

“Ecosystem mapping and value network analysis are two powerful tools for helping companies and communities begin to understand their contexts and the value they generate within those contexts.”

Finding Value

Using Ecosystem Mapping and Value Network Analysis to Navigate Complexity in Corporations and Communities

By Maya Townsend

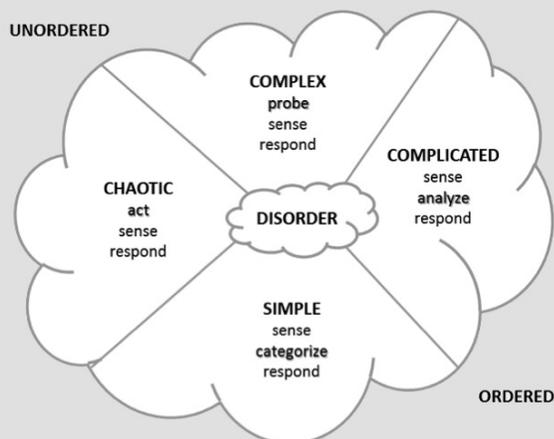
Several years ago, I was hired by a software client to help with strategic planning. When the company started fifteen years ago, its product was revolutionary but its uniqueness was not a permanent state. Other companies were offering software that provided similar functions. The channel partner who sold the company’s software was now offering a competitive product. Furthermore, hardware companies were embedding the software’s features into devices like printers, scanners, and faxes. This company needed help figuring out how to move forward amidst these challenges.

Eight years later and 2000 miles away, a diverse group came together to improve the health of adolescents in Austin, TX. Led by Nikki Treviño, Program Supervisor at the Health & Human Services Department in Austin, and facilitated by Stephanie

Nestlerode of Omega Point International, the Austin Healthy Adolescent (AHA) Initiative envisions a world in which adolescents are active decision makers and fully engaged in improving their own health and the health of their communities. The AHA Initiative ran into a critical issue: different groups perceived the system in radically different ways. These perspectives were so complex and varied that it became difficult to intervene.

Both groups used ecosystem mapping or value network analysis (VNA)—or both—to help them navigate complexity. This article presents both methodologies and shows how they can help companies like the software client and communities like the AHA Initiative think about the complexity of their environments and find innovative options for action.

Figure 1: The Cynefin Framework



The Challenge: Complexity is Here

During my years in consulting, I have worked with exactly two companies that operate in stable, predictable environments. One was a government-regulated utility. The other was a government-funded pension administration organization. Every other organization has been buffeted with unanticipated and constant change from inside and outside the organization.

The Cynefin (ku-*nev*-in) framework (Figure 1), developed by Dave Snowden in 1999, is a sense-making tool that helps people explore the complexity of their contexts (Snowden & Boone, 2007). Very few companies these days have a simple context like the regulated utility and pension administration organization. Those that do are lucky enough to have stability, low uncertainty, and clear cause-and-effect relationships that are easily discernible. The challenge in these organizations is to sense, categorize, and respond, with the emphasis on categorize. Standard operating procedure—and there are SOPs in these organizations—is to assess the facts and respond based on historical knowledge, bucketed into categories of behavior, about what works in these situations or established processes. OD has many tools that work splendidly with organizations in simple contexts, such as process improvement and benchmarking.

More challenging are complicated contexts, in which there are multiple right answers and the relationship between cause and effect are not always apparent. The practice here is to sense, analyze, and respond, with the emphasis on analyze. This is the realm of expertise. To be successful, people with deep skills in specific functional areas gather and examine data in order to understand root causes. Again, we have many tools that help us work with organizations in complicated contexts, such as root cause analysis and decision matrices.

The contexts in which my software client and the AHA Initiative inhabited were complex. For the software group, often no right answer emerged from discussion and there was no clear relationship between cause and effect. For AHA, the vision and leverage points were clear, but engaging and aligning stakeholders was challenging. In both cases, there was constant flux and change in the environment, which made it difficult to plan and then execute plans.

Often large group exploratory interventions, such as Open Space and Future Search, can be helpful for these organizations. However, these interventions were not right for the software client since they could not get their arms around who would be in the room. They could not see the landscape.

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The Concept: The Business Ecosystem

James F. Moore coined the term *business ecosystem* in 1997 (Figure 2). Business ecosystems are dynamic webs of interdependent organizations that rely on each other for success. They include the *core business*, which includes those we have always considered to be part of a corporation—internal functions like finance, human resources, R&D, and production—plus distribution channels and direct suppliers.

