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**Citation for published version:**

Speed, C & Maxwell, D 2015, 'Designing through value constellations', *Interactions*, vol. 22, no. 5, pp. 38-43. <https://doi.org/10.1145/2807293>

**Digital Object Identifier (DOI):**

[10.1145/2807293](https://doi.org/10.1145/2807293)

**Link:**

[Link to publication record in Edinburgh Research Explorer](#)

**Document Version:**

Peer reviewed version

**Published In:**

Interactions

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# Designing Through Value Constellations

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Designers have always been good at mediating value. Their sensibilities for understanding how to manipulate materials, images, and actions have been adding value to products and services for a long time. Design studios across the world have used increasingly creative tactics to add value to both the most banal consumer products and the most interesting cultural material. However, the designer's role is one of the hired hand, brought in to add value somewhere along the classic linear value chain.

Simply put, value chains describe the organization of parties, resources, and energy involved in the production of products and services. They are often depicted as linear systems, in which stakeholders can map how value is increased or diminished across a trajectory toward a final margin of profit. Coined in the late 1970s and central to the shaping of business models through the 1980s and into the 1990s, value chains and ultimately global value chains became important concepts for international investment and trade.

Somewhere in every value chain is the designer, hired to boost the value of a product, business, or organization through their creative and sometimes critical insight. At the most basic level, the contribution will be the commissioning of a logo, using type styling and colors to stamp a unique identity onto an otherwise anonymous product. With the further investment of marketing, this branding can gain value and promote the associated product or services. Design studios, in danger of being subjugated to the role of adding a sprinkle of shine somewhere in the middle of the value chain, have over the past 20 years worked hard to offer not only type, color, and form, but also creative strategies. These strategies add value at the point of engagement with the consumer (or participant), which builds toward an experience in which every encounter with the product is commensurate with the values of the brand, from the touch and feel of the packaging and the images and sounds through advertising, to the placement of products within the environments in which they will gain most value (e.g., Frog Design's holistic work on brand strategy and product development with home speaker manufacturer Sound United [1]).

The linearity of these chains, and the ability of the designer to add value at peak moments, has been a vital property of what has been described as a *push economy*. Push economies are predicated upon developing best-guessed products that persist by achieving a scale of production that secures them a place on the shelves of supermarkets and a marketing budget to keep them there. The peak moment in a push economy is the point of sale—that moment when a product reaches its highest economic value and a consumer pays for it. At this point in the past, the organization that produced the product or service could essentially take the money and run. This is epitomized in the U.K. by the TidyMan symbol (Figure 1), which appeared on many of our products to encourage the consumer to take responsibility for disposing of packaging, ostensibly absolving the seller of any role in the product's subsequent lifecycle.



Figure 1. TidyMan symbol. (Permission by Keep Britain Tidy.)

The advent of the Internet and the development of the network society enable consumers to challenge traditional dynamics and provide feedback on a product or brand on a mass scale, extending value beyond the traditional linear chain. This is characteristic of a *pull economy*, which uses network technologies to respond to demand through customized services or fulfilling specialized needs, compared with the mass manufacture offered within push economies. The most well-known examples of pull economies are software platforms such as eBay, Google, and Amazon, who, without members, would be unable to offer services or use their technologies to mediate value.

Given this scale of change that the Internet has placed upon production and consumption, it is timely to consider how design has responded. Are designers struggling to find their place within less linear value models? How can design make use of new paradigms to more strategically contribute to the value of products and services? Through the following examples, we offer insights into how designers might better understand how value is sustained and what it might be like to design *value* rather than products or services themselves.

### **From Value Chains to Constellations**

In parallel with the move from push to pull economies, designed products and services are increasing their network capabilities. Reflecting this shift, the term *value chain* has now largely been superseded by *value constellation*, which describes how value is entangled within a complex network of social and environmental connections. Coined by Richard Normann and Rafael Ramirez, the phrase describes the economic patterns that emerged at the end of the 20th century as globalization and new technologies influenced the way value was sustained. Recognizing the role of co-created value within networks, Normann and Ramirez highlight that “successful companies conceive of strategy as systematic social innovation: *the continuous design and redesign of complex business systems*” [2].

