

WELCOME TO THE EXPERIENTIAL AGE

When Chris Klock was ten years old, his parents took him to the Statue of Liberty. After climbing halfway up the interior stairs, he stopped at a lookout point to see the New York City skyline. “It just terrified me. I turned around and walked right down the steps,” Chris said. It was the first time he could remember being overwhelmed by *acrophobia*, or, the fear of heights, which afflicts an estimated 7% of people worldwide. It was a fear that would plague him for many years to come.

Phobias are rarely cured without treatment; in a state of heightened fear, phobic individuals usually actively avoid, reject or move away from a fear-inducing stimulus. In doing so, they never relearn new, positive ways to interact. Most commonly they avoid the object of fear reinforcing a negative perception of it and making the problem worse. For many years now, therapists have used a technique called “exposure therapy” to help clients reduce phobias and anxieties. The method works by gradually exposing clients to fear-inducing stimuli without avoiding it. Little by little, they get used to one fearful situation, then progressively advance onto to greater challenges. The fear begins to dissipate through repeated exposures.

In Chris’s case, a therapist took him and a group of other acrophobics to a first-floor balcony. They would look at the edge of the railing, and all the major anxiety symptom would appear: raised heartbeat, sweating, nervousness. They were encouraged to spend as much time as possible on the first-floor balcony until the fear diminished. Next, the therapist would challenge them to go out to the railing. After they could remain at the railing without fear, they were challenged to go to the second level, then the third level and so on. Over seven weeks, they would spend 45 minutes exposed to progressively more



challenging heights. At the end of the course, Chris was able to stand at the railing of the balcony on the 20th floor and look out over the view without fear.

However, there was something unique about this balcony Chris was standing on: it wasn’t real.

This experiment took place in 1995. As a graduate student, Chris had participated in the first controlled experiment using virtual reality as a therapeutic intervention to target acrophobia. Now, over 20 years later, virtual reality technology has advanced significantly in terms of realism, interactivity and complexity. It has not only been used to successfully treat a wide variety of phobias, anxieties, and other disorders, but has been deployed in numerous other applications, setting in motion a much larger shift that will reshape the future of how we interact, how we learn, and how we train our workforces.

THE EXPERIENCE REVOLUTION

Historical periods are often marked by technological transformations that reshape human societies. The Stone Age, Bronze Age and Iron Age, for example, were marked by increasingly sophisticated metallurgical techniques to refine the production of tools and weaponry. The dominant civilizations of those periods were those that were best able to harness and deploy these advances.

Our current period has been called the Information Age. This period is marked by a shift away from the Industrial Revolution of the 19th and early 20th centuries. While the Industrial Age was rooted in mechanical mass production, the Information Age is built on a knowledge economy, where the dominant societies of today are those best able to harness and deploy efficiencies in how information is generated, shared and used to aid decision making. But according to many prognosticators, the Information Age is coming to a close.

What we are entering now, many say, is the Experiential Age, which will be an epoch defined by our ability to harness and deploy the direct transmission of experiences. But if this is true, what does it mean for industry? How does this really disrupt our current ways of working and interacting? And how do industries adapt and put it to use? For the mining industry, one pivotal area is in the design and application of safety training and learning experiences. Below are three ways in which the Experiential Age might transform we train our workers.

Quality Over Quantity

In the Information Age knowledge was king. Access to information, high quality performance feedback, and big data analytics drove instructional design. But increasingly, the quality of experience is more important than the quantity of information. Immersive technologies like virtual and augmented reality make data just one component in a larger experience of the learning platform. Training is shifting away from classical instructional design and toward immersive, user-centered designs, where learners don't just digest new information and get feedback. Instead, they participate in a more robust learning experience where innovative thinking can flourish and consequences to actions are felt, not just perceived.

Show Over Tell

Through a mechanism called *narrative transportation*, which we discussed in last month's article, we now know that people learn and change behavior more far more effectively when they are immersed in a story or narrative rather than simply presented with new information. The ability to transmit direct experiences using virtual and augmented reality can exponentially increase the potential for narrative transportation to create behavior change, increase retention of information and decrease skill decay.

Interact Over Interface

We are all used to screens and keyboards as primary mediating interfaces for remote interaction. But immersive goggles, augmented reality, and voice interactivity allow us to increasingly shed interfaces and blur the distinction between physical and virtual worlds. Through more direct experiences, we can engage a broader set of brain functions in decision making and create more naturalistic virtual interactions. These features allow us to create more effective learning environments for complex scenarios that are difficult to replicate in the real world or on screen-based interfaces.

Essential Ingredients

With all of the advances in VR and AR technologies, two design principles remain as essential to its effectiveness as they were in those early exposure therapy experiments in the mid-90s, especially for enhanced workforce learning and training : 1) *presence*, or, the sense of "being there" and 2) *repeated exposure*, or, the ability to rapidly expose people to challenging scenarios, helping then relearn new ways of interacting ith the world and with others.

The sense of presence

"It was completely realistic," said Chris Klock. "In the back of my mind I knew it wasn't real, but I felt I was on the edge of the ledge. Even though it looks like an animated reality, all the depth and movement cues are realistic, so it feels real."

The primary goal of any experience designer in virtual reality is creating a sense of presence. Presence in virtual reality is the feeling that you are really there and that it is really happening to you. Presence has two primary components. The first is the *place illusion*, which is the sensation that you are actually in a real place. The second component is the *plausibility illusion*, which describes the feeling of coherence that events in the virtual world are actually occurring, key elements make sense together, actions produce appropriate consequences and interactions feel realistic. Even though Chris Klock knew "in the back of his mind" that it wasn't real, he had an acute sense of presence that allowed his mind to believe that he was on that balcony and the scenario of falling off of it was plausible. Triggering that sense of presence is necessary for effectively creating behavior change in an immersive learning environment.

Repeated exposure

One of the primary areas that virtual reality has shown effectiveness is in disaster preparedness. The goal of any disaster preparedness training scenario is to help people learn *emotional regulation* during chaotic or stressful events, which helps enable more effective decision making. However, because high risk scenarios are rare, operators are often frightened, overwhelmed and highly reactive when disaster strikes, which severely impairs decision making even when they know the correct protocols. Emotional regulation realigns the fear response so that appropriate actions can be taken to address appropriate sources of risk.

Just as repeated exposure to a 20-story virtual balcony helped Chris reduce his fear and increase his emotional regulation, repeated exposure to disastrous events in virtual reality helps operators in high risk work environments remain emotionally regulated when things don't go as planned.

As we enter the Experiential Age, workforces will be overhauling every aspect of their operations, from engineering to product design to learning and training using experiential technologies that have been decades in the making. At the dawn of this new era, it remains to be seen what suite of new tools remain just beyond the horizon. —

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