

The Return to

# DESIGN



Clifton Stanley Lemon. June 7, 2018

I like to temper the heady feeling of future techno-visionary excess with a return to design. "Return" is perhaps not entirely accurate since we never really leave design activity, we just forget that it's more important than technology.

Two of my biggest design heroes have always been Charles & Ray Eames. I grew up in Southern California, and they were great icons of creativity and style when I was a kid. Later on I had the great pleasure of working in Los Angeles in the 1980s and 90s with people who had been in their studio and their professional circles. My experiences with these people, including Gere Kavanaugh and Deborah Sussman, were formative for me as a designer.



Tyler Blevins  
AKA Ninja

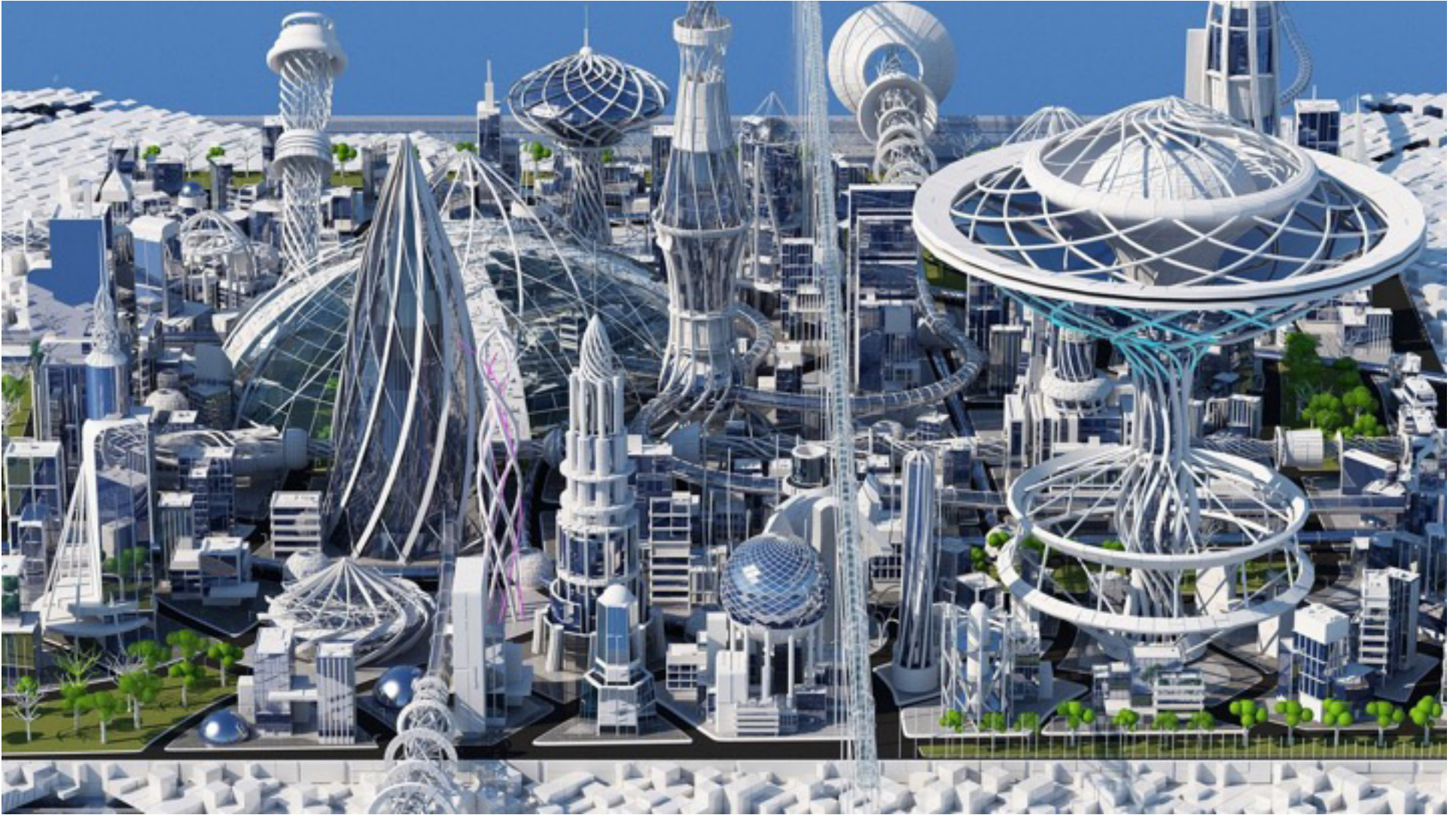
To follow on Mark Lien's comments about the future, here's a random slice of weirdness. This is Tyler Blevins, AKA Ninja, who makes between \$500,000- 600,000 playing Fortnite. You don't know what Fortnite is – ask your teenagers.

