

Infinite Possibility

creating customer value on the digital frontier

by B. Joseph Pine II

March 8, 2011

Scope

We desperately need experience innovation in business today. Why? Because we are now in an Experience Economy, where experiences – memorable events that engage people in inherently personal ways – are becoming the predominant economic offering. As goods and services increasingly become commoditized, companies must step up this progression to stage the experiences that create customer value.

Companies constantly innovate new and wondrous experiences – from Disneyland, the world’s first theme park and Starbucks, the world’s foremost ‘third place’ between work and home, to Second Life, Linden Lab’s virtual world for creating your own masterpieces (whether works of architectural or performance art).

Note how this last example differs from the others. Yes, technology may support ticket-taking at Disneyland and Wi-Fi access at Starbucks, but without digital technology, Second Life would not even exist. Further, thanks to technology, Linden Lab’s virtual world presents an entirely new medium for experiences.

While consumers (and business customers) will always be open to innovative real-life experiences, the greatest opportunities today lie in thinking about how to use digital technology to stage compelling experiences, whether they enhance what’s going on in the real world, simulate real experiences within a virtual world, or create permeable boundaries between the two.

This report – a condensed piece from my forthcoming book with Kim C. Korn – provides a new way of thinking about such opportunities, enabling readers to discover the infinite possibility for creating wondrous, innovative, and immersive experiences that effectively fuse together the real and the virtual.



In his classic *Future Perfect*, Stan Davis expressed the inspiration for his thinking: “A basic progression governs the evolution of management in all market economies: fundamental properties of the universe are transformed into scientific understanding, then developed into new technologies, which are applied to create products and services for business, which then ultimately define our models of organization.” (1) He stresses that all new business models “first get articulated in our scientific and technological understanding of how the universe works.” He also predicted, quite accurately, that “in the industrial economy managers considered time, space, and matter as constraints, whereas in the new economy they will come to think of them as resources.”

That new economy – the Experience Economy – is now upon us. We can, therefore, see more clearly the way in which the universal dimensions of time, space, and matter shape today’s business.

Introducing the Multiverse

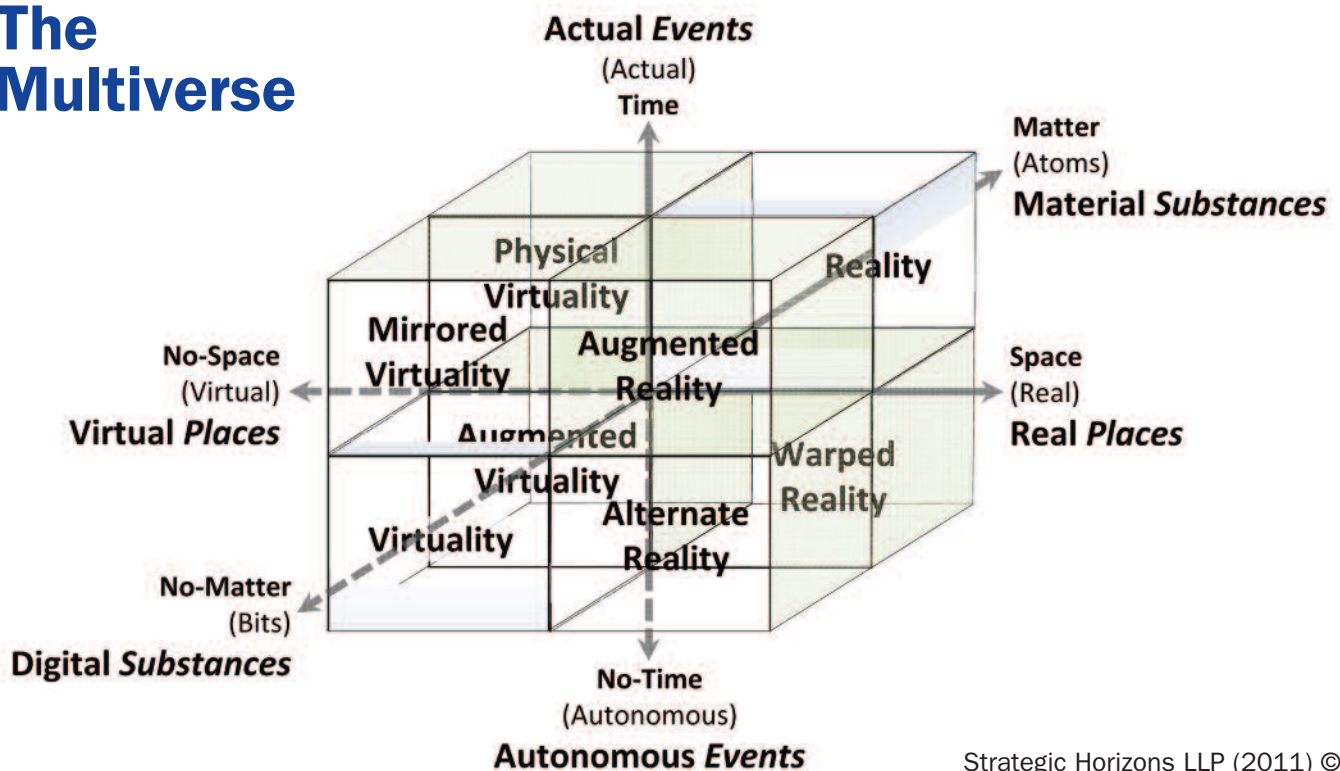
The fundamental property of the physical universe is that these three dimensions come together as a true trinity – whereby removing any one of the three destroys the entire entity. All physical experiences consist of objects made of matter (physical entities, including the humans

