

## The depth and breadth of the metaphor

# The Magic Eyes® of innovation: Working within the metaphor

## Magic Eyes® images can illustrate numerous features of how breakthrough innovators collect and connect dots



In this essay we continue our exploration of the metaphor for breakthrough innovation introduced in the last essay, the act of viewing Magic Eye® images.

While I strongly encourage you to re-read the previous essay before studying this one, as a brief refresher, the metaphor is particularly powerful, with several key features of innovation capable of being illustrated through it. The apparently random dots of Magic Eye® images (hereafter referred to as Random Dot Stereograms (RDS)) illustrate the apparently random mass of data confronting the Serial Innovator (SI). Just as the RDS viewer does not focus on the two-dimensional surface image, the SI does not focus on the data itself. Instead, RDS viewers and SIs look at the totality of available data in parallel, holistically. Only then can either have the capacity to see what they are looking for – the embedded three-dimensional pattern for the RDS viewer or the breakthrough innovative concept for the SI.

This metaphor illustrates that the act of innovation requires both “know what” and “know how”. While the dots themselves represent specific, factual, propositional explicit knowledge – the “know what” – the skill of connecting them represents tacit knowledge – the “know how” that the possessor cannot fully articulate. Such “systems thinking” and “connecting the dots” are the work of a master.

Since the relative focus of the last essay prohibited an exhaustive consideration of the metaphor, I revisit it in significant detail here. Over the next several pages, in fifteen unique examples, we will explore the depth and breadth of this metaphor. For each example I depict with a drawing a particular feature of RDS viewing, discussing in the associated text the illustrated aspect of breakthrough innovation. ■

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*Over the next several pages, in fifteen unique examples, we will explore the depth and breadth of the metaphor for breakthrough innovation introduced in the last essay, the act of viewing Magic Eye® images.*

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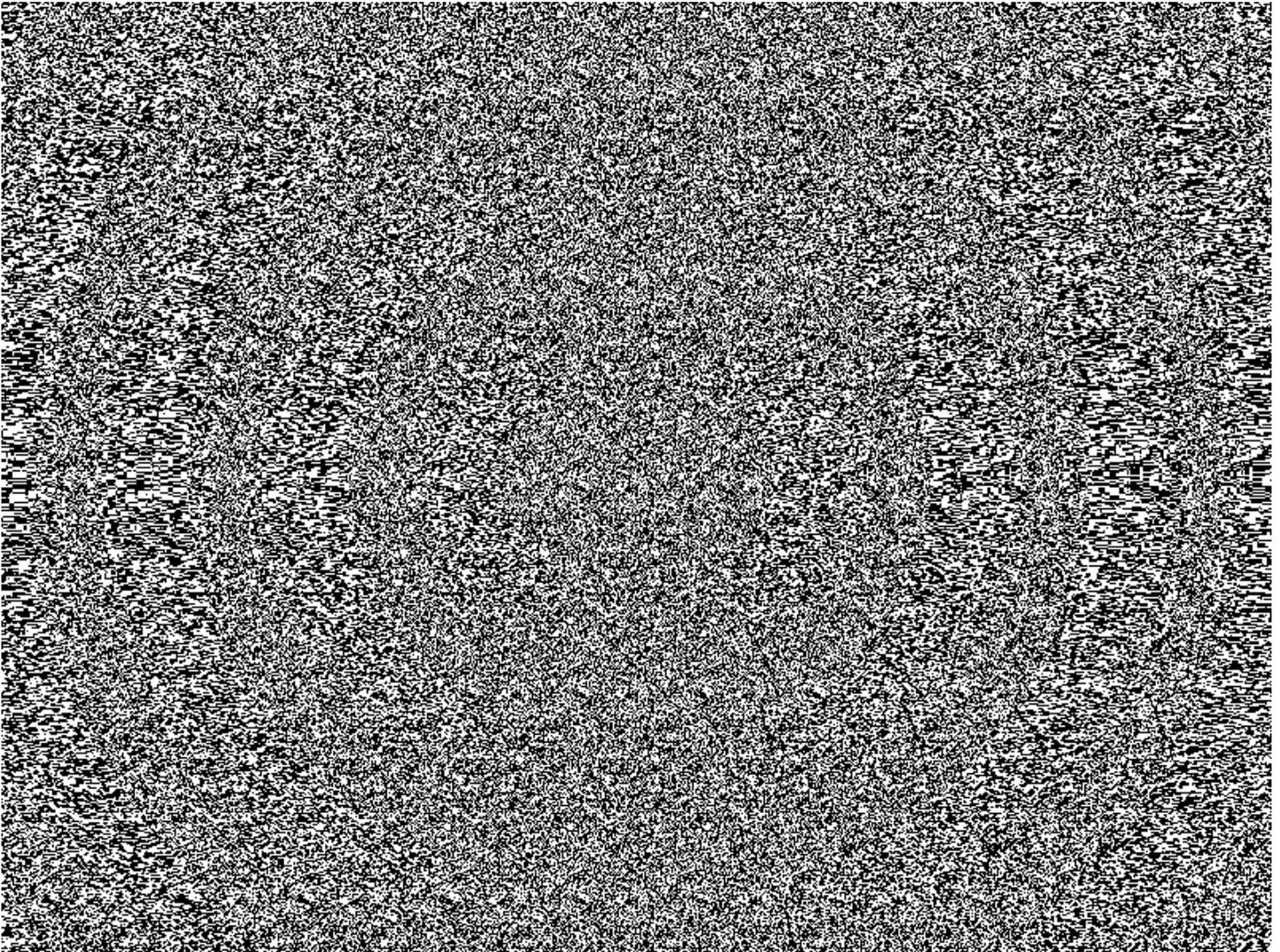
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<sup>i</sup> Magic Eye, Inc., *Magic Eye: A New Way of Looking at the World* (Kansas City, MO: Andrews and McMeel Publishing, 1993).