Within a value constellation, the value of a service is constantly mediated according to algorithms and check-sums that recalibrate the network to sustain the value proposition associated with a product, service, or experience (Figure 2). These more complex models of value creation and relation offer a different opportunity for design—an opportunity to remain with an idea (be that a product, service, or organization) throughout its life span, influencing how it mutates and evolves according to the shifts across the value constellation. This opportunity for designers to work even more closely across disciplines can enable better understandings of how the feedback from user communities affects the value of a product or service. However, such opportunities require a reframing of what designers think they are designing—not products, not services, but the propagation of *value*.

## Value Constellation, not Value Chain

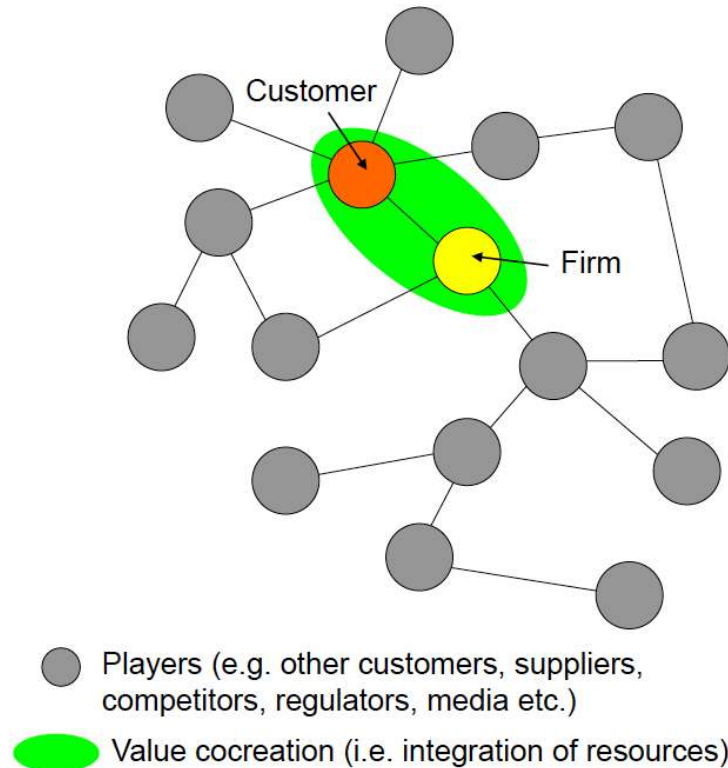


Figure 2. A value constellation and the space of co-creation as described by Michel [3].  
(Image by Stefan Michel)

### Engagement as Value

Design, as employed within the traditional linear value chain, offers little feedback once a product or service has left the shelves, and it is therefore challenging for designers to know how well the work performs beyond this point. This is of course exacerbated when designers have been helicoptered in as external consultants. Given the intrinsic networked nature of contemporary HCI, embedded evaluative data-capture technologies such as Web services that allow continual feedback are more likely to support the development of a value constellation in which designer, client (context owner), and participant are kept in constant tension.

An example of interaction design that succeeds in developing a value constellation that is sustainable in its engagement is the Voxbox by Connie Golsteijn et al [4]. The VoxBox is a tangible system for gathering public opinion (Figure 3). The design team used a combination of physical sliders, dials, and buttons to produce a compelling engagement model for eliciting public opinion data. This highly interactive system features stress balls as rewards for participating and answering a series of questions. While the work was not consciously developed with a value constellation in mind, the design team was able to successfully manage the cost of incentives (stress balls as rewards) alongside the investment in designing a highly tangible interface with tactile feedback, which together elicit high-quality

data from the participant. In fact, the constellation is arguably too successful. The installation is so eye-catching that it draws interest quickly, but the time it takes people to complete the experience often results in long lines of participants waiting to take part.



**Figure 3.** Voxbox. (Image by Lisa Koeman)

A second useful context in which to reflect upon how value can be situated within digital networks is citizen science platforms. In their study of motivation in collaborative citizen-science projects, Rotman et al. [5] identified egoism as the leading factor for initial involvement in platforms such as eBird, Galaxy Zoo, VitalSigns Gulf, and the Encyclopaedia of Life. Egoism was one of four motivations identified by Batson et al. [6] for social participation toward common goals: egoism, altruism, collectivism, and principalism. Batson stated that egoism occurs when the ultimate goal is to increase one's own welfare. Through their study of longer-term engagement, Rotman developed an analysis and process model [5] that describes the tensions between the motivations of the volunteers and the scientists, and the obstacles to collaboration. The value for the volunteer to stay within the platform includes the tension between the volunteer's sense of being recognized for his or her work, his or her inclusion in outcomes, and community involvement and advocacy. Rotman's study is useful in reflecting upon how value is constructed and provides indicators for success.