doing the experiencing and the sensory stimuli they are experiencing) that move in time (the measure of change and therefore of experiencing) and across space (the background source and context of everything that happens).

One of the path-breaking notions Davis introduced in *Future Perfect* is “no-matter”, the name of a chapter where he discussed how “[i]n the new economy, the value added will come increasingly from intangibles. . . whose importance does not lie in their material existence.” Think of how much of the value of economic offerings today has shifted from the tangible (goods) to the intangible (services) and on to the ephemeral (experiences).

Now here’s the key: If there is no-matter, there therefore must be no-space – where experiences are not real but virtual; they occur in a world (or worlds) without material existence. And if there is no-matter and no-space, there must be no-time: the experience becomes independent of actual time, whether by being non-linear, asynchronous, or transient, by shifting into the past or future, by slowing down or speeding up or otherwise creating a distinct, disparate sense of time (or timelessness) that does not truly exist. While no-time may be the most difficult concept to grasp, as that description attests, it may also be the one with the most

The Multiverse



opportunity for creating value. These three sets – matter and no-matter, space and no-space, time and no-time – come together to define eight distinct universes, revealing the full set of possible realms for staging experiences.

The realms of the Multiverse

The image above shows all eight realms of the Multiverse. Each name relates directly to the two anchors of Reality and Virtuality, the former grounded firmly in our physical universe of [Time – Space – Matter] and the latter residing ethereally in the immaterial realm of [No-time – No-space– No-matter].

The Reality anchor

In Reality, the sheer physicality of the experience reigns supreme. Think of such quintessential experiences as dinner with family and friends, taking a walk along the beach, watching a sunset, or playing a sport. Reality of course remains the most well-known and understood of the realms, and therefore the only one we do not need to spend much time on here, for so much has already been written on it. The best primer for how to create reality-based experiences remains *The Experience Economy*, which I co-authored with Jim Gilmore.

Augmented Reality

The first realm, and one of the most familiar, is Augmented Reality, which employs digital technology to enhance one's experience of the physical world. Researchers have applied the term Augmented Reality mostly to technologies such as wearable computers that supply a constant flow of sensory information to the wearer. These are almost like prostheses, except no part of the body need be missing or defective, so they can greatly extend a person's body – or mind.