Wait but...

Progress towards...What exactly?

We assume that Progress is many things: inevitable, God-given (as in the doctrine of Manifest Destiny), desirable, and especially high tech. All of these assumptions deserve a closer look. Despite optimism about the future, it's pretty hard to find a realistic version of it. The good news is that the fact that we're constantly inventing fabulous futures means we still believe there is still a future to be optimistic about. It's also hard for anyone to imagine any other model besides relentless growth and change.

But what exactly are we progressing toward, faster and faster all the time?



Is it this? Unfortunately this is the predominant idea of what the near future looks like. Can't we just agree that this is ridiculous? Nightmares like this are mostly the result of powerful new design visualization tools now widely available for anyone to play with. Equally unfortunate is the degree to which parts of our major cities are beginning to resemble this dystopian technojunk landscape.



Or is it this? Growing babies in glass bubbles like in the Matrix is progress? Really? Why is it that images like this persist when we visualize the future? We know that fear of technology is behind it, but what else?

Wait but...

Who says? And Why?

Who's creating and disseminating these views of the future? A lot of the science fiction stuff is coming from Silicon Vally, no surprise. It's as though time itself is warped, because if things are changing with increasing speed, as we're constantly told they are indeed, then the future should be happening, well right about now. And indeed it is. Stuff like AI and robots and self-driving cars aren't really in the future, they're here now, and how are they really changing our world? If the future is arriving faster and faster, then in order for it to be

the future, we have to project our farther and farther, which of course is pretty much impossible anyway. Despite Ray Kurzweil's fantastic hit rate in predictions as described by Mark, we're not very good at predicting. Even his predictions aren't that surprising, as they're mostly based on stuff that's happening now, so projecting forward on things we have some understanding of isn't all that difficult. It's trying to imagine things we haven't even begun to imagine that's difficult, and increasingly important, especially since we need a future

that isn't based solely on advances in technology. Technology is wonderful, but we consistently get it wrong when we project our ability to adapt to it, or its trajectory. We either undershoot or overshoot our expectations.



We are constantly told by techno-visionaries that the impossible will soon become the inevitable.

- Sherry Turkle

Abby Rockefeller Mauzé Professor of the Social Studies of Science and Technology at M.I.T.

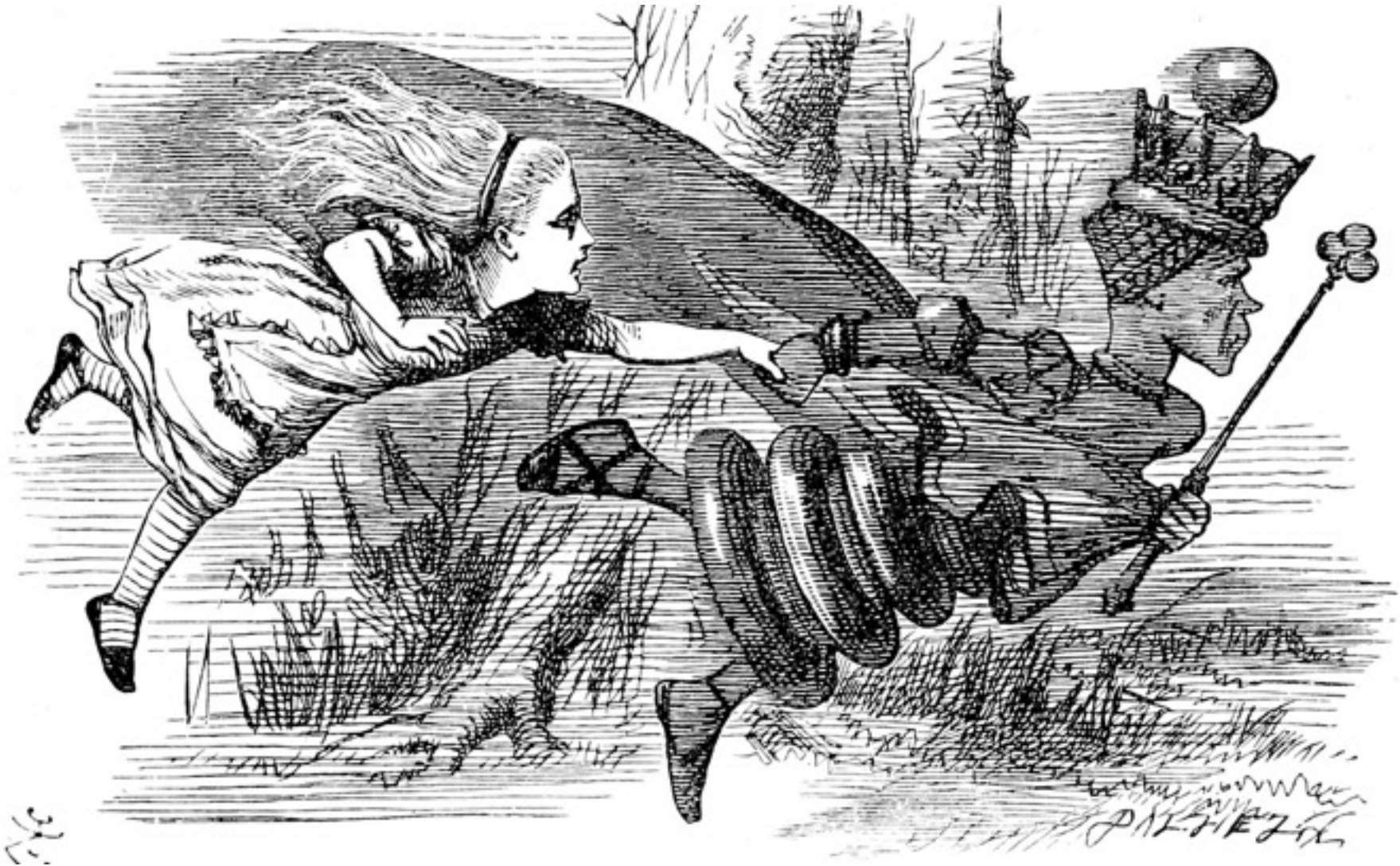
So this brings up the question of who's making the narrative? There is a case for building things that people don't know they want until they see them. Steve Jobs was brilliant at this, so was George Eastman. In his case, people knew about photography but could not understand why they would want to do it themselves. If they wanted pictures they went down to Main Street to the photographers and sat for a portrait. Kodak's genius was in creating what we call today the "ecosystem" for portable cameras. They taught people how to take pictures with portable cameras, starting hobby clubs and classes. It's the hard way to do it – "educating" the