However, explicitly designing this as a value constellation at the outset could have offered a framework to identify where value is co-produced and what further external parties or factors would be required to create a platform that was not just sustainable but also virtuous—to go beyond retaining members and attract more.

The two example contexts of the Voxbox and citizen science may seem technically worlds apart. However, their success is entirely based upon their unconscious development of a value constellation. As HCI and interaction design become increasingly involved with data exchange in our digital economies, so too will understanding how products and platforms mediate value within constellations become increasingly important.

### **Designing Through Value Constellations**

To explore how a design process could evolve if the design of a value constellation were the objective rather than a product or platform itself, the authors worked with members of a workshop at NordiCHI in 2014 to see what could be achieved.



Figure 4. Fallen bike on the Arabia campus of Aalto University, Helsinki. (Image by Chris Speed)

Inspired by a bike that had fallen over and was lying on its side (Figure 4), one team investigated how a design incentive might foster a value constellation containing the bike, passers-by, other bike owners, the city council, and bike manufacturers. Exploring the role of a small device that would speak and ask people to stand the bike up, the team proposed a constellation that placed the emphasis not on the bike pleading for help, but rather on it saying “Thank you” to those who picked it up. The team speculated that such a move fostered a virtuous dimension that would build a value proposition between people who were

rewarded by picking up the bike, namely passers-by who would compete to receive thanks; the city council, who would benefit from a better use of street space; and manufacturers of bikes that contain the speaking sensor, who could advertise that more care would be paid to their bikes (Figure 5).