The most obvious example, however, is surely a GPS navigation system (such as those made by TomTom or Garmin), which overlays the physical scene outside your windshield with a digital representation of it on your car dashboard. It enhances - or augments - your experience of the real world by making sense of it, providing directions to help you find your way, and even relieving the stress of a trip in unfamiliar environs.

While these involve specific-purpose devices, the largest opportunities now and into the future for Augmented

Reality rely on the most general-purpose of all devices: the mobile phone, which (provided it's connected to the internet and aware of its location) can provide a constant stream of information to overlay our everyday experiences. Amsterdam-based Layar, for example, lets you view the real world through the built-in camera of your iPhone or Android handset, which then overlays a layer of computer-generated information to find, say, restaurants, apartments for rent, or the nearest subway station.

That's the key to Augmented Reality: overlaying an experience in Time and Space with bits in order to enhance that experience, make it more informative, more effective, more engaging, more memorable.

“Jane McGonigal, the world's foremost authority on ARGs and puppet master of ‘I Love Bees’, even thinks Alternate Reality should become ‘the New Business Reality’”

Alternate Reality

Alternate Reality is the application of digital technology that changes the way you perceive, and interact in, the physical world of Space. This is exactly what happens with Alternate Reality Games (ARGs), famous examples of which include the game for Spielberg's movie *A.I.*, 'The Beast', and the 'I Love Bees' promotion for *Halo 2* on the Xbox 360. ARGs layer digital (No-matter) interaction in unexpected and non-linear (No-time) ways atop a real-world (Space) set of activities performed by players, which enables them to make the connection between all the elements of the game – and to each other.

And Alternate Reality need not be a game at all. Consider GoCars, which operates three-wheeled vehicles equipped with GPS-powered narration systems for visiting San Francisco, San Diego, Lisbon, and other tiny-car-friendly cities around the world. Rather than being on a bus or other tour defined by someone else, here one or two tourists roam the city as they will, enjoying the comfort of navigation and destination know-how that comes alive when the GPS indicates a known spot has been reached. The driver and his passenger in effect randomly access any site they wish to in any order and at any pace, a non-linear activity relative to tour buses and other such normal modes of visiting a destination.

Jane McGonigal, the world's foremost authority on ARGs and puppet master of 'I Love Bees', even thinks Alternate Reality should become "the New Business Reality": "ARGs train people in hard-to-master skills that make collaboration more productive and satisfying. Because [they] draw on the same collective intelligence infrastructure that employees use for 'official' business, games will map directly to a familiar reality – no translation required." (2)

Warped Reality

This may be the strangest of the eight realms, where a Reality-based experience of Space and Matter moves from Time to No-time. Rather than building an experience around actual time, Warped Reality creates an altered sense of time, clearly distinct from normal, workaday experience.

The most obvious examples are those that are set in a different period of time, typically the past, such as living history museums like Plimoth Plantation and Colonial Williamsburg, as well as Civil War and other re-enactments, and experiences that enforce rules from the past, such as all the baseball leagues using 1800s rules and equipment. Or Oakhurst Links in White Sulphur Springs, West Virginia, where golfers must use 19th century equipment and follow 1884 rules at 'America's First Golf Course'.

More unusual are where you can randomly access real-world experiences normally played out in sequence.

For example, Mark Brady Kitchens of Simsbury, Connecticut, offers a Shopping Cruise, where the eponymous designer picks you up himself at your home in a limousine. He begins by taking you to breakfast at a local diner to discuss your needs, and then you're off exploring various kitchen stores, finding exactly the right cabinets, appliances, countertops, etc. In between each segment of the Shopping Cruise are repeated limousine rides that provide respite from the dramatic tension of examining all the possibilities and choosing the right one, warping reality through the No-time of the intermittent (and interstitial) limousine.

