# Dynamic Product Equilibrium
by Mickey McManus

With the rise of social media, traditional marketing was upended and transformed by real-time feedback from consumers. Products couldn't hide from their defects, and stand-outs got their time in the spotlight. But another revolution is coming. Marketers are just one side of the business—product developers are the other. What will product development look like when it is exposed to the same feedback loop? When it must move from a static to a dynamic state? That's the real future of the connected world.
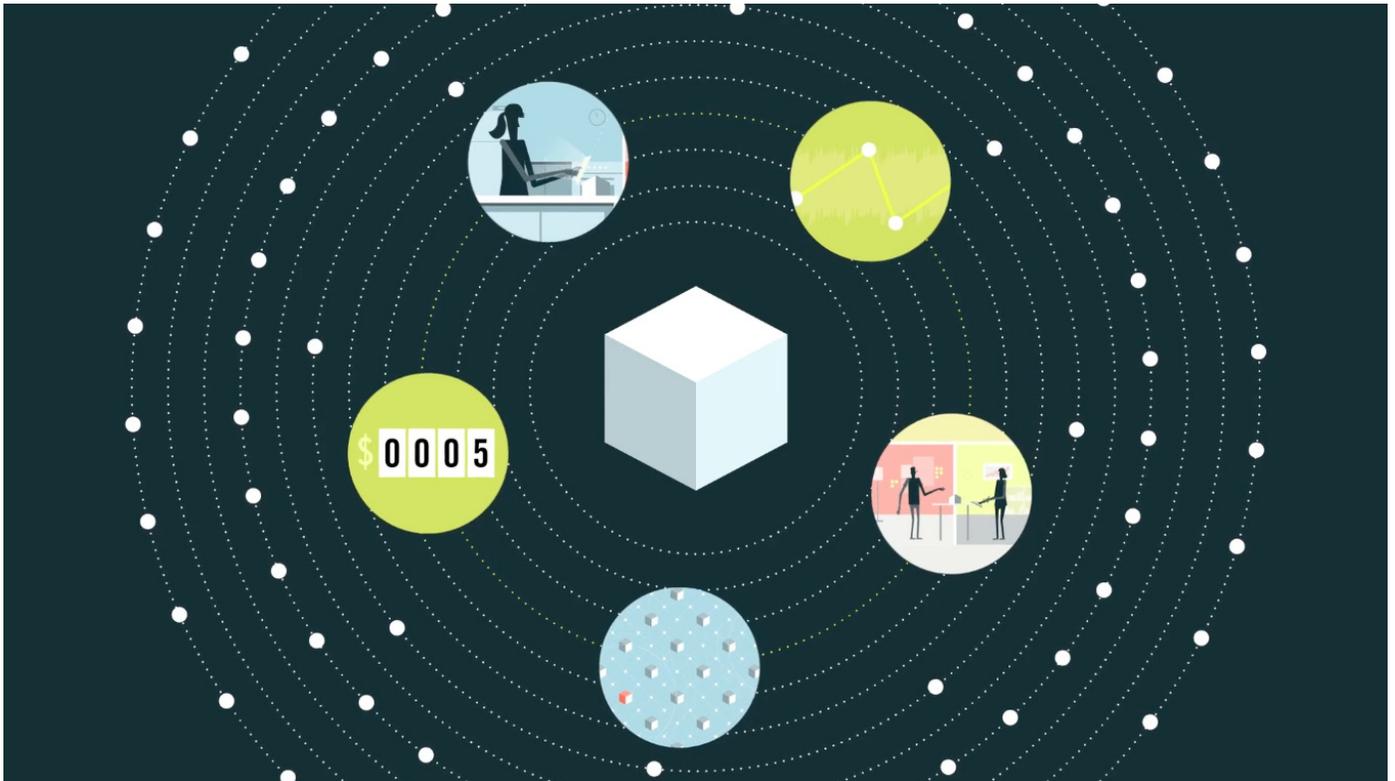
Atoms & Bits

For the last decade the story of the web and connectivity has largely been about digital information, or the "bits" side of the equation. Moving them around, getting access to them with ever more mobile devices, and building new business models as information liquidity lowers the friction of commerce.

