

## INTERVIEW WITH TOM CHEESEWRIGHT

# Geomatics Provides Truth about the Physical World



**New digital technologies are changing our industry. Or is it the other way round? Is the future of geomatics a virtual one? Will surveying soon be done in digital realities? Read this interview with renowned futurist Tom Cheesewright to find out what he foresees for the digital era and how disruptive those changes will be.**

*(By Wim van Wegen, GIM International)*

**You often talk about the synchronisation of the two worlds we currently inhabit: the physical world and the digital one. Can you explain this to us?**

The boundary between the digital and physical dimensions has been getting thinner for decades now. Eventually it will disappear and there will be no distinction between digital and physical. This is happening in three ways. Firstly, computers are starting to inhabit our world. Instead of discrete boxes of silicon and steel, computers are being embedded into everyday objects around us: walls and floors, clothes and accessories. Before long, the concept of a computer will become redundant; almost everything around us will be capable of some level of computing. Secondly, the way we interact with these machines is changing. Fifty years ago, talking to a computer was like communicating with an ogre in a cave. You had to go to its cold, dark, air-conditioned lair and speak with great deference to this big beast in its own language. Today I can shout at my phone from across the room and half the time it might actually play the song I want! Before long, most of our interactions with machines will be based on words and gestures: intuitive and natural, not forced and artificial. Machines will begin to extrapolate more from our behaviour using their own sensors, reducing the need for us to explicitly tell them what to do. Thirdly, we're beginning to overlay the physical world with a distinct digital reality. Eventually, augmented reality will be a near-permanent experience for many of us. The distinction between what is physical and what is digital is starting to become irrelevant – at least, until you try to walk across a virtual bridge...

**Location is the point of synchronisation between these two worlds. How does that work?**

For all our successes with technology, nothing we have made yet matches the power of the physical world. As much as our brains might extrapolate from the visual data they are fed, a virtual rollercoaster is nothing like the real thing, and driving a real sports car is still much more thrilling than any computer game. It's a question of bandwidth. In the physical world, all of our senses are engaged. We're overwhelmed with data, whether we're watching a concert or just working with a colleague. That's why all the data shows we are more productive when we're physically co-located; why millennials are so engaged in the experience economy; and why high streets are still popular places to meet, even if the economics of digital delivery mean some classes of product just don't work there any more. So location and physicality remain hugely important to us. And as more of our interactions with the digital world come through physical media and motion, the ability to understand our location becomes increasingly key to synchronising the two worlds.

**How will the geospatial industry benefit from the endless possibilities of virtual reality (VR) and augmented reality (AR)?**

VR and AR are really two sides of the same coin, it's just about which way reality moves. VR is about recreating reality in a virtual environment, while AR is about making the virtual 'real'. While we can create entirely fictional realities, lots of people will want to virtually experience real places, such as in the sci-fi game *Beyond Flesh and Blood*, which is set in my home town of Manchester. This expands the existing market for location data beyond the more prosaic mapping applications. But augmented reality offers perhaps the biggest opportunity for the geospatial industry. AR fails – miserably – if it's not bound tightly to the real world. To overlay compelling digital experiences on the physical world, creators need hyper-accurate information, not just about location but also about the visual and other cues that can be used to connect the virtual to the physical.

**Talking about VR and AR, one really high-profile hype at the moment is Pokémon Go, which brings together the real and virtual world for a smartphone game. What are your thoughts on this?**

Pokemon Go represents a 'holy trinity' of factors: location-based gaming (like geocaching), augmented reality, and a compelling media property that appeals to two distinct but equally enthusiastic age bands. In many ways the experience is very, very low-fi, but the game mechanics are well crafted. This is very much just the beginning. In a few years' time, looking back at Pokemon Go will be like looking back at the great 8-bit console games from where we are today.