Note how this involves Matter in real Space, but shifts from Time to No-time, enabling 'jumping around' within the physical world that would be the equivalent of hyperlinking on the Web. If it existed, in fact, the perfect technology for Warped Reality would be teleportation – being able to instantly, and randomly, access any place in space.

In part two, published tomorrow, Joe walks us through the final four realms of the experience multiverse – those anchored in the Virtual realm – and expands on the model's potential as a framework of infinite possibility for brands and marketers.

Sources

1. Stan Davis, Future Perfect, Basic Books, 1997 ed.
2. Jane McGonigal, 'Making alternate reality the new business reality', quoted in Harvard Business Review, 'Top 20 Breakthrough Ideas for 2008'.

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part two: the Virtuality anchor

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Scope

Yesterday, Joe Pine introduced the concept of the Multiverse, his multi-dimensional model for mapping - and grasping the potential of - wondrous, innovative, and immersive experiences that effectively fuse together the real and the virtual. In the concluding part of his report, he presents the four realms of the Virtual, and expands on the insights and opportunities the Multiverse has to offer.

Defining Virtuality

In Virtuality, the experience completely separates from Reality into one made wholly of digital bits, unfolding within a non-material, virtual no-space, with the capability for autonomous action, such as stopping and starting the sequence of temporal activity or instantaneously teleporting from one virtual place to another.

The most prominent experiences today that lie within the realm of Virtuality are those commonly referred to as 'virtual worlds' - WoW, Habbo Hotel, Club Penguin. More popular are videogames. One key characteristic they share with virtual worlds: the experience happens through an avatar, a virtual representation of the self that usually shares little in common with the real self (even when, as with most virtual worlds and increasing numbers of games, you can design your own avatar).

Perhaps an even more popular form of Virtuality, although most would hesitate to use the term virtual world to describe them; social networking sites, blogs, wikis and chatrooms. You also employ an avatar to visit such places, even if your virtual representation is merely your e-mail address. And, as you create your online identity, it too may bear little resemblance to who you are in real life.

There's one more category of Virtuality you should consider, expanding the notion of what 'virtual' has come to mean. As alluded to above, the key characteristic of Reality experiences is physicality, involving not just the mind but the body. With Virtuality, the opposite is the case: its primary characteristic is immateriality, meaning a highly non-corporeal experience. Such is the case also



with many other experiences we don't typically consider to be virtual worlds, such as going to the movies, watching TV, or even reading books. These remain vicarious experiences, where we identify not with an avatar of our own making but with a hero (or anti-hero) of someone else's creation.

Such experiences actually occur not in real Space but in the virtual No-Space of our imaginations, while the actual Time of our world falls away into a sense of timelessness as we fall under the spell of some other No-Time. Again, No-matter digital technology has enhanced these

experiences, in this case not just to be more realistic, lifelike, and immersive, but to be more fantastic, more sensory, and more imaginative. And, of course, more portable, where with our laptop PCs, our mobile phones, our iPods, and even our Kindles we can now access these vicariously virtual experiences, escaping into our imaginations, from anywhere and at any time.

Therefore, we will consider all such experiences to lie in the Multiverse within the confines of Virtuality – although, as we shall later see, variations on these forms may bleed into the other realms (a quite desirable effect, actually, for creating the new and the wondrous).

Augmented Virtuality

If bits can augment Reality, then logically atoms can augment Virtuality, resulting in the opposite realm of Augmented Virtuality, which brings sensory feedback to create a more bodily experience than that available from pure Virtuality. In particular, material devices extend the experience by enabling your hands and fingertips (that normally just pound a keyboard, roll a mouse, press buttons, and fiddle with a joystick) to more directly manipulate objects (or be affected by them) through sensory stimulation and feedback – or even to draw the experience back from the sensory extremities to involve the rest of the body in an otherwise-virtual activity.