Marketing has been dramatically changed by this information revolution. Big brands that for the last fifty years could largely keep much of their internal operations and culture safely behind closed doors and drive consumers with strong and compelling stories have now had to shift to an era where social media and recommendation engines have given consumers just as loud of a voice. The flattening of the landscape opens

doors and gives the world a picture window view into the inner workings of organizations. If an organization isn't really what it says it is in its brand promise, there is nowhere to hide. The rise of social networks is filling marketers' inboxes with feedback and insights. Each month the pace of change is accelerating as well. Many organizations are now building real-time marketing newsrooms or mission control environments to manage and embrace that flow.

However, when we look at the product design and innovation side of the picture, particularly for Business to Business (B2B) brands and those that have to make things in the messy and complicated physical world of atoms, we haven't seen as great an impact. The gap between product innovation and

marketing has always been present in some form or another within organizations, that's just a natural tendency of groups. We create tribes, we protect territories, we run our own experiments, we become experts with our own language and jargon. We build an edifice to our discipline. Connectivity is just making it far more obviously divided and creating a pace and urgency that is hard to ignore.

Look at it from a product developer's standpoint. Discovering unmet and unvoiced needs and changing the actual physical product and supply chain to fit those discoveries is hard, often unforgiving, and rife with unintended consequences. If you have ever designed products for mass production you'll certainly have memories of knock-down, drag-out fights over a few pennies on a bill of material because when multiplied by hundreds or thousands or millions of manufactured goods it would knock the product out of your pricing or manufacturing sweet spot. Worse, product managers still run focus groups in some organizations that are straight out of the 1970s. Other organizations have grasped the pebble and are now investing in human-centered design techniques that lower the risk, but they are sadly few and far between. Product innovators in big brands don't have much more actionable information in their inbox than they had a decade or half century ago.

That churn on the marketing side creates a feedback loop for repackaging and shifting the story about a product. Yet given the long lead times, complex supply chains, and channel considerations of a product developer, the feedback isn't that useful for the physical or "atom" side of the equation. The entire product team is 12 months into a major investment that will end with them building or modifying a factory line or building a new supply chain from scratch. We have seen some compelling bright spots as product and marketing teams start working more closely together to harness the insights from social media, but it's tough to change the direction of an ocean liner midstream.

There have been significant leaps and bounds in the last few years around optimizing manufacturing and retooling factories to address some of this, but the core challenges remain.

Companies that are good at atoms are good for a reason. They can lower the cost to deliver food-safe calories to 7+ billion people. They can make sure planes don't fall out of the sky, trucks stay on the roads, and communities can be built in a way
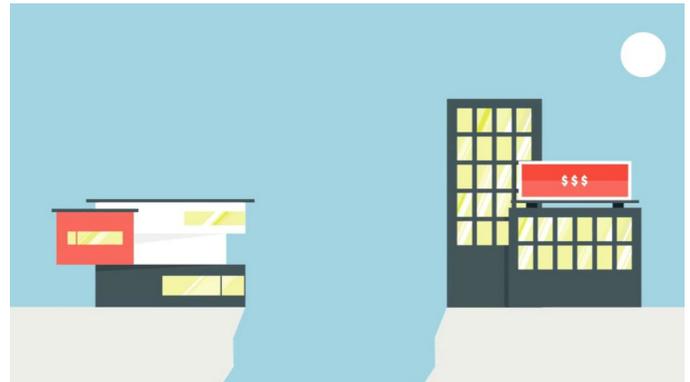
that cover the basics of Maslow's hierarchy of needs. A product team has to develop a Stock Keeping Unit (SKU) or set of SKUs and marketing will have to help sell those SKUs even if they aren't quite the right fit at launch. The marketing team often saves the day by experimenting with framing, business models, communications, and other aspects of the product to get it into a successful equilibrium.

We spend quite a bit of time working on getting people to like what we produce.

Product Equilibrium

For a product to succeed in the market it needs to reach equilibrium, balancing all the various relationships between seller, buyer, user, community, and environment. It needs to balance the value it brings with the cost to buy and own it. It needs to be produced and delivered in a way that "fits" within a competitive landscape. It needs to have a compelling story about itself and the organization that produced it. It needs to balance use with waste so that it reaches an equitable place with the environment.

Unlike products made out of bits, products made out of atoms have further challenges. Atoms need to be discovered, mined, made, bought, sold, and recycled; they are not a "free" resource. Given how fixed the actual atoms of a given product are, marketers spend quite a bit of their lives turning the knobs of price, story, and channel to find that point of stability after the product hits store shelves.

