

**Ghosts, Memory Trees,
and the Mobile Many**

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Introduction

In the last several decades, information and communications technologies have undergone a Cambrian explosion of tools and interfaces: mobile telephony, the web, shared virtual environments, embedded computing, peer-to-peer networks, and countless others. With low financial barriers to entry, internet and mobile technologies continue to combine in unexpected and innovative ways, the line between them now long-blurred. SMS introduced asynchronous communication to telephony while Voice Over IP repurposes the internet as a telephone, to name but two examples of this design-driven gene flow.

In attempting to organize these inventions into some sort of technological bestiary there might be some temptation to begin by placing rich virtual worlds at one pole and the convergence of mobile devices, embedded computing, and freely accessible wireless connectivity described in Howard Rheingold's 'Smart Mobs' at the other. From an interface perspective this would be a perfectly reasonable strategy: virtual worlds immerse a user in a rich, alternate reality while Rheingold's vision of ubiquitous computing aims for a certain level of transparency, with the technology doing its work while leaving us relatively engaged with the real world. The web and a broad selection of internet tools comfortably fit at various points along the road between these two endpoints.

That said, there remain compelling alternative taxonomies. To look beyond interfaces and assess the experiential qualities of these two technologies leads to a very different conclusion. How it is to use them, as well as their potentials for knowledge management, demonstrate striking commonalities between mobile networks and virtual

worlds; in fact, especially rich mobile networks could very plausibly be considered virtual worlds of their own, overlaid on and existing concurrently with our real one. This paper will examine two of the more compelling themes that unite these two technologies.

Place and Presence

If the invention of the telephone upended many long-standing conventions about distance, presence, and location, then mobile phones seem poised to completely demolish them. Land-line telephony took two geographically distant people and piped their voices, temporarily electrical signals, very quickly through the network of wires that connected them. To say that mobile telephony simply eliminated the wires does not begin to capture the dramatic sea change in the culture of communication that the technology ushered in. Mental models of traditional telephony do not easily accommodate the invisibility and technical complexity of mobile networks. While mobile telephone conversations are likewise based on electrical signals traversing geographic divides, the experience of one is far more akin to a meeting in an abstract and metaphysically extant but distinct space. This is not a far cry from the immaterial astral plane theorized by various world religions; communications and technology theorist James E. Katz refers to the burgeoning mass of mobile users as “a nation of ghosts” [2006]. And as with ghosts we are increasingly unconcerned with the limitations of physical space. Telephony plus mobility has already undermined many basic social practices. The strictness with which we must coordinate real world social action in the future has plummeted – arranging to meet at a specific street corner at a specific time many hours in the future has long since given way to quickly checking in from wherever one is within some relatively flexible

time frame. For those with deeper footholds in the mobile network ghost world, new and different things begin to occur – your mobile device may alert you when a friend enters your physical vicinity, or even a friend of a friend or software-vetted potential love interest [Rheingold 2002]. Even when a user is fully immersed in the real world, devices are reaching into this other space and having proto-social encounters of their own.

From the corporeal user's point of view, virtual worlds may not redefine place in a manner especially distinct from online activity in general. However, from the perspective of the avatar with which the user navigates their virtual environment, place takes on curious new meanings. Putting aside the typical avatar's ability to simply teleport from one location to another at will, there is yet another plane of activity or existence in play. In contrast with increasingly transparent mobile networks, this one is very literally real from an in-world avatar's perspective – it is the command or menu interface to the world, through which avatars can manipulate aspects of their experience as well access metadata of their reality. The social implications resemble those of a real world where everyone is continuously connected to a mobile device, with social or professional network profiles available on demand. This is not wildly distant from our present reality; in effect, these interfaces help make explicit much of the tacit knowledge with which we get around in the world.

Informational Objects

A common characteristic of all virtual worlds is the information richness of physical artifacts in the world. A cursory investigation can easily determine an object's properties, its owner, and other useful information. In the Second Life environment

objects can be programmed to perform actions but more importantly can read, write, and query information from their own storage facilities as well as from elsewhere. In short, they can manage knowledge.

An especially dramatic example of an information-rich virtual object is the Studio Wikitecture Tree in Second Life. Studio Wikitecture is a group of professional architects and amateur enthusiasts with a shared interest in leveraging the capabilities of virtual worlds to explore architectural innovation. The Wiki-Tree is a tool that supports iterative, collaborative design – appearing in-world as a ornate, button-laden pillar, it operates similarly to a conventional wiki, allowing users to instantiate and edit any version of the design project to which the Wiki-Tree has been dedicated. Version access and control is managed with an ingenious visualization, with unique designs represented by nodes in an ever-branching tree that sprouts from the main pillar. Activating a node conjures a particular design, which a user may then edit in any way that he or she sees fit. Saving the new iteration will produce a new node in the tree, branching off of the one previous. A web interface allows group members to rate the various designs, with popularity represented by in-world node color. Consistently poorly rated designs are eventually pruned from the Wiki-Tree, a process representing the automation of a valuable bit of knowledge work.

On one level, the Wiki-Tree enables active collaboration between members of an extremely loosely organized group working in a discipline where projects are traditionally approached by small teams of highly-trained and specialized professionals. By attempting to harness the collective intelligence of a larger group, Studio Wikitecture is able to take advantage of a wildly broad selection of skills and content knowledge –

within days of entering a competition to design a health clinic in Nepal, the group had acquired a wealth of useful background information provided by Second Life residents. These contributors may have had little or no interest in architecture and design, but did possess pertinent knowledge about a particular region of Nepal. Presumably many were motivated to participate by a genuine desire to see quality health relief brought to that area. And while this information was primarily aggregated on the group's wiki and not in-world, the Wiki-Tree remains emblematic of the group's radical approach to design.

Alternately, peering more deeply, the Wiki-Tree houses the institutional memory of Studio Wikitecture. Like a totem pole ripped from the moorings of traditional chronology, it accomplishes the formidable knowledge management task of not simply storing and recalling information or knowledge, but of capably modeling the knowledge and learning arc of a community.

The off-loading of knowledge into artifacts is a primary feature of the world envisioned by thinkers and researchers such as Rheingold and Dertouzos. With ubiquitous networks providing seamless connectivity, the tacit knowledge of experts and the explicit knowledge of users meet in information-ready objects and devices. In some cases the expert explicit knowledge may be specific to highly technical content and in others it may be the expert knowledge of a tireless project manager and life coach. From providing just-in-time factual information to helping users enhance their own efficiency or enjoyment by tracking and analyzing their behaviors, these objects are powerful new mediations and managers of knowledge.

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