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*“On the Epistemology of Innovation: How Breakthrough Innovators Connect the Dots” is a series of brief, occasional essays addressed to executives, managers, and technologists responsible for innovation in industry. Its purpose is to challenge readers to reflect broadly and deeply on the practice of innovation – in particular on how innovators come to know what to do today – in order to succeed commercially in the future. Essays are available without charge at the University of Illinois’ digital archive at <https://www.ideals.illinois.edu/handle/2142/27667>. The discussion group at <http://epistemology-of-innovation.com> is a place to provide feedback and dialog with the author and others regarding these essays, as well as to register to receive notice of new essays as they are issued.*



**Please read this before you begin exploring the examples on the following pages**

To facilitate your personal experience with the fifteen examples shared below, I provide here for your convenience a Random Dot Stereogram (RDS) in which a series of concentric rings, with something of a three dimensional ripple appearance, is embedded. This is the type of RDS depicted in many of the examples contained in this essay; the series of concentric rings depicted in the mind's eye of the viewer in example 8 is where this first appears on the following pages. This RDS was created by using Stereogram Explorer,<sup>1</sup> a simple design software for creating RDS images of the type presented in the Magic Eye® books.

You may find that professionally produced RDS images are easier for you to see. If so, I encourage you to use them instead. All of the examples will work the same regardless of whether you use this image or any one of the many Magic Eye® images, for example.

Please note that not everyone can see the embedded three dimensional image. This is often due to a lack of depth perception. For example, I recently met someone who could not see the embedded image because their Lasik surgery adjusted one eye for reading and the other for seeing at a distance. Others appear to experience difficulty in their tacit reconstruction of the image in their "mind's eye". I assure you that the embedded image is there!

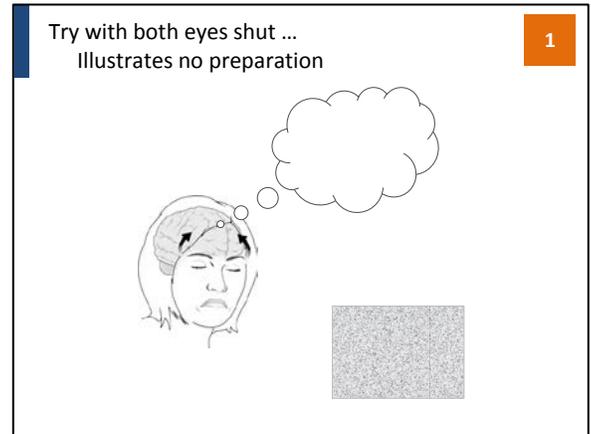
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<sup>1</sup> At the time of the writing of this eassay, Stereogram Explorer can be downloaded for a \$20 registration fee at <http://www.aolej.com/stereo>. While I expect that other good options are likely available, I have found Stereogram Explorer to be easy to use which is why I mention it here. Be assured that I have no connection with this company.

## 1. Lack of preparation

Aspiring innovators fail before they start if they are not adequately prepared for the task. Without the ability to work fluidly and effortlessly with technical concepts, customer insights, financial requirements, etc. a potential innovator may be blind to the factual information necessary to give rise to breakthrough innovation while in the midst of it.