**There are lots of buzzwords around nowadays: BIM, AI, 3D printing, robotics. Aren't we forgetting the geospatial data itself?**

Artificial intelligence (AI), 3D printing and robotics have many applications that may not rely on geospatial data, or at least not explicitly. Because of this broad, horizontal relevance – not least in consumer applications – they naturally attract more of a buzz. However, where these buzz markets do have applications that intersect with geospatial data, I would agree that they tend to overshadow the fundamental data underpinning the exercise. People dramatically underestimate the complexity and scale of the geospatial data challenge. They tend to think in two-dimensional terms: “It’s a map, right? Don’t we have maps?”. Meanwhile, BIM is ‘under-buzzed’. Although there’s a hardcore group of people focused on it, the majority of the markets that should be adopting it enthusiastically are instead having to be dragged into the 21<sup>st</sup> century.

**‘Smart City’ is another term being used a lot. How would you define it?**

Right now, most projects are about using technology to make cities cheaper to run. Yes, there are environmental factors, but what’s driving investment is the prospect of doing more with less cash, rather than less energy or water; those are side benefits. A true definition of a smart city should incorporate more than just cost. ‘The application of technology to improve efficiency, safety and quality of life’ might be one way to put it. I would like to see more technologies applied to create moments of joy: interactions with the physical environment that don’t just make things cheaper or easier, but that actually make them fun.

**Can you give us some inspiring examples of truly smart cities?**

Santander in Spain is probably the best and most local example right now. There, technology has been applied to issues like energy use, but also quality-of-life issues like the time it takes to park your car. Dynamically routing people to empty parking spaces across the city, using smart signs – not just another app – is estimated to save eight minutes off the time it takes to park.

**Some renowned experts say that the smart city concept is not about gigabits or bandwidth, but rather about participation from locals, such as in infrastructure planning.**

Smart cities actually need very little bandwidth, unless you’re surveilling your population in high-definition video. Sensors mostly spit out integers. Moving these around and storing them is very inexpensive. The challenge lies in making sense of this data, and the most effective way to do that right now is to give the information to people. The smartest cities of the future will be ones where the city becomes an open platform on which others can experiment and innovate. This won’t be for everyone. Who has the time to get involved in planning decisions? But what you can do is push hyper-relevant information to the people affected by decisions, and ask them questions. You can allow the motivated to make use of large datasets. And you can source extremely powerful guidance from social media conversations. The CPU team at the Manchester School of Architecture are doing pioneering work in this field.

**Urban planning is done from the top down. Do you think modern technology is going to change this?**

Yes and no. For your average citizen, part of the barrier to engaging in urban planning in the past has been friction, as I know from personal experience recently. Endless committees, hand-drawn diagrams, bureaucratic processes – it’s just an ugly experience to engage with. Reduce the friction and you will get more engagement...but still not a lot; not many people want to devote more of their time to this. What technology will transform is the intelligence that can be applied to planning. Planners will be able to leverage more real-world data – both hard and soft – to drive their decision-making, and even model the impacts of their decisions with computer-generated future scenarios.

**Future opportunities may be beyond the realms of our current geospatial imagination, but what’s in it for the geomatics industry?**

I often say that the finance function is the department of truth for any business. They know the reality. Similarly, geomatics is the department of truth for the physical world: the source of hard data about a fast-changing environment – data that can be relied upon for decisions with serious implications, whether it’s the construction of a building, the navigation of a self-driving car or the production of a virtual-reality training environment. Truth is a great market to be in!

**Tom Cheesewright**

*Tom Cheesewright is the founder of UK-based applied futurism practice Book of the Future and creator of the Futurist’s Toolkit, a suite of tools for agile organisations. Clients range from charities and public sector organisations to FTSE100 enterprises and global technology corporations. After graduating in mechatronic engineering, Tom spent 14 years in the tech industry working with global brands such as BT, EE and IBM, and subsequently founded a series of technology-driven companies. Most recently, Tom co-founded venture-backed big data analytics start-up CANDDi (<http://canddi.com>), of which he remains a shareholder. Through consulting, speaking and media work, Tom helps people to see, share and respond to a coherent vision of tomorrow. He acts as an advisor to a number of technology-driven start-ups and is a frequent presence on TV, radio and in the media.*

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