market we call it today, but once it caught on, photography really went "viral."

It's one thing to create markets and change behavior with things like computers and cameras, but when technology begins to change social patterns in areas of our lives that impact us even more dramatically, like privacy and city planning, and the forces of change are increasingly in the hands of fewer and fewer people, political pressures build up and can dangerously overheat the social order. So it's no surprise that Silicon Valley's power brokers are now getting mixed up in

things they never envisioned a few years ago, like congressional inquiries into egregious violations of privacy; lawsuits over deaths from failures in self-driving cars; and changing the course of global politics by weaponizing data and communications.

The power and promise of technology is always used for both good and evil, often simultaneously.



Fears of loss of control resulting from overwhelming, rapid changes are not new. Lewis Carroll's Red Queen symbolizes the fear of technology, and the change driven by technology, that people experienced during the Industrial Revolution in England, which dramatically "disrupted" the social order.

"Red Queen" syndrome still resonates today, as we too, like the Victorians, find ourselves running faster and faster simply to stay in place. Inherent in this potent

metaphor are several salient narratives: the feeling of never being able to get ahead; the feeling that someone else is controlling the narrative (and more importantly the treadmill); the fear of rapid descent into irrelevance and certain demise should we happen to fall off the treadmill; and the general feeling of powerlessness against the onslaught of "progress" symbolized dramatically by disruptive technology – the Red Queen herself dragging you along inevitably like a force of nature, which in a strange way, she is.





Do not seek to have everything that happens happen as you wish, but wish for everything to happen as it actually does happen, and your life will be serene.

- Michel Eyquem de Montaigne  
(1533-1592)

Do you want to improve the world?  
I don't think it can be done.  
The world is sacred.  
It can't be improved  
If you tamper with it, you'll ruin it.  
If you treat it like an object, you'll lose it.

- Lao Tzu, Tao te Ching  
(c 600 BCE)

Here are two thinkers we automatically assume to be radically different because of their wide separation in distance and time but also because of our inherent cultural biases. But the conclusions they come to are strikingly similar.

Both Montaigne and Lao Tzu enjoyed the luxury of being philosophers, with ample time to reflect, contemplate and write. This vocation is only possible within the context of an advanced culture with advanced technology, complex division of labor and an extensive state

infrastructure tasked with preserving the system and the stability of the social order that makes it possible, a challenging task in any era. Both were in a position to advise government leaders or to actually fulfill government functions, so they were familiar with the risks of ignoring the valuable firsthand knowledge of human behavior that comes with such positions. And both said basically: start with reality. Montaigne's approach amounted to what some consider the beginning of Western modern thought, a large component of which revolves around evidence-based knowledge.

Lao Tzu's advice to see the world as perfect the way it is has always appealed to me because it's so counter-intuitive and especially because it's in such diametric opposition to our fundamental Western concept of progress. "Making the world a better place" seems to be at the root of all design activity, and the guiding moral principle of designers.