They also encompass the *extended enterprise*: direct customers, standards bodies, suppliers of complementary products, and so on. Finally, they include the *business ecosystem*: those who can have a significant effect on the core business but who are often considered afterthoughts or, even, pesky outsiders. Entities in the business ecosystem include trade associations, regulatory bodies, unions, investors, and so on. Both this outer layer and the entire system are referred to as the business ecosystem.

For example, the ecosystem surrounding Apple Computer consists of core business employees like programmers and designers plus those who supply Apple with the parts for its products. It also includes direct customers, part of the extended enterprise who, in their zeal for Apple, serve as marketers and evangelists. App makers who create free or low cost software for iPhone devices are part of the extended enterprise as well. Some makers,

Figure 2: The Business Ecosystem

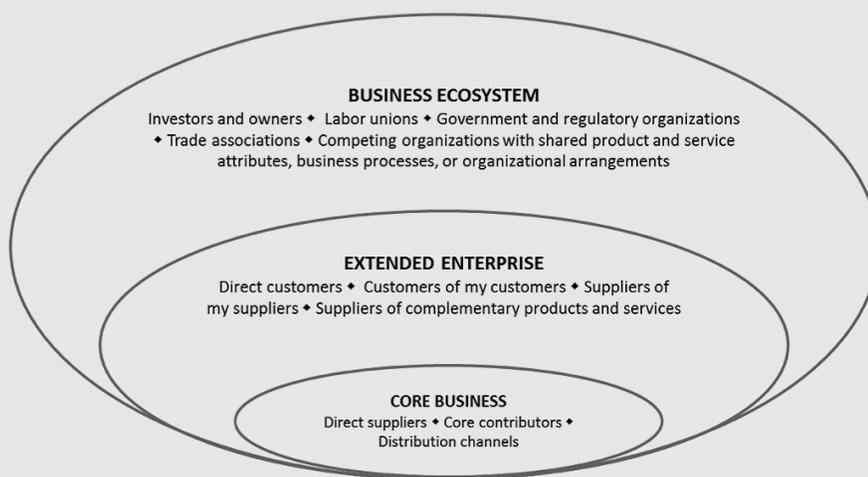
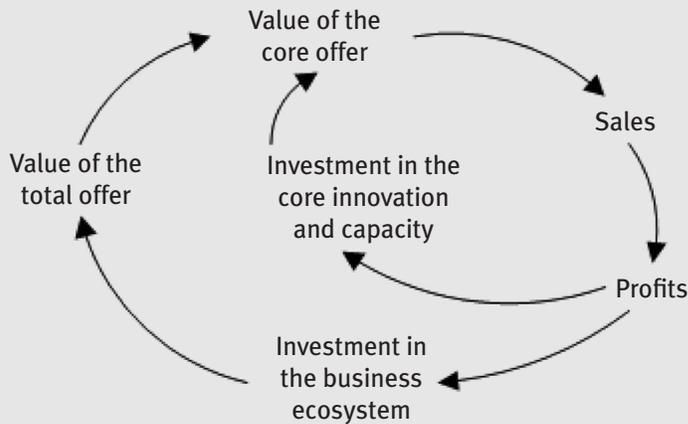


Figure 3: The Virtuous Cycle in a Functional Business Ecosystem



such as Square and Springwise, make it possible for iPhone owners to purchase goods in stores directly from their iPhones. Those stores, frequented by iPhone users, are also part of Apple’s business ecosystem.

Ideally, entities in a business ecosystem like Apple’s collectively form a virtuous cycle of investment and return (Figure 3), according to Moore (1997). One or more core capabilities (the “value of the total offer”), such as Apple’s beautiful design, ability to delight customers, and attention to detail, are transformed into the “core offer”: products or services that provide significant value, such as the iPhone, iPod, and iPad.

The products or services generate significant sales and profits, which then lead to new investments in core capacity, innovations, and investments in the business ecosystem. Apple’s success has a ripple effect beyond the walls of its organization and affects the entire business ecosystem of personal device manufacturers, for example. My beloved Android owes its success partially to Apple for leading the way. Motorola and Google teamed up to create the Android as an iPhone competitor. In the process, they created innovations that pushed boundaries and spurred Apple on to additional innovation and investment. The investments in the business ecosystem increase the value of the offer itself, which then increase the value of the total offer.