There are two kinds of equilibrium. "Static"—think of holding the skinny end of a pool cue between your thumb and forefinger so that the fat end hangs downward like a pendulum—and "Dynamic"—now flip the pool cue into the air so that the fat end is above you and balance the skinny end on the tip of your finger.

Since the beginning of the industrial revolution products have been largely static. The world didn't change much so the product didn't have to change either. Once we had a hold on that pool cue we could look away, or hand it to someone else, or set it against a wall. In most cases it'd be just fine, just don't rock the boat. Static equilibriums are brittle, they don't like change.

Feedback loops

Dynamic equilibrium is something much more subtle and complex. You couldn't actually balance that cue on your fingertip with your eyes closed or if you looked at your hand instead of the top of the cue. Dynamic equilibrium only works if we have a few more pieces of the puzzle. We need to be able

to sense (big sensor and big data by another name). We need to be able to respond appropriately given context (that's where algorithms, learning, and the ability to change things comes in). Lastly we need a network that can support a true feedback loop of facts on the ground (connectivity of those sensors back up to the brain and muscles in the case of our pool cue example). We're lucky because our nervous system is one of the most sophisticated and powerful technologies Nature has ever produced. Nature makes it look easy.

Nature figured out a long time ago that adaptability to changing conditions is a superpower. Shifting from static to dynamic product equilibriums will do the same for those businesses smart enough to pay attention.

Social media saw the rise of a feedback loop of anecdotes, opinions, and user reviews. The next revolution will provide a true feedback loop of facts that will collect over an "arrow of time." This is largely due to the rise of big sensor and big data and the fact that in a trillion-node world everything that can be connected will be. That's a good thing because the anecdotal information we've been able to glean so far can sometimes lead us into believing an illusion that feels good because it "makes sense." In Nature some organisms exploit the idea of protective camouflage to take advantage of this very concept. The predator creates the illusion that it's harmless. It's safe, you can make sense of it, until it strikes.
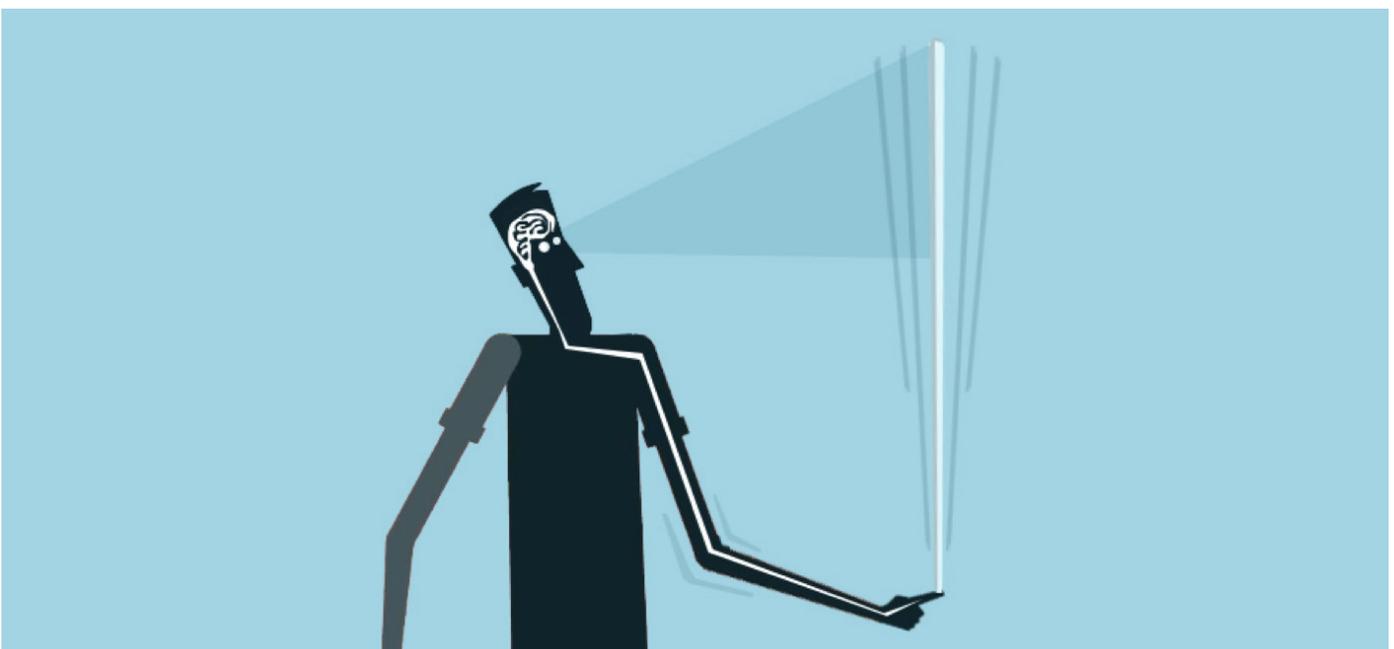
Dynamic Product Equilibrium