Wait but...

Who will fix it when it breaks?

New technology that saves us many hours of drudgery, or gives us fantastic new magic powers is of course irresistible. And it seems that we increasingly fail to wonder how it will get fixed when it breaks. There is of course a trade-off to relinquishing control over technology to corporations far away who are the sole providers of whatever it is that is now indispensable to our lives. We experience this loss of control when our smartphones go dead or get lost. And the factor of maintenance seems to be utterly ignored more and more, as replacement is often much cheaper. Or maintenance is

supposed to be automated, self healing, self correcting. Some of these strategies make sense, but for all the power of technology to make our lives easier, there's also a concomitant power of catastrophic risk when they fail, especially when we come to depend upon them for essentials like food water, information, and transportation, or heating, cooling, and ventilation.

We need a new ethic of design that plans for maintenance, replacement, and distributed access to the control of fundamental technology.

# Ancient Hindu Trimurti

**Brahma-  
The Creator**



**Vishnu-The  
Maintainer**



**Shiva- The  
Destroyer**



I have a lot of trouble with the term “disruption.” In its current popular use, it’s a lame interpretation of Harvard professor Clayton Christensen’s meme borrowed from Joseph Schumpeter, an Austrian economist who was one of the early proponents of the “free market” mythology that’s so pervasive today, and responsible for so many failures of government and economic policy. It’s also been thoroughly discredited as a useful economic theory. My sense is that Schumpeter probably got his original inspiration for the idea of “creative de-

struction” from Hindu mythology, for here is the notion of the great cycle of life, with gods in charge not only of creation and destruction, but intriguingly also of maintenance. Hindu mythology was like most elaborate narrative structures developed by advanced cultures – the deities resembled humans more than not, and their interactions were pretty much like a great celestial soap opera, replete with endless displays of loyalty, betrayal, gossip, devotion, annihilation, back-stabbing – the full range of human behavior.

In the Hindu cosmology, there’s also the notion that these roles are somewhat overlapping and interchangeable, shape shifting as it were – that every life force also contains the seeds of death and destruction. This, as it turns out, is the case with cancer – the processes in cells that create life are the very ones that cancer hijacks to bring upon the death of the organism. So in this respect, as with many ancient systems of philosophy the Hindu cosmology seems quite prescient.

# Modern Western Trimurti



With all due respect to any religious beliefs, today our concept of the Trimurti, at least with respect to our Western notions of building and progress, bears little resemblance to the rich, holistic, elegant narratives in ancient cultures. It's notable for its lack of connection between all the players. The gods of creation – exemplified by the starchitect and his rich clients – run the show, while maintenance is literally relegated to the basement, and normal human beings (AKA “occupants”) who have to live with the results of the disconnect,

namely unworkable building controls, revolt by foiling the elaborate designs that never took actual human behavior into account in the first place. They then play the role of destroyers of the ideal order, the forces of decline and decay, by disabling controls they don't like.

Clearly this model is – as we're fond of saying, as though it's a piece of technology that needs to be carefully reengineered – “broken.”

# Hybrid Monsters of “Creative Destruction”



The concepts of disruption and creative destruction take on a whole new meaning and scale when we look at the primary drivers of technocracy and the progress narrative we all get force fed relentlessly. It's no accident that many, if not most, of the Silicon Valley power brokers own the media channels and produce the content and the devices that have become dominant in all our lives. So not only do they create the new technology that's so disruptive, they drive the narrative that keeps it in place and blocks anything that threatens the unimaginably massive cash flow that the new media and communication technologies generate.

What has happened seemingly overnight is an unprecedented concentration of power, wealth, and control of technology in the hands of a very few people. These people probably didn't set out to become Dr. Evil but they all are unabashedly eager to dominate whatever sphere they can control – communications, energy, retail sales, transportation. The entire industries that they gleefully “disrupt” every day are larger in scope all the time.

Such concentration of unmitigated power should be worrisome politically in any economy, yet there is much about our culture that keeps it in place: our individual

hero mythology; our unshakable faith in technology; our “magic bullet” single technology myth; our declining sense of government as a protector of the social order; and the increasing inability of our legal system to keep pace with technology, to name but a few factors.

One of the biggest casualties of this technocracy is our utterly unwitting relinquishing of the last shred of what we used to think of as privacy. We will be dealing with the “unintended consequences” of this for long into whatever future we create for ourselves.

Wait but...

What kind of future do YOU really want?

The technocrats rightly argue that if Henry Ford had asked people what they wanted before he made automobiles ubiquitous, they would have said faster horses. It's undeniable that we can only be expected to view the future in terms of the present, since the future is intrinsically unknowable. Still, I think it's safe to assume that most people today don't really want or care about most of what future techno-visionaries envision and promote as inevitable, not least because it doesn't address their perceived big problems.

