy, and comfort need to be used... Sustainability is primarily focused on energy consumption at the moment. This is largely due to the fact the fuel costs are up, energy cost savings are tangible and the world has a new awareness of climate change and energy independence. Water, biodiversity, and ecology will need to be active design criteria for a true paradigm shift to happen.”

That sounds fine, but I am a practical man, and the pragmatic side of me is asking, who is going to pay for this? And who will this apply to? All building projects, or just particular projects? What will it cost to run all of these analyses, and who will be responsible for their accuracy? Will architects have to have a large staff of people to design a house, or will some computer programmer come up with a TurboTax-like software for single practitioners to be able to compete with the big firms? And if the requirements for designing a building become so data-driven, will there be room for the decades of practical experience that architects have accumulated to be used? Will architects just become supervisors of a blend of scientists and computer programmers that actually design the building, only to become responsible for activities that are completely out of their control?

Furthermore, what happens when the requirements to perform building design shifts from the voluntary realm to the mandatory, when building design becomes codified to a far greater extent than it is already? What impact will that have on the market, and will the higher cost of architectural design and building construction drive both markets down?

The new technology will require an industry-wide modification, forcing manufacturers of nearly every component in a building to provide drag-and-drop data for architects. So far, many manufacturers have been willing to provide facsimile data, but at some point they will have to give up proprietary information in order to furnish the data required for analyses. Won't China and other unregulated countries enjoy having such a free resource?

Technology is a great thing, and people get as excited about this as they do the next generation of Ipad. However, little thought is being given to the consequences and the impact on our freedoms. A little bad science (for example, climate change) can lead us down a path that can rob us of the very environment that allows us to give birth to great technology. Discussion from that aspect would be appropriate.

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