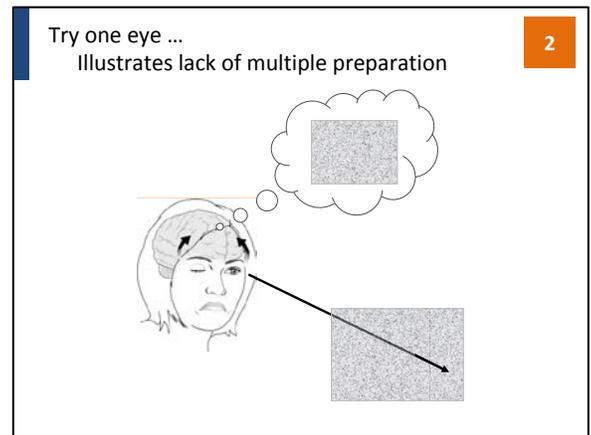
You can illustrate this within the metaphor by closing your eyes in the face of an RDS. Everything external to you necessary to permit seeing the 3D image is available to you. Yet, by not having the eyes to see the RDS, the 3D image eludes you.



## 2. Prepared, but not multiply

Aspiring innovators fail before they start if they are not prepared multiply for the task. With the ability to work with only one of the multiple required insights (again, technical concepts, customer insights, financial requirements, etc.) the potential innovator may see all of the factual information necessary to give rise to breakthrough innovation, yet only see it from one perspective. For engineers and scientists, this will be the technical perspective, while, for those in marketing only the customer or market perspective will be accessible.

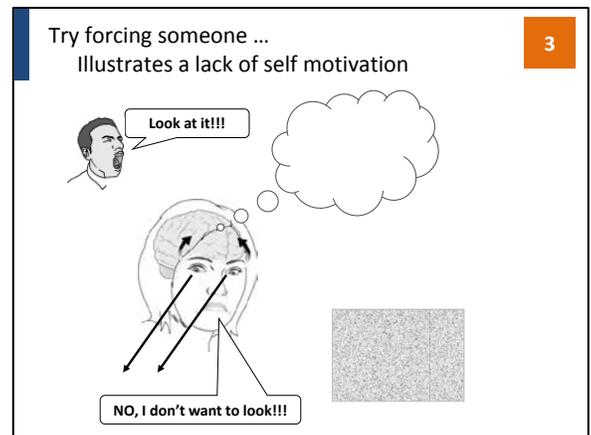
You can illustrate this within the metaphor by opening only one of your eyes in the face of an RDS. Everything external to you necessary to permit seeing the 3D image is available to you. You even have the ability to access the RDS, albeit with only one eye. Yet, by not having both eyes to see the RDS, the 3D image still eludes you.



## 3. Not personally motivated

Those not personally motivated to solve customer problems are very unlikely to come up with breakthrough innovations. Many of those in research or technology groups focus on other things, most commonly new and interesting technologies, that typically are independent of solving important customer needs. Regardless of how much managers cajole these people to innovate, they just are not motivated to immerse themselves in data relevant to solving customer problems.

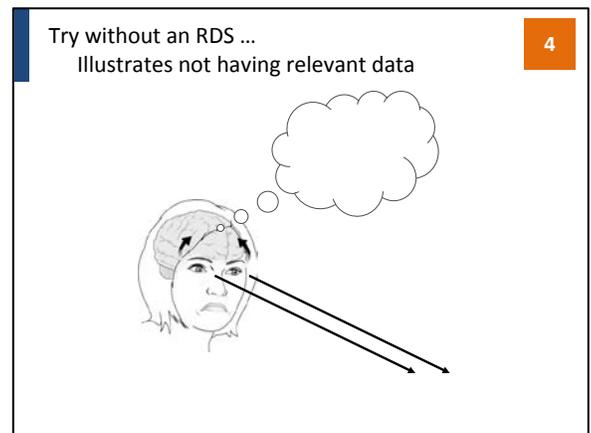
You can illustrate this within the metaphor by not looking at the RDS. If we take the RDS as containing all of the required dots, the viewer looks elsewhere. Another way to illustrate this would be to have the viewer gazing at a different RDS, even with the proper gaze to see the 3D image, albeit the wrong one.



## 4. Prepared and motivated, but not possessing relevant data

A good, but insufficient state is to be both prepared and motivated. If such an individual is sufficiently curious, eventually they will likely collect enough relevant data so that breakthrough innovation is possible. A potential, although not commonly observed, situation is where such an individual is not curious.