Haptic technology has thus far only been commercialized, however, in highly specialized fields like medicine

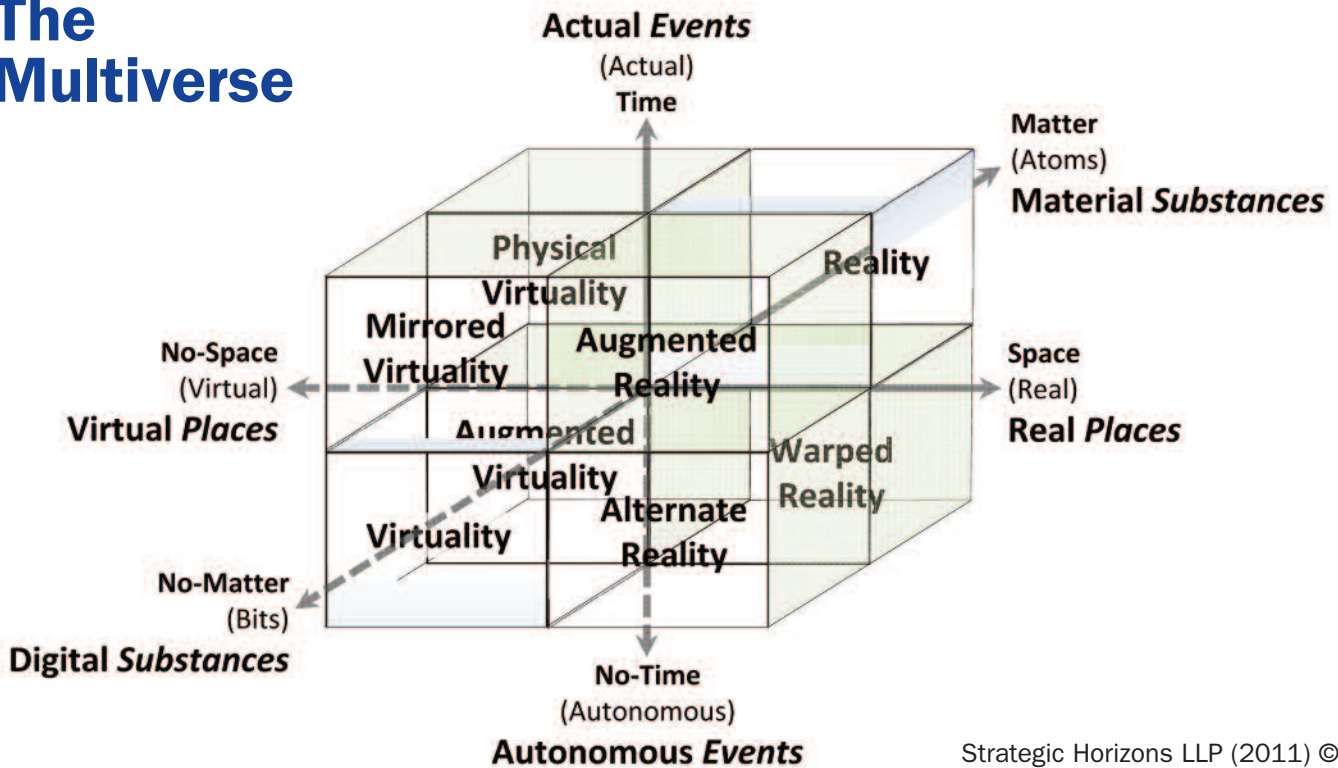
(particularly for the virtual training of doctors) and avionics. More innovation has reached the market in videogames, where producers increasingly augment their virtual experiences with sensory feedback, from as simple as a shaking joystick controller to immersive game chairs that move three-dimensionally, in synch with whatever vehicle you’re controlling.

The clearest example here, though, is the simplest: Nintendo’s Wii, whose remote device allows players at home to get physically, materially engaged in computer games, removing the experience from one residing primarily between the fingers and the brain to one involving the whole body.