Products join the social network

Not only will products join our social network, they'll start creating their own. Aside from the obvious product and market implications, the mid- and long-term ecological, social, and health issues about a particular product or brand will be too obvious to ignore. Products will share how other products around them actually perform, how they succeed, how they fail, and not just sharing with the customer or the brand but with other products in their proximity. If you pick up a bottle of sugary, flavored water, Google Glass will show you how continued drinking could lead to a loss of a few years of your life. It will be a direct feedback loop. Organizations and their offerings will be naked.

When we talk about dynamic equilibriums we think about how learning and feedback loops give us the ability to take action. If we see the pool cue falling but haven't learned how to balance things on our fingertips or can't move our hands fast enough (try balancing it on your shoulder for example), the equilibrium is broken and it clatters to the ground. Dynamic equilibriums evolve and change to keep things in balance. If it's windy outside, or we're wearing a straightjacket while trying to balance that cue, we'll need some practice. Consider what would happen if you could "practice your product" into a more resilient state rather than ship it out and hope for the best in an ever changing world.

Points of Stability

If every aspect of a system varied all the time, a market-based ecology would collapse into gray goo. Dynamic equilibriums require points of stability and often have points of leverage. A cup affords drinking, a chair affords sitting. If they stopped performing their tasks they would no longer be of use in their original market niche. Knowing what to make constant and what to make variable is something broadly defined as architecture. Architecture defines the blueprint of what makes your product your product. Architectures can't be crowd-sourced, they don't come from committees, but once a seed is placed in fertile soil, communities of practice within a niche can evolve them by adjusting the variables to fit market forces.

So what does this mean for products?

Manufacturing methods are undergoing their own revolution. Not only will everything be connected, it may be more malleable as well. Last year Invisalign manufactured millions of unique dental retainers using 3D printing. The age of big dumb factories is coming to an end. Factories themselves are joining the social network. Invisalign doesn't have a SKU for each product; instead they designed a product "species" that defined what must be true of all Invisalign retainers, and then allowed each doctor and patient to contribute to the creation of a given individual product. They designed an authoring tool instead of a fixed product.

Now let's take that example with the flavored water. If the last century was typified by big food companies lowering the cost to access calories (the feedback loop may have been there in the form of increased levels of obesity and diabetes but it wasn't very actionable or direct), the next century will be about lowering the cost of healthy/happy calories. You'll still snack but if you had a hard workout the snack may actually be a little sweeter. Or If you like to stop by that fast food drive-through but really desire some means of breaking your addiction, you may give your GPS system the ability to gang up with your fitness sensor and make it just a little bit harder for you to take that off ramp. After a week of missing the fast food stop, your car might then give you an option so that your addiction shifts to a choice.