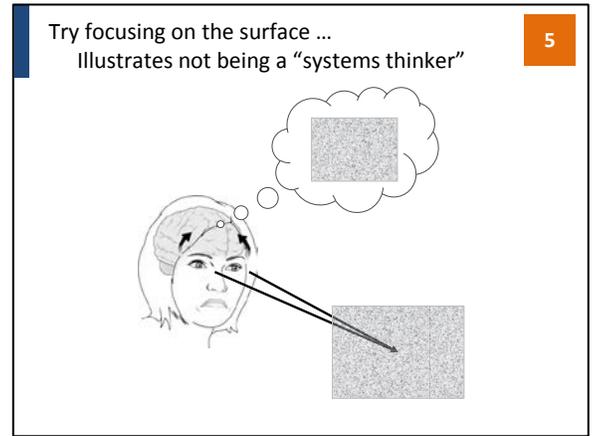
You can illustrate this within the metaphor by not having an RDS to look at. A curious viewer will look for an RDS to view and ultimately, although later, succeed in seeing a 3D image. One who is not curious will not look for an RDS. In some respects this second situation presents itself similarly to that discussed in illustration 3 above, where the viewer is not motivated.



### 5. Prepared, motivated, curious, but not a systems thinker

A very common situation is to find individuals who have all of the capabilities and much of the information at their disposal, except the skill of systems thinking.

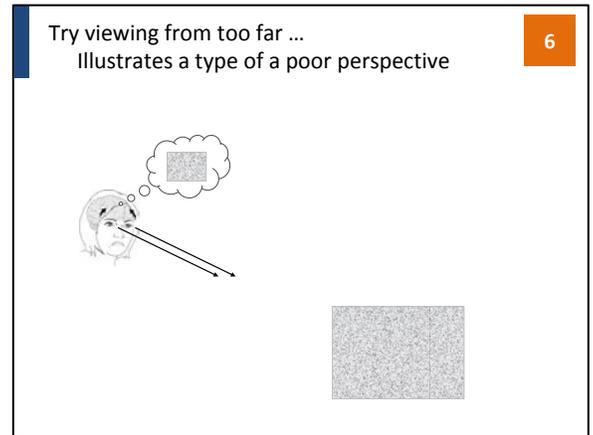
In a metaphorical sense such near-sightedness is illustrated powerfully with an RDS where the viewer focusses on the surface. Without gazing holistically through the RDS, the viewer is condemned to a life of only seeing the dots themselves.



### 6. Poor perspective on technology

A very real characteristic of breakthrough innovators is that they possess appropriate perspectives relative to technology. They see technology as a means to an end and understand that technology development is pursued only to make money for the company.

Similarly, the right perspective, relative to the RDS, must be held in order to see the 3D image embedded in an RDS. Viewing an RDS from too far illustrates poor physical perspective relative to the RDS.

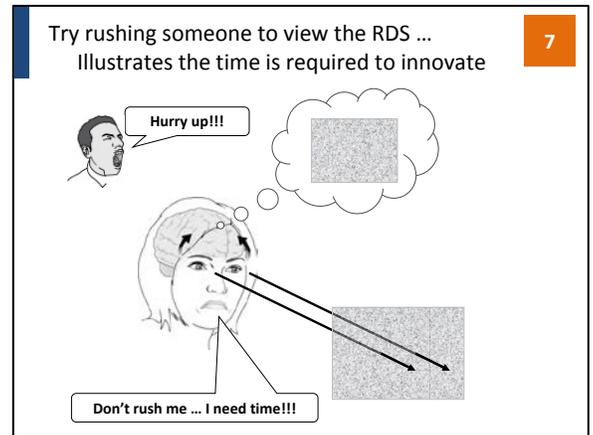


### 7. Pushed to get results

With this example, we move from considerations of the inability to innovate to the challenges confronted by those with at least some level of ability.

A commonly held belief by many is that innovation can be "accelerated". While it clearly is important to not pursue wasteful effort, breakthrough innovation cannot be rushed. It takes time for Serial Innovators (SIs) to both gather the necessary data and then immerse themselves in it long enough to discern an innovative solution to the customer problem.

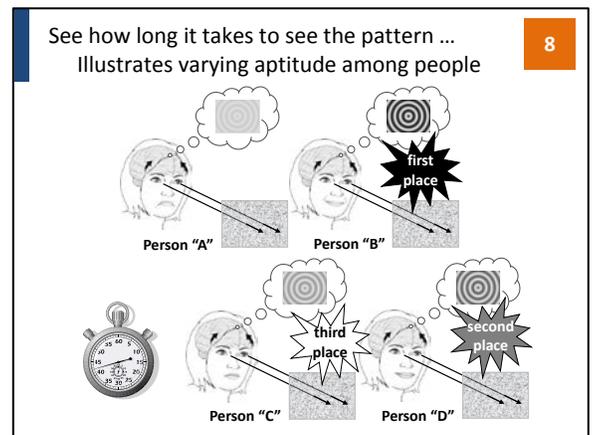
You can illustrate this by chiding someone to hurry up while they try to view an RDS. Ironically, such harassment usually only results in it taking longer to view the embedded 3D image in an RDS.