Hot on the Wii’s heels have been other physical devices, such as the plastic instruments that enable you to be a guitar hero, or the mat that lets you dance to your heart’s content. Microsoft’s Kinect technology for Xbox 360 takes this to a whole new level; through it the system can take an image of a player’s entire body to place it inside games, so rather than gross motor control of an avatar, Kinect provides rather fine body control over the player’s actual image. The player’s body becomes the physical controller.

As with Augmented Reality, over time more and more of Augmented Virtuality will shift from the use of specific-purpose devices to the general-purpose mobile phone. Not for its capabilities to bring digital information to any physical location, but rather to bring physical activity to any virtual location. Already most phone manufacturers

The Multiverse



are copying the Apple iPhone's accelerometer and motion and proximity sensors – used in applications as trivial as quaffing back a virtual beer to as serious as medical training – and over time these will be integrated into more and more Virtuality environments, augmenting them with the physicality of Matter.

Physical Virtuality

Physical Virtuality takes real-world objects (atoms residing in actual time) and designs them virtually. Such a [Time – No-Space – Matter] experience occurs when virtually designed artifacts - created, viewed, usually customized, and generally sold online - take material shape.

The most familiar include the mass customized t-shirts, coffee mugs, mousepads, and business cards available on sites like Zazzle and CafePress. The technology of 3D printing perhaps best captures the [actual – virtual – atoms] nature of Physical Virtuality. Here something designed virtually is printed, physical layer by physical layer in precise time sequence, to build up a material object from the experience. Originally used in industrial applications for prototyping or remote part creation, such companies as Shapeways and Ponoko have brought this to the masses, taking your own virtual design (or that of someone else offering designs for sale, which you can often further customise), printing it out physically, and shipping it to you.

“The technology of 3D printing perhaps best captures the [actual– virtual – atoms] nature of Physical Virtuality.”

In a different vein, LEGO employs Physical Virtuality with its LEGO DesignbyMe offering. Its Digital Designer enables people to design, tinker, and perfect their brick-based creation before ever lifting a physical piece of matter. Once happy, LEGO analyzes the design and offers to sell the exact bricks required to make it – a great implementation of Mass Customisation. Customers can also share their designs in a gallery accessible by other LEGO lovers, fostering friendly competition while engendering design innovation.

It seems that almost every one of these realms has a type of technology talked about in Science Fiction and hoped for in the real world. Amazingly, it is here where actual realisation may be closest to fictional representation, for desktop manufacturing, or fab labs, is a here-and-now technology. The biggest proponent is Neil Gershenfeld, the head of MIT's wonderfully named Center for Bits and Atoms, who says he is squarely “aiming at making the Star Trek replicator”. (1)

Mirrored Virtuality

Mirrored Virtuality derives its name from the term ‘Mirror Worlds’, coined by computer scientist David Gelernter to describe “software models of some chunk of reality (...) outside your window.” (2)

It is the Time – No-Time axis that differentiates Mirrored Virtuality from Virtuality itself. While inside the latter people (through their avatars) are free to do whatever they wish to do, people inside the former remain tied into what is happening in the real world, in real time, moment-by-moment. Because Mirrored Virtuality is so tethered to real time, it must be a representation of the real world in some way, shape, or form, essentially mirroring reality, and not a complete fantasy as Virtuality can be.

Today, Gelernter's version has become a reality, so to speak. Numerous places within Second Life now are tied into real-life data feeds. The National Oceanic & Atmospheric Administration, for example, operates a real-time weather map of the United States that your avatar can walk through. And IBM produced – or, rather, reproduced – tennis matches live from the 2007 Wimbledon tournament on its Second Life island.

Wade Roush, Contributing Editor at *Technology Review* identifies another new genre of 3D visualization tools: “virtual globe” programs such as Google Earth, Microsoft's Virtual Earth, and NASA's open-source World Wind.” (3) As intimated in the title of his piece – ‘Second Earth’ – Roush sees virtual places like Second Life inevitably merging with such visualisation tools like Google Earth, which would open the doors wide open to the almost limitless Mirror Worlds envisioned by Gelernter.