In the case of the software company client, the ecosystem was not forming a virtuous cycle. Instead, the ecosystem was absorbed with internal battles for dominance and control.

The Method: Ecosystem Mapping

When we discussed options for thinking about strategy, the software company’s CEO was attracted to the idea of ecosystem analysis. This, he said, was what they needed. Understanding the business ecosystem would help them assess how they fit, where opportunities reside, and how to move forward.

At the time, there were no formal tools or methodologies available for mapping ecosystems. So we made up our own. We identified all of the entities in the ecosystem—software companies, device manufacturers, hardware suppliers, trainers, analysts, dealers, direct sales organizations, and so on—and represented each with a circle. We listed examples of each kind of entity. Some entities overlapped with each other—they were companies that filled multiple roles like trainer and direct sales—so we made their circles overlap. We represented their importance by the size of their circles.

The next step was to analyze the entities. For each, we discussed:

- » Its evolutionary stage. Example: Infant, toddler, tweener, teenager, mature adult, or elder.
- » Its relationship to each of the other entities. Example: Conflicted, competitive, cooperative, or collaborative.
- » Its interests. Example: Grow, maintain, improve, or innovate.
- » Its leverage: How does it influence the system? What constitutes its power? Examples: Trailblazing, following, driving down costs, and top notch marketing.

We also assessed the ecosystem map for typical ecosystem roles (sidebar) like Keystone, Niche Player, Recycler, and Commodity Provider (Iansiti & Levien, 2004).

In the end, we had a large map that showed all the players and their evolutionary stages, relationship to others, interests, and leverage. It helped the software company understand the complexity of its situation and identify focus areas.

Case Study: Mapping Austin’s Adolescent Health Ecosystem

Ecosystem mapping also proved helpful to the AHA Initiative in Texas. The AHA Initiative’s members knew that they needed to bring together stakeholders across a broad and diverse ecosystem. An important step in their process was helping

Ecosystem Roles

Adapted from Iansiti and Levien (2004).

Keystones. Keystone organizations are the centerpieces of the ecosystem, generating metaphorical food for others. They accept a broad view of success by inviting partners to expand, grow, or innovate on their core products. Microsoft is an example of a keystone.

Niche Players. Niche players grow in relation to the keystone organization and profit from their proximity to it. Each niche player develops a specialized place within the ecosystem, developing unique products or services that fulfill a particular need. Price-line is a niche player in the travel industry.

Recyclers. Recyclers fill a special niche that deserves mention. These companies follow larger companies and transform the remnants of their work into a viable business. A classic example is Eco-Gear, which creates t-shirts from recycled plastic bottles and other reclaimed materials.

Commodity Providers. These organizations provide simple, transactional services to organizations in the ecosystem. Payroll service companies are commodity providers.

stakeholders understand the ecosystem and network weaving.

Coined by Valdis Krebs and June Holley, *network weaving* describes the process of nurturing networks (2002). They write:

There are two parts to network weaving. One is relationship building, particularly across traditional divides, so that people have access to innovation and important information. The second is learning how to facilitate collaborations for mutual benefit.

The practice of network weaving is particularly important since many of today’s challenges, like improving adolescent health in Austin, are too complex to be handled by only one organization. Instead, they require concerted, aligned efforts from many organizations in what Kania and Kramer call *collective impact* (2011). This kind of interaction—a “commitment of a group of important actors from different sectors to a common agenda for solving a specific social problem”—was exactly what the AHA Initiative was trying to achieve (Kania & Kramer, 2011).

We brought together the AHA Initiative’s leadership team together for a half-day meeting. We talked about how networks operate, how to weave networks for complex system change, and what network weavers do to develop healthy, well-functioning systems (Plastrik & Taylor, 2006):

- » Weavers help weave connections within and outside the network.
- » Weavers help bring cohesion among members and articulate the value proposition of the whole.
- » Weavers help connect unconnected entities.
- » Weavers help operate the network and cope with management issues.
- » Weavers help monitor and evaluate the network’s development.

Then we created a map of Austin’s adolescent health ecosystem. To identify entities in the ecosystem, we answered four questions:

1. Who provides health services to Austin adolescents?



2. Who cares about adolescent health in Austin?
3. Who provides resources, funding, and/or other types of support related to adolescent health initiatives or issues in Austin?
4. Who has the power, authority, and/or ability to influence Austin adolescent health issues?

Each entity was written on a sticky note and color coded according to the type of agency: AHA alliance member, funder, policy maker, service provider, and other (Figure 4). Some agencies filled multiple roles and were marked by multiple sticky notes.