### 8. Innate aptitude varies – nature vs. nurture

Not surprisingly, the aptitude for systems thinking varies. Some are able to make connections and see information holistically more quickly than others. The fastest are those who will arrive at innovative insight first – the SIs.

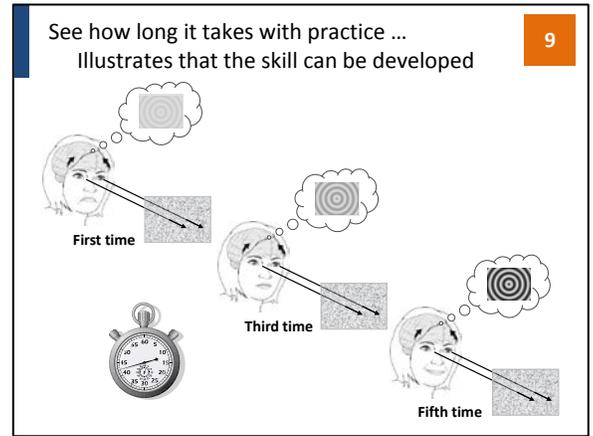
You can illustrate this by timing a group of individuals who are viewing a particular RDS for the first time. Some will see the embedded 3D image very quickly; some will struggle.



### 9. Can improve with practice – nature vs. nurture

While variation in native skill at systems thinking is observed, improvement in this skill can be observed with practice. As SIs experience success, they increase their self-awareness of what occurs as they discern the patterns associated with innovation.

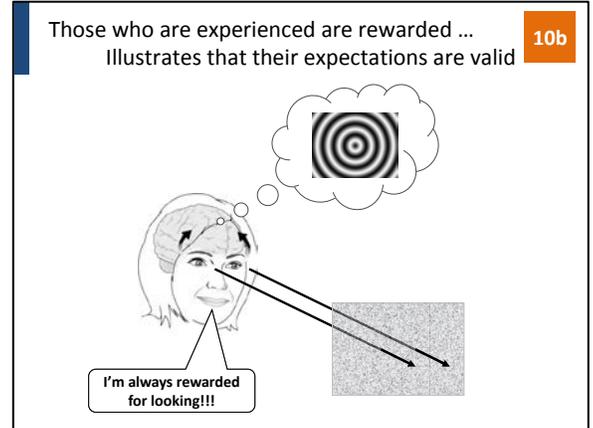
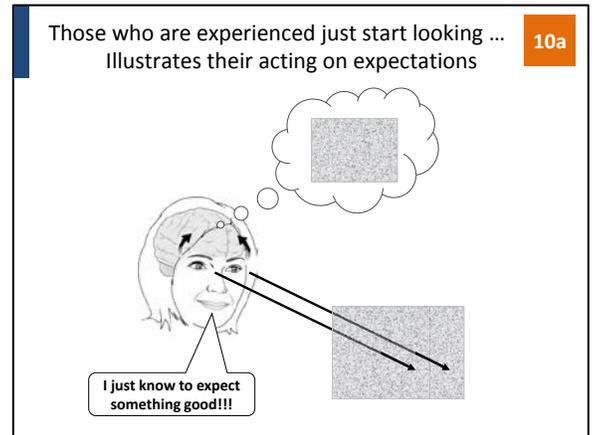
You can illustrate this by viewing a set of RDSs, one after another. As the viewer regains familiarity with how to focus their eyes and position the RDS, they find that they can move from one RDS to the next more quickly as time goes on. Their learning comes with practice.



### 10. Anticipate discovery, even if it does not result in a new product

One of the more fascinating characteristics of SIs is that they just start exploring, with some sense that something will come of it. In contrast, many innovation neophytes seem to lack confidence at first, with some exhibiting a level of paralysis at the outset. As a result, many do not immerse themselves to the depth and for the length of time required to experience breakthrough innovation.