As products join the social network and become authoring tools that foster emergent, dynamic experiences for users to tell their own stories, a true ecology (that means a real economy) could bubble up. For instance, instead of "thumbs-ups" and "likes," what if consumers actually contributed to product innovation and reaped the rewards for their creativity at some fractional amount of value derived from the newly co-created product. Maybe you're a foodie and you come up with your own snack combination blended together like a music playlist. Your friends and family notice it and start buying this new "Brand+You" product from the local 3D printed food vending machine. If it starts trending around the world, turning you into the first Internet snack tycoon could reward your creativity. Instead of convincing people to like what we make, we may see a shift to helping our customers make what they like.
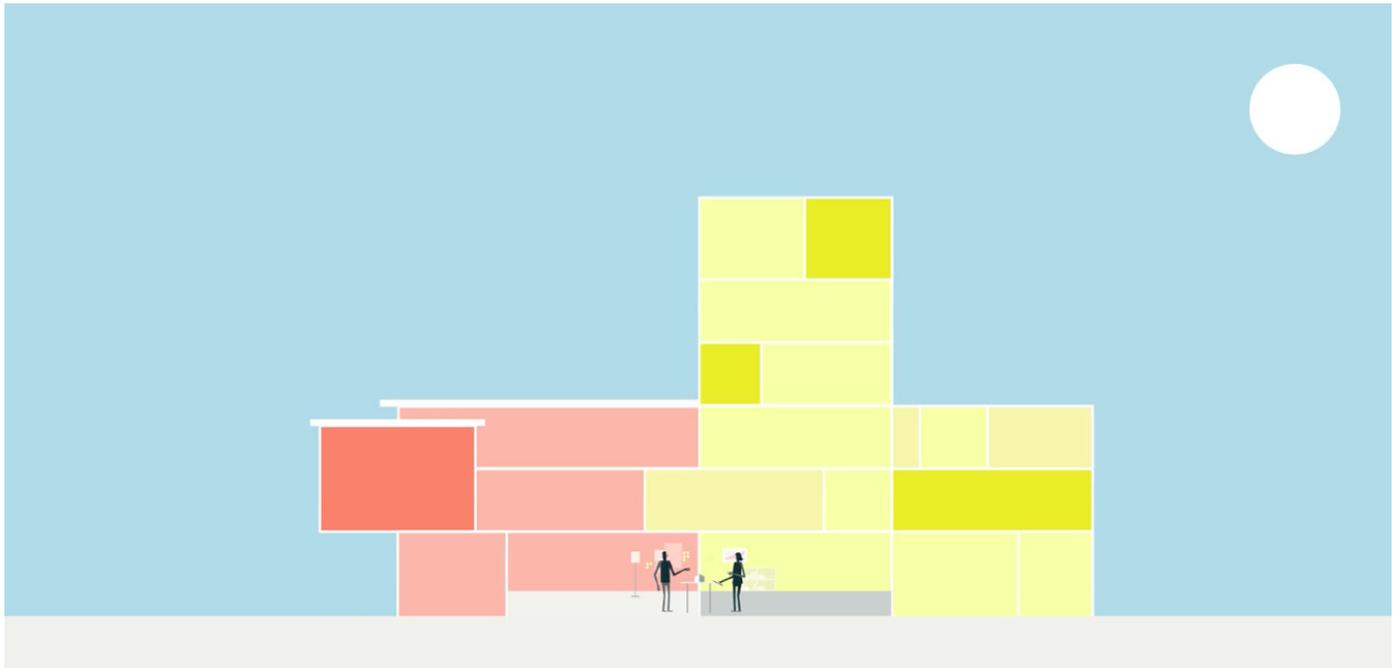
The rise of made media

As the physical and digital sides of a successful product or service come together, the barriers within an organization between product development and marketing will also need to collapse. Products will become their own new form of media built out of the product itself. The stories told together—between the brand and the consumer and the community at large—in a dynamic equilibrium between market-demand and personal invention will come to the foreground.

We thought these insights and their impact on marketing and storytelling were so important that we launched an entirely new spin-out of MAYA called AoT to explore the implications to the classic agency and media world of dynamic product equilibrium.

Historical precedence?

TiVo is an interesting example in the evolution of this new kind of product story. For the first time the video recorder in a person's home had a real-time feedback loop back to the manufacturer. It's hard to imagine a world before TiVo if you didn't live through it. Suddenly the product was observing how it was used and changing itself, in the form of shifts in the schedule display and recommendations. TiVo also included a serial port and allowed industrious users to customize it further. The product and the story it told as it became more

tuned to our viewing needs evolved hand in hand. All the while the company was building real-time insights that drove happier users. Today Tivo has become a verb. Actually, that might be a good way to bring this story to a close. Your product will no longer be a noun; tomorrow, it'll be a verb.

We predict that a number of convergent disruptions are coming together very fast and they are leading to a new era of dynamic product equilibrium. How do you design a dynamic product experience? What must be true to succeed in this new era? How can you pilot and learn now the skills to prepare for the road ahead? At MAYA, we're helping organizations grapple with those challenges, and how to build architecture, emergence, and transformation itself into the practice of design.