And there's no lack of problems to be solved, many of which are the results of technology itself.

# Maybe Like today, except without...



Most of us want these kinds of problems to go away, and it's clear that many of them are, if not caused by technology directly, then significantly abetted, magnified, or exacerbated by it.

# And more of...



Whatever the initial promised benefits are for technology, we still want and need what we've always wanted and needed: clean water, clean air, equal opportunity, affordable housing, jobs, education, access to nature, beauty, time with our families, government that works, safety and security.





Most of us basically want world peace, right?

It is true in general that in terms of key indicators—calories per capita, infant mortality, life expectancy, quality of life—the average person is much better off in general today than, say, 50 years ago. It's also true that because of the nature of our news cycle this fact is often masked by an increased perception of declining quality of life. But average statistics can easily mask hot spots of severe and increasing inequality that can rapidly blow up

politically, leading to catastrophic wars and splintering of social cohesion. Technology needs to be used more carefully, with a sense of the possibility of unintended consequences, to prevent these kinds of preventable outcomes.

## The Paradox

Consciousness and cognition demand a narrative...

Even if it's demonstrably completely wrong.

And here's a surprising paradox: we are incapable of avoiding predictions, even when we consciously know that the predictions are wrong.

We're discovering that the brain is hardwired to seek an explanation for things it perceives in the world. We can't tolerate meaninglessness and manufacture meaning where none can be found. Hence the state of permanent predictions coupled with permanent amnesia when they inevitably fail to pan out. It simply doesn't

matter as long as we retain unshakable confidence in our inevitable bright shining techno-future.

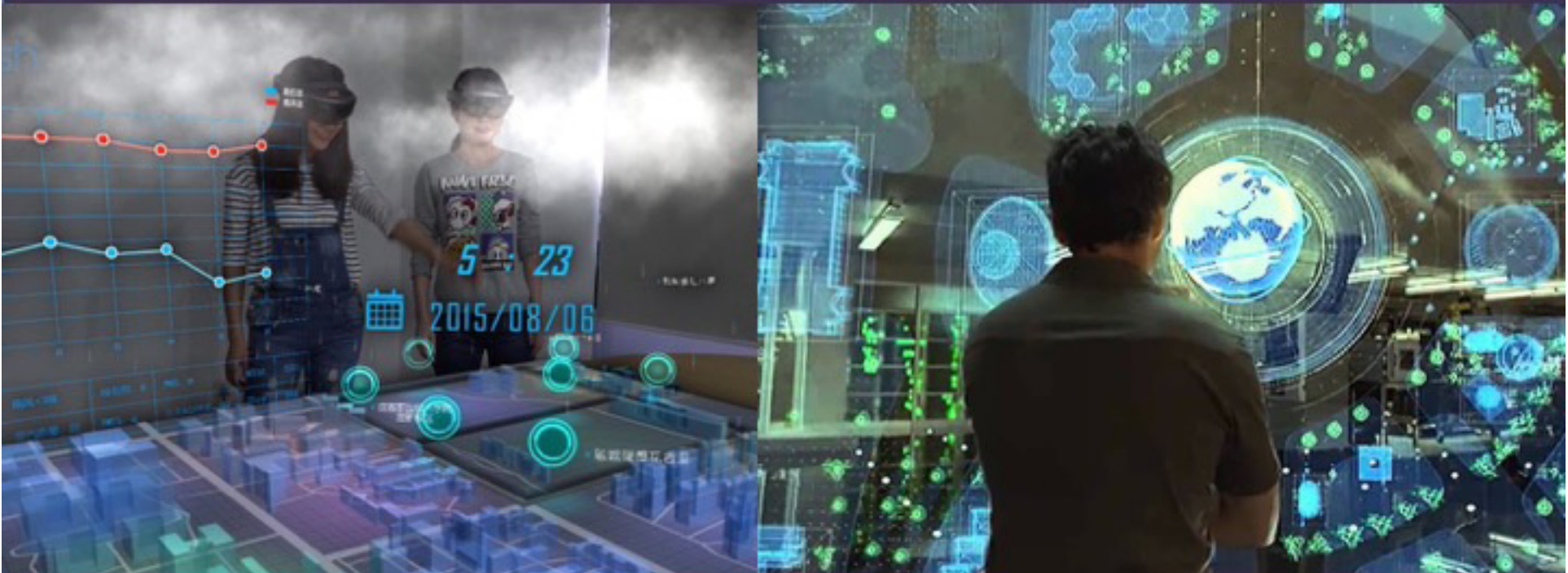
What would it be like if we envisioned the future not in terms of how much technology we'll have but in terms of how basic human problems will be solved? And I don't mean simply envisioning the end of work, hunger, disease, racism, war, or hatred. From one perspective, perhaps it's not surprising we expect so much of technology. We've given up expecting anything of govern-

ment, as our current government in the United States is certainly not focused on anything remotely close to solving basic human problems, and is putting forward no proposals or visions of the future, even idealistic ones.