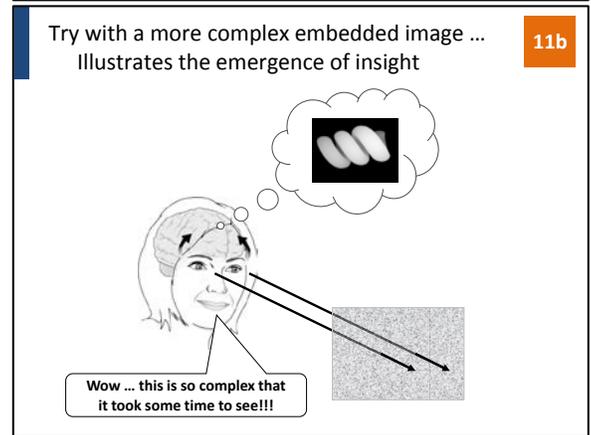
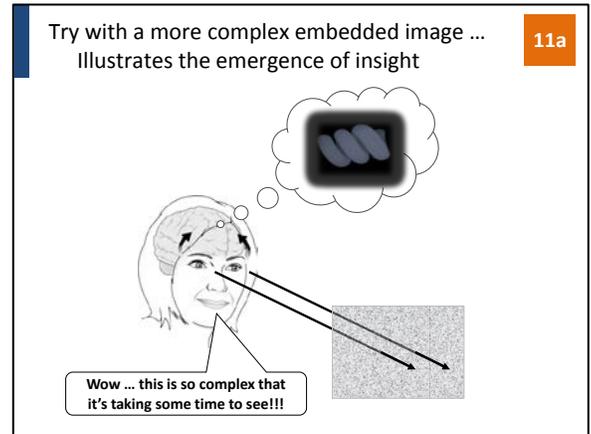
You can illustrate this by an experienced viewer or RDSs who comes to an RDS and just starts looking. They know that a 3D image is embedded, they know that they will be rewarded if they pursue it and persevere, and they just expect something good to come from their effort.



## 11. Breakthrough innovation emerges – at times gradually

Each of the last four examples addresses the fact that innovation requires time – time for the SI to immerse themselves in the available information and make sense of it in a way that yields innovative insight. Such gradual emergence of innovative insight is particularly characteristic of breakthrough innovation, as the insights associated with it typically are complex and always unfamiliar.

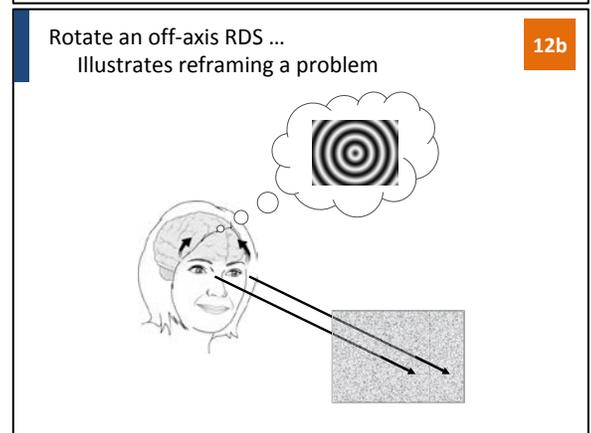
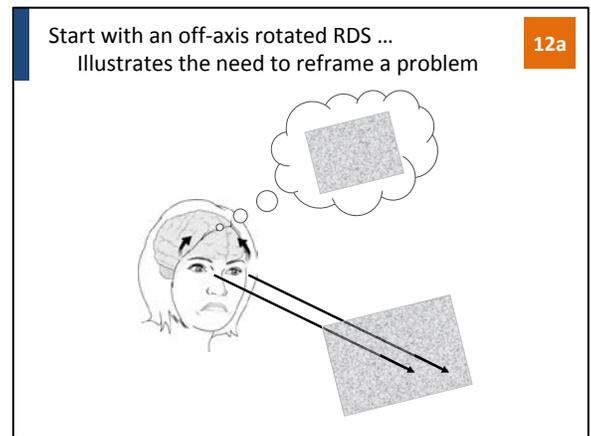
You can illustrate this by embedding a very complex 3D image in an RDS. The viewer often will begin to see parts of the image, not capturing it in totality for some time. As such emergence occurs, it is very difficult to identify just what the pattern is – at least until the entire pattern emerges. Not unlike trying to name a song by its first few notes, it rarely is easy.



## 12. Realize when a problem must be reframed in order to solve it

A striking pattern observed in breakthrough innovation occurs when an SI “reframes” a customer problem. While the existing consensus is to view the problem in one way, the SI sees it entirely differently. Such a story was related by Tom Osborn, an SI who had significant impact on the feminine hygiene product industry during his career at P&G.<sup>1</sup> When he began in this industry, the generally-held perspective was that feminine hygiene products were there to catch fluid and the goal of innovation was to improve performance within this “diaper” paradigm. Tom, however, understood the customer problem in a deeper, more nuanced way than those before him – that viewing the product as a “garment” would provide benefit to P&G’s customers and shareholders, as well as to his co-workers and management.