While technology is finally catching up with the vision, what makes Mirror Worlds so inevitable is their ability to provide what Gelernter calls topsight, “an understanding of the big picture. . . [that is] the most precious intellectual commodity known to man.” It is for exactly such a precious vantage point that we enter into the realm of Mirrored Virtuality.

Insights and opportunities: exploring the Multiverse

The greatest value of the Multiverse lies not in examining the individual realms, as done here by way of introduction, but rather in creating experiences that transverse the Multiverse, crossing the permeable boundaries of each dimension to yield experiences never before envisioned, engendered, nor encountered. Think of this as effectively fusing Reality and Virtuality into a third space, neither completely one nor the other, but transversing the environment's events (actually and autonomously), places (really and virtually), and substances (materially and digitally).

Visiting Walt Disney World in Orlando, for example, clearly makes for one of the happiest experiences in Reality, but the company employs Alternate Reality with its Kim Possible experience at EPCOT, in which guests work together to “save the world”. It embraces Warped Reality with Main Street USA harkening back to a bygone era, and also in how it manages queues to change guests’ perception of time. Disney also increasingly turns to technology to warp its waiting time reality. It now has a wait-time command center below Cinderella’s Castle to monitor wait times throughout Walt Disney World (Mirrored Virtuality). When necessary, the center calls for additional ride capacity and/or a mini-parade to route guests to underutilized areas of the park (both in the theme park’s base Reality). Disney is adding video games to the waiting areas of particularly long-lined rides (Virtuality), while its smartphone app Mobile Magic lets guests see where characters are out in the park (Augmented Reality). Finally, the company is experimenting with wristbands that identify guests connected to in-character technology, so that the cast members playing characters will know whom they’ve already met and where, guest names, and so forth (Augmented Reality for the cast members to enhance Reality for the guests).

You create a third space whenever you transverse even one boundary between two realms within any given experience. Layar not only enhances your current surroundings through its Augmented Reality technology but also, with some apps, can give you a “time slider” that lets you see those surroundings into the past or future, shifting over into the No-Time realm of Alternate Reality. Other apps turn the phone into a gun to shoot down virtual objects, sliding over into Augmented Virtuality. Or consider SensAble Technologies of Woburn, Massachusetts, which provides 3D design and modeling tools clearly within the borders of Physical Virtuality, but its FreeForm and Clay-Tools applications enable users to use a haptic device it developed, called PHANTOM, that provides force feedback operating on 3D models, letting you, for example, model

with virtual clay just as if it were real clay. The addition of haptics causes the experience to reside simultaneously in Physical and Augmented Virtualities.

As you can see, digital technology continually pushes the frontier of experience outward, opening up new worlds begging for ambitious exploration. The Multiverse is the instrument by which you set the direction and chart the course. Its ongoing mission: to help you explore strange new dimensions, seek out new technologies and new experiences, and boldly go where no company has gone before. Therefore think of the Multiverse as more a flexible tool for taking you into the far reaches of your imagination than as a blunt instrument restricting where you can go and what you can dream.

And dream big. Recognize that the three dimensions of the Multiverse do not stop where we have drawn the boundaries of each box. Those little arrows on both ends of the three dimensions mean the lines representing each variable extend out, further and further, reaching to infinity. With them go the eight realms, expanding ever outward, encompassing ever more possibility, creating deeper and more intense experiences – particularly as you fuse them together into third spaces through innovations resulting from our imaginings.

And of that there is no end.

Sources

1. Ethan Zuckerman, 'TED Global: Neil Gershenfeld promises us a replicator', ethanzuckerman.com, 17 July 2010.
2. David Gelernter, *Mirror Worlds, or the Day Software Puts the Universe in a Shoebox: How It Will Happen and What It Will Mean*, Oxford University Press, 1993.
3. Wade Roush, 'Second Earth', *Technology Review*, July/August 2007.



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