Wait but...

You Promised me...

Thus we persist in believing that a technological future will be bright and lovely, even when the promises are never fulfilled, or fulfilled too little or too late.



What about those wall-sized data displays you see on cop shows on TV where you just drag and drop information and instantly know everything? I think I could probably use one of those, but where are they? Why do they keep showing us those like they're 1.) available now, or soon 2.) easy to use, 3.) actually useful, and especially 4.) inevitable? What's up with that exactly? Will these show up in 2 years or 30?

Think of all the technology things we're promised that never happen – we might be dismayed if we had the attention span to remember them. But it doesn't really matter because there's always something new to have a pointless illusion about, that's how the technology narrative works.



How about videoconferencing where you can get a global meeting up and running in under a minute, and everything works right away? There may be solutions out there that actually do this, and you may have actually experienced them, but it's really hard for me to imagine. It's not at all commonplace, despite the fact that the technology has been around for decades. Where is the incentive to make this technology easy to use? It's not like there wouldn't be a market for it. Or maybe a better question is why the hell do engineers persist in making

this and most other technology so incredibly difficult to use? At times it seems to be beyond evil, right?



What about smooth, ubiquitous, error-free personal videoconferencing? This was envisioned 72 years ago in 1946 with the Dick Tracy comics, and while we have the technology, you can't argue that it's as good as it can be. In fact, Skype, Facetime, and other technologies are in many cases barely acceptable, and they're certainly not ubiquitous. Why is that? What social or cultural changes will need to take place before person-to-person communication will be primarily be videoconferencing? Will this ever happen?

There's an anecdotal story about the first time Native Americans in the far north were shown internet communications with email. Rather than being amazed by the white man's magic, they said "Is that all you can do, writing? Why can't I see my cousin's face and talk to him directly?"

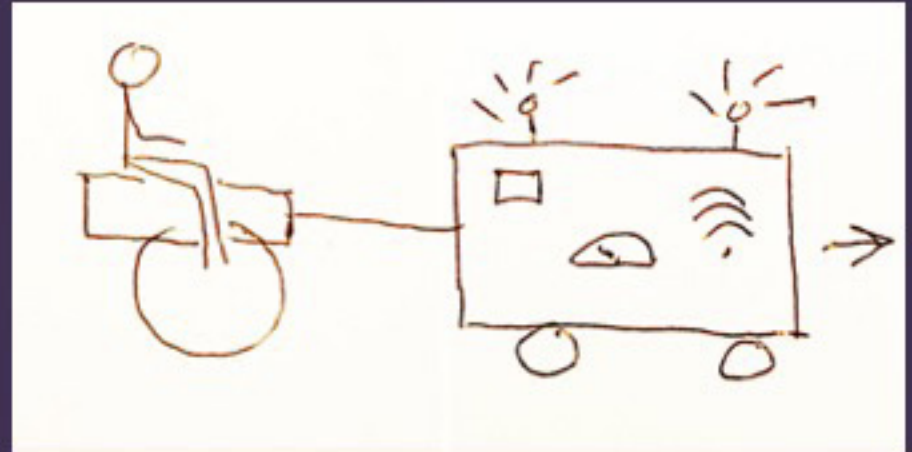


And what is a Smart City exactly? As far as I can tell it's still pretty much limited to streetlights connecting to the internet. Smart City narratives are driven by tech companies that want to sell unsuspecting municipalities on big complex contracts to provide marginally useful gear and proprietary systems. While we can certainly envision plenty of cool things to do with combining technology, that's about all we're really doing right now – envisioning.



And for the lighting world- how many of us have ever actually experienced "adaptive" lighting, where AI driven dimming, distribution, and color seamlessly change to suit the specific needs of the people in a given environment. Despite the technology being widely available and not necessarily difficult to deploy, most of us in the industry in a position to know all about this have never really walked through an installation where it happens. Yet we hear about how it's the next phase of lighting constantly.





One of the ways I get perspective on this is to put the cart behind the horse, so to speak:

Don't work for tech, make tech work for you.



Design is...  
A Messy Process of  
Creating Order

In other words, think like a designer.

Design Is...

Deciding what problems are worth solving in the first place

Part of the problem of context that we have is that technology is so pervasive and overshadows so many other imperatives that we create terms like “human factors,” “human centric lighting,” “user experience,” and “intuitive” which all assume that making things for humans is a special, custom consideration in design rather than the primary one.