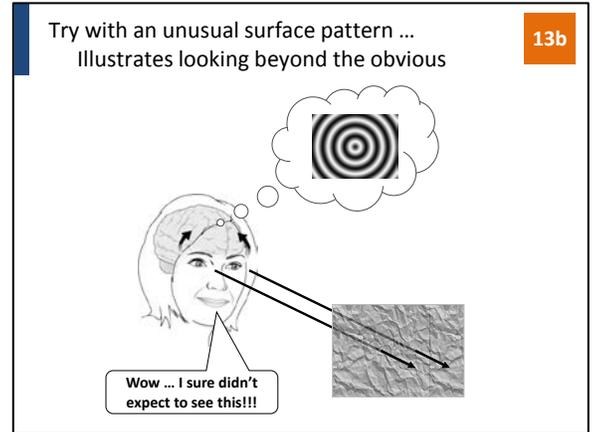
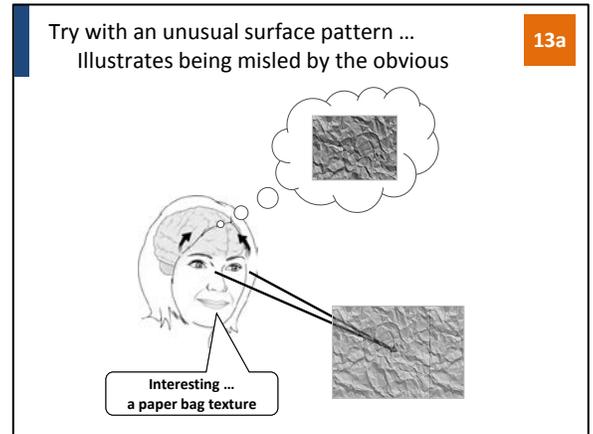
You can illustrate this by first rotating an RDS slightly off-axis. With this orientation, the viewer will be unable to see the embedded 3D image, even with the right perspective in every other way, including but not limited to staring beyond the surface, not at it. Then, by rotating the image back to its horizontal orientation, you “reframe” it, you change the orientation from which you view it. In doing so, you know will be able to see the embedded image in a way that was impossible just moments before.



### 13. Can be distracted by a pattern, even if it has no significant meaning

Just as poor framing at the outset provides opportunity for SIs to make breakthrough innovation by reframing, initial distractions can be overcome by SIs. It often is just too easy to be distracted by superficialities. All of us regularly take things at face value, often being drawn in by them, embracing them as a reality to explore. Instead, SIs immerse themselves in such a way that surface distractions are overcome.

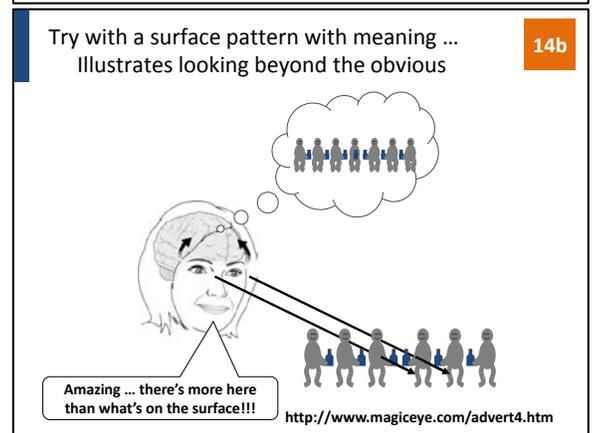
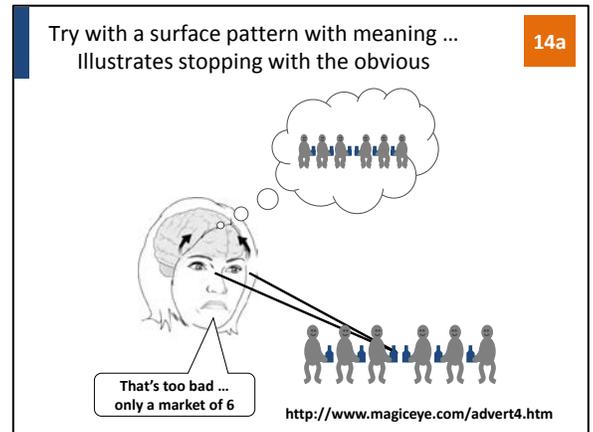
You can illustrate this by using an RDS that has a surface pattern. In this example, the surface pattern has no real meaning from an innovation point of view. However, its existence can very easily distract the viewer from taking the time to look beyond for the embedded 3D image. Only by doing so is the viewer rewarded by seeing it.