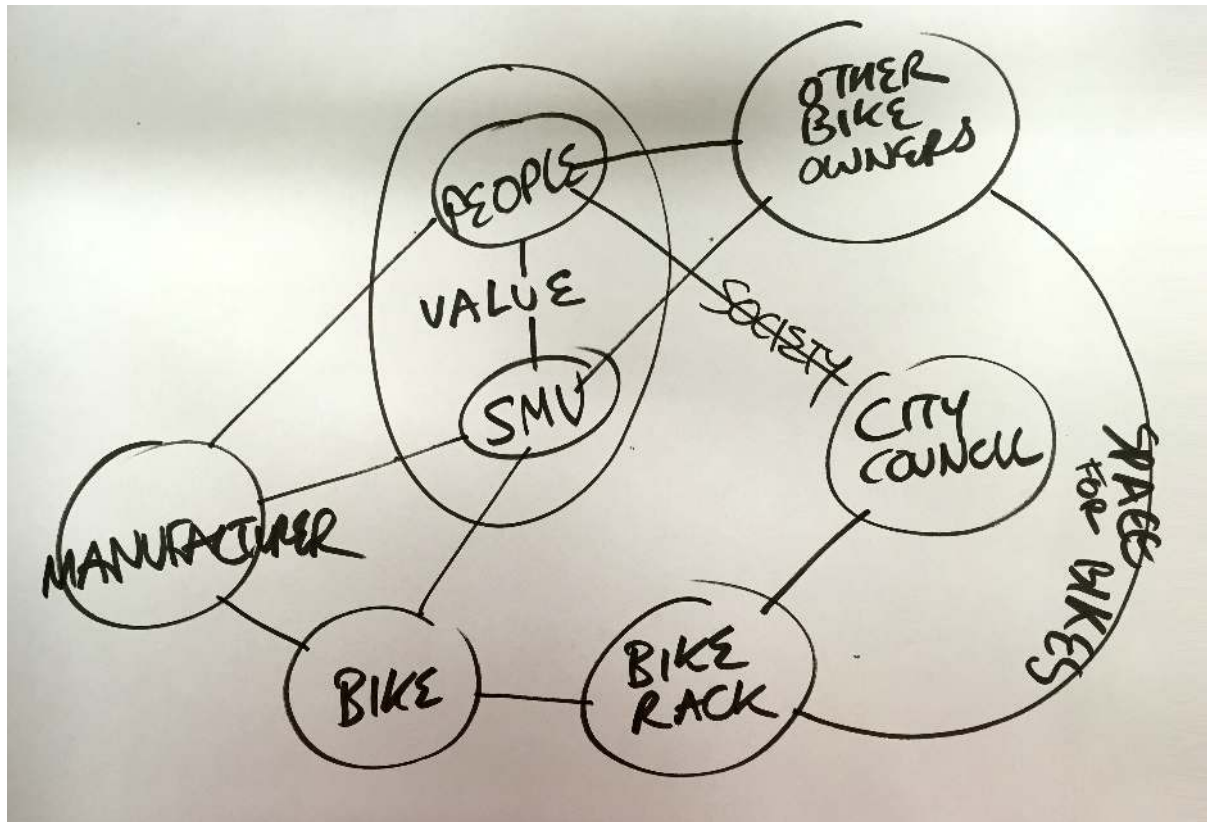


Figure 5. Value constellation for the Stand Me Up bike design intervention. (Image by Chris Speed)

By focusing not on the design of an artifact, but rather on the mediation of value across a constellation of stakeholders, the process revealed how design could be tasked with considering how ecologies of actions, behavior, and incentives could create virtuous markets of interaction.

If design is to extend itself beyond being a hired hand somewhere in a value chain, it needs to develop ways of understanding how the objects, images, and services it designs mediate value within constellations—not traditional linear chains—thereby distributing the roles of design and designers across the constellation rather than across a discrete section of a linear chain.

### Discussion

The implications for practicing interaction designers or UX professionals to consider value constellations as a complement to the existing design processes could be substantial. From our experience, the value constellation approach led to a fresh, multifaceted way to consider a given context, essentially offering an acute perception of the networks, ecosystems, and markets required to make a design intervention sustainable. Consequently, rather than

looking to exploit a market share or seek simple adoption, we developed insight into how the possible solutions had the propensity to become virtuous or vicious through tracing their potential impacts across the constellation. Such insight was based upon a growing awareness of the network of actors, artifacts, practices, and jurisdictions bounded within their possible set of interactions. Although still a work in progress, there was a genuine sense that designing through these constellations can enable designers to explore fresh sequences within a sociotechnical environment, allowing them to reveal and propose new forms of causality and in turn design more sensitive and nuanced interventions.

At a practice-based level, it suggests that designers may have to think beyond the artifact, and beyond service or experience design, to understand how material and technical interventions play a role within a constellation. As the circular economy gathers pace, interaction designers have an opportunity to tune their decisions around materials and interactions toward the mediation of value, with data providing feedback signals as to how their design interventions generate and sustain worth. In this way, design has an interesting opportunity to create value not only by adding more (e.g., products, interactions, functionality), but also by rearranging existing things or taking things out of current value chains in which waste is a given. We found that an appreciation for the gaps, opportunities, and negative spaces within social environments that were revealed through value constellations became interesting design opportunities—not ones to exploit but rather ones that could shift behavior in such a way that all actors and artifacts benefited.

From an HCI perspective, the field is beginning to recognize the implications of a network society and the passage of data as a new material for design. Haddadi et al.'s paper on human-data interaction [7] encourages computer science, design, and social science to consider how a sensibility for interacting with data can be developed. From discussing visualization and sense-making to transparency and audit, and privacy and control to analytics and commerce, the paper highlights the need for the HCI community to examine how it should design beyond physical interfaces toward helping people understand the era of big data and personal analytics. While for many designers this may require a substantial leap in disciplinary expertise, it may be that value constellations can offer a valuable stepping stone. Engaging in the tensions and parameters of a constellation in which material interventions and social practices are informed by the flow of data will offer designers a space in which value is mediated within a constellation versus inherently built into a designed product.

### **Final Thoughts**

Design schools, currently organized around traditional materials and processes, must catch up with how contemporary business is designing value. If design wants to play a role in how the world engages with people through the organization of products and services, we need to take seriously the idea that we may not be designing objects, images, and services but instead value itself. The sensitivity of designers in understanding people, materials, and practices makes us more valuable than simply being hired and fired to add value at peak points in the value chain of a plastic bottle. If designers want to make a difference about how value is produced and sustained within society, we need to invite the economists into schools and start thinking of constellations instead of products.



## Endnotes

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## Insights

- The shift to pull economies demands that designers think about less linear value models.
- The value of products and services mutate and evolve throughout their life span according to the shifts within value constellations.
- Value constellations allow designers to anticipate and respond to shifts, identify opportunities, and understand social practices.