While there is much to be said for accidental innovation, whereby technology often becomes used for applications other than the originally intended ones, too often the problem we set out to solve is finding a novel application for technology that’s just been developed (without a real design brief) than in solving important human problems in the first place. This is the putting the cart before the horse paradigm, and it’s all too often the predominant one.



On a recent trip to France, I repeatedly encountered luminaires that may have been fairly well designed, but showed very dated, poor quality light sources that were mostly retrofitted to replace original older technology. Europeans take the design of everyday objects much more seriously than people in the United States, but from what I saw it can't be said that they're ahead of the curve on LED adoption.



On the other hand, both old and new architecture in Europe is much more likely to be what I call a “luminaire building,” a building that functions as a beautiful means of shaping light.

This is the Fondation Maeght building in Saint-Paul-de-Vence, 20 kilometers north of Nice in Provence, designed by Josep Lluís Sert and Aimé Maeght in the 1960s.

This delightful room is a perfect example of a structure designed to work intimately with light.



Like Louis Kahn's and Renzo Piano's Kimbell Art Museum in Fort Worth, Texas, with lighting design by Richard Kelley, this building also makes use of barrel vault ceilings to distribute light in beautiful even layers. Unlike the Kimbell, no complex luminaires or structures were devised- in fact the electric lighting is almost primitive and the result is still exquisite.

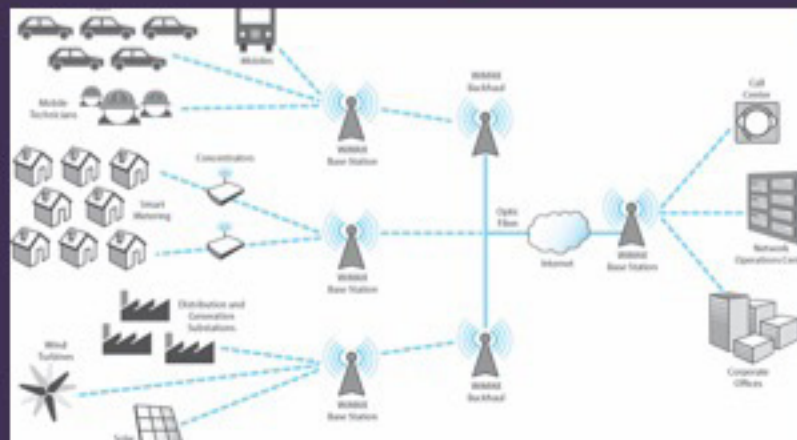
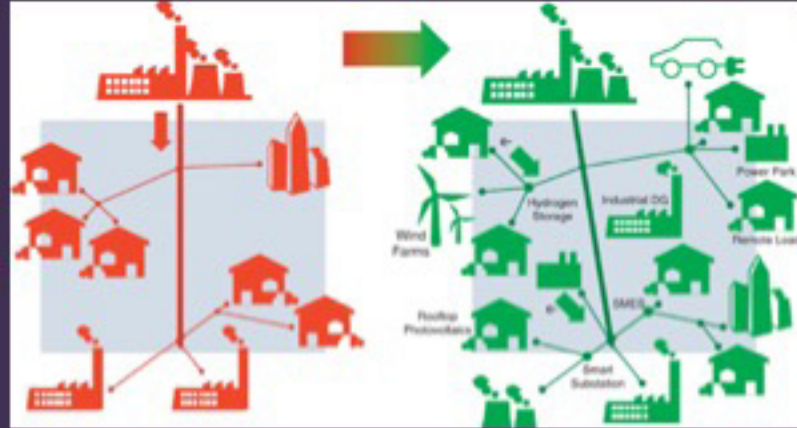


While it's obvious that better electric lighting could probably improve the art and the experience, to me this building illustrates the fact that starting with light as a main "building material" is simply a much better way to design both lighting and architecture. In fact they're not separate ideas at all. This is truly the building as luminaire – a design that expresses the best of both.

For lighting designers, a primary design activity now should be to return to design, to see buildings as luminaires – to work with architects collaboratively to create optimal light first through enclosures, then with electric light. As evidenced by this building this is not a new design paradigm but a time-honored architectural design imperative.

How about envisioning a future where beautiful lighting is the norm?

# Forces of Change – Convergence of the Big 4



While our attention is diverted by smart everything, IOT, robots and AI and self driving cars, behind these developments is a much bigger, fundamental shift in our energy infrastructure, driven by the convergence of four major groups of technologies: renewable energy sources like solar; advanced batteries; distributed generations; and smart networks. As in the past, it's the dynamic convergence of all of these technologies, rather than a single technology, that is driving significant and lasting change. This shift can't be ignored – no

other technology can evolve, nor can we ever hope for progress in any real sense, unless we rebuild our fundamental energy infrastructure. Largely built for energy sources and economic conditions that are no longer viable, it must be gradually replaced by one that's more efficient, reliable, adaptable, and resilient. This presents unlimited design opportunities in a wide range of industries, especially lighting.