### 14. Can be distracted by a pattern, especially if it has significant meaning

It is especially easy to be distracted by superficialities that carry meaning. Just as in the previous example, all of us regularly take things at face value, often being drawn in by them, embracing them as a reality to explore. When the surface pattern carries meaning it is particularly difficult to detach from it. Instead, SIs immerse themselves in such a way that surface distractions, even those carrying some potentially relevant meaning, are overcome.

You can illustrate this by using a type of stereogram that has a surface pattern of the type depicted in the associated figures. In this example, the surface pattern (the original can be found at the Magic Eyes® web site: <http://www.magiceye.com/advert4.htm>) consists of six monkeys, each holding a bottle. By taking it at face value, we merely see the six. However, by viewing it in the manner of an RDS, you instead see seven monkeys. As with the previous example, only by doing so is the viewer rewarded.



## 15. The opportunity to innovate is continuously renewed

Over the past two decades much has been written about innovation. Just a handful of the most familiar books, with their salient message, include:

- The Sources of Innovation, by Eric von Hippel (Oxford Press, 1988) – look to ‘lead users’ for innovative ideas;
- The Innovator’s Dilemma, by Clayton Christensen (HBS Press, 1997) – new products to new customers require a distinct organization;
- Radical Innovation, by Richard Leifer, et. al (HBS Press, 2000) – idea generation, opportunity recognition and implementation as separate activities; and
- Open Innovation, by Henry Chesbrough (HBS Press, 2003) – look outside your organization for new ideas.

But do not be limited by my list – draft your own. All provide great insights and suggestions, adding real value, but some are something of a recipe, and – to be successful – each must be applied with insight and discernment about the existing situation.

What you will see is a pattern of (1) places to look for ideas, (2) how to organize to create ideas, and (3) how to incubate ideas. Each, while accurate, will only address a specific aspect of innovation, no matter how broad the focus. What you will not see is anything that is sustainable and truly broadly applicable, in part but not entirely due to the fact that the specifics of your situation are missing from each book.

That is, each must be understood sufficiently in order to know how, or whether, to apply it to your particular situation. Unfortunately, then, each of these other concepts is both incomplete and ephemeral, and all illustrate just how elusive sustainable expertise in innovation really is.

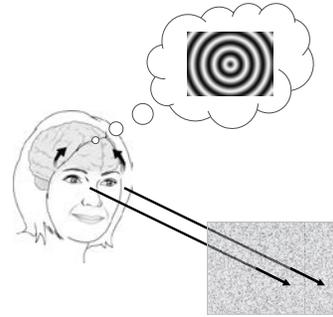
What I suggest is that, in contrast, the innovation skill represented by this Magic Eyes® metaphor is the truly sustainable approach to innovation. By immersing yourself in relevant information on an ongoing basis, by having the proper perspective and holistic gaze, you can gain insight otherwise unavailable in your specific situation.

You can illustrate this simply by just moving from viewing one RDS to another. The dot pattern changes and, with it, the embedded 3D image changes. A more powerful way to illustrate this is by viewing a video of an RDS in which the embedded pattern is constantly changing. At the time of writing this essay, such an RDS video can be found on YouTube at:  
[http://www.youtube.com/watch?v=\\_emBBi-muLo](http://www.youtube.com/watch?v=_emBBi-muLo).

By viewing an RDS video, you will experience something like surfing, riding the wave of new information that constantly is changing, morphing, moving. Does this feel like what you observe in the best innovators? Is this what you experience while attempting to innovate?

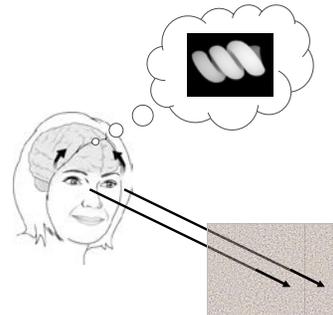
Try with a time-varying RDS ...

15a



Illustrates innovation's dynamic nature

15b



<sup>i</sup> Tom Osborn's story of breakthrough innovation is related in detail as illustrating the actions of an exemplar in our book: Abbie Griffin, Raymond L. Price and Bruce A. Vojak, Serial Innovators: How Individuals Create and Deliver Breakthrough Innovations in Mature Firms (Palo Alto: Stanford University Press, 2012).