Trending Ideas:

Simple, Sensible, Scalable

Peak Lighting Efficiency

Two ideas, themes, or memes to consider.

The first refers to a healthy emerging movement in design to counteract paralyzing complexity in systems, interfaces, components, and maintenance and operations. Good engineering thrives on elegance- if a solution can use less material or energy, improve ease of use, or solve two or more problems at once, it's inherently better. Sample innovations in the lighting world include power line control, driverless LEDs, and low voltage DC systems.

The second refers to the idea that we've hit the point where efficiency in light sources generates diminishing returns. Because of LEDs, lighting energy has fallen faster and farther than any other building component, so it can't fund retrofits anymore, and there's not much to be gained by investing in further efficiency increases. It's time to focus on lighting quality so that we can realize the potential efficiency gains that were promised when we implemented LEDs in the first place, and so that we can enjoy our interior environments more.

## New & Better Metrics:

Flicker

Glare

Larson's Law- cost curve of 90+ LED

Lighting Comfort Index

Completeness of Spectrum vs TM-30/CRI

And for lighting, we can facilitate the transition to a future with better lighting by measuring many things beyond lumens per Watt.

Much work remains to be done on a universally accepted metrics for flicker and glare, two of the persistent quality problems for LEDs.

While Haitz's Law proved very useful in the early days of LEDs, we're quickly reaching the practical limits of

efficiency. Looking at the cost curve of high quality LEDs, as proposed by 90+ Lighting's CEO Susan Larson, would give us useful data on the most important rate of adoption of LEDs, which still account for less than 15% of socket installations globally.

We can certainly devise a comfort index for lighting, that takes into account the limited vectors that constitute lighting comfort- glare, intensity, color, rendering, spectrum, and controllability, for instance. Single met-

rics that measure each of these vectors individually aren't experientially based and can't give a complete idea of the appropriateness of any given lighting installation.

TM-30 is an improvement over CRI but is probably too complex to be easily adopted any time soon. Why not simply rate a light source on how complete its spectrum is?

Wait but...

What isn't changing?

What if real change is a lot slower than we think?

What are our cognitive limits to change and what happens when we reach them?

The technology driven narrative that life is changing faster than our ability to adapt does not reflect most peoples' reality, for what happens when we reach our limit of what we can apprehend or deal with cognitively? We usually just shut down and ignore things that are too complex or not worth the trouble – and much of what's thrown at us all day long falls into this category. This is quite an effective strategy of adapting.

It's useful for me to put the incessant narrative of rapid change into perspective by looking at what isn't changing- what's consistent from month to month, decade to decade, generation to generation.

When I try to imagine, for instance, how I ever got by in business without the communications tools and software I use today, admittedly it's difficult, but I still have the same challenges, opportunities, problems and inspirations I used to have two or three decades ago, it's just that some of them happen, well faster. But the

essential quality of life as an urban professional white male in West Coast post-industrial United States remains pretty much the same. I still brush my teeth with a toothbrush, drive a car, sleep in a bed with sheets, live in a San Francisco Victorian, and struggle to understand the phone bill. Probably the quality of food in general is better, but specific things aren't what they used to be, like tomatoes, oranges, and other fruits. Perhaps the biggest changes have been social- I see friends and family good deal less than before as we're constantly texting and Facebooking each other, plus everyone's always too busy. So this is not necessarily progress.

One thing I'm quite intrigued with is adoption curves. We're entranced with the idea the anything we create now can randomly "go viral" thus bestowing upon our lucky souls the chance to get rich, or at least famous for 15 minutes. Part of our amnesia about how predictions are never accurate is our forgetting how long some technologies actually take to reach the mainstream

adoption stage- there's nothing at all dependable about our ability to judge this other than it's, well, pretty undependable. Social media took a lot longer than we think to become really prominent, yet we missed the predictions about electric cars and solar by huge factors. Many things actually happen a lot faster than we think they will. The history of technology in the last two centuries or so is filled with examples of adoption curves that don't fit our confident predictions of the future, even in retrospect.

And almost no one makes a career out of reviewing past predictions rigorously over a long period to see if there's any useful pattern to their inaccuracies. Instead we seize on the isolated cases where predictions do hit the mark, then venerate the predictors as brilliant wizards while ignoring it when they can't repeat their past success with any consistency.

The history of invention is not the history of a necessary future to which we must adapt or die, but rather of failed futures, and of futures fixed firmly in the past.

- David Edgerton,  
*The Shock of the Old*,  
Oxford University Press, 2007