Next we identified links (Figure 5). The three questions guiding our linking were:

1. **Information:** Between which entities does information flow? In which direction?
2. **Funding:** Who has funding relationships with whom? In which direction?
3. **Referrals:** Who sends referrals to whom? In which direction?

The results were laid out on a 20-foot piece of butcher paper. Soon, it was covered with sticky notes and lines. We stepped back to look at the map we had created and analyze the patterns. We used three questions to analyze the map:

- » **Density:** How dense or sparse are the lines on the map?
- » **Reciprocity:** Are there interactions that



- are not reciprocated? Are some entities taking a lot while giving little? Are others giving a lot while receiving little?
- » **Orphans:** Are there unconnected entities?

The map produced significant learning. Nestlerode says, “It made our understanding more systematic. We began seeing where opportunity might exist that wasn’t so evident before. It gave some of the partners a better understanding of where they stand in terms of awareness and how connected people feel to them. It whetted our appetite to dig even deeper.”

As discussion continued, the Leadership Group realized something important: their maps showed only the adult view of the health system. It did not include the youth view. Since the goal of the AHA Initiative is a world in which adolescents are active decision makers and have a role in shaping their communities, the group decided it was important to map again—this time with youth in the room. For this effort, we wanted to know more than the patterns of interactions between entities. We wanted to know how youth experience the health system. For this, we turned to Value Network Analysis.

The Concept:
Value Network Analysis

Value Network Analysis (VNA) was developed by Verna Allee in the 1990s.

Some Basic Assumptions Underlying Value Network Analysis

Adapted from Allee and Schwabe (2011).

- » The natural pattern for creating value through collaboration is a network pattern.
- » The emergent purpose of a network is revealed through the pattern of roles and exchanges within the network. Sometimes the espoused purpose of a network is at odds with what it really produces.
- » You cannot administer a network. You can only serve it through the roles you play. Network strategies fail when people try to run a network like a hierarchy.
- » People—not processes—are the active agents in a value network. Only people can make decisions and initiate actions, in organizations, and in networks.
- » Every business process has a hidden network pattern of human interactions. Traditional work design approaches ignore the critical human interactions that build relationships and make the processes work.
- » The fundamental level of value creation is the exchange. Value is not limited to financial value. Any exchange of goods or value puts us solidly in the realm of economics.
- » Every interaction in a network is an opportunity to create value or build relationships. Network interactions have intangible value even when financial transactions are not involved.
- » The dynamics of value in a network are dependent upon network effects. One cannot determine the value of the network by simply adding up all the roles and their outputs.
- » Patterns of human interactions and intangibles are leading indicators for success. Network patterns can show work processes at risk and show how companies build strategic capability for the future.
- » The success of an enterprise depends on how efficiently it can convert one form of value to another. As individuals and firms we must be able to convert our material and intangible assets into more negotiable forms of value.

At the time, those around her were using traditional business process reengineering techniques. Those techniques assumed that the goal was to create replicable, predictable processes, which did not seem achievable in the messy reality and complex contexts of contemporary organizations.

Instead, what Allee wanted was “a systems-level tool that showed business process, but would communicate across organizational systems that might be very different” (Allee & Schwabe, 2011). She wanted to show the dynamic nature of systems, the flow of activity through a system, and the role of people in that system. During the creation process, Allee realized that she was creating a new way of thinking about systems: as value networks.

A *value network* is “any web of relationships that generates... value through complex, dynamic exchanges between two or more individuals, groups, or organizations” (Allee, 2003). Value networks are all around us. Public education adds value—knowledge and skill—to students through the enmeshed actions of schools, counselors, nutrition, physical education, parent support, and so on. A procurement process adds value—product and service acquisition—through relationships between

internal procurers, customers, suppliers, distributors, and so on.

Figure 6 shows a simplified view of a professional learning and development value network. To read the map, start by scanning the roles in circles. Then located the first transaction: Project work that goes from the Learner to the Customer. Proceed to the next transaction—the Customer gives feedback about skill gaps to the Manager—and so on throughout the map.

When analyzing a value network map, some things to look for are:

- » **Balance of transactions.** There’s more activity around the Manager and the Learner in the map than around the Customer and the Trainer. That is probably how people want this system to work: the Manager and Learner should carry the burden of managing the development process. In contrast, if the map showed more transactions involving the Customer than the Learner, people might question levels of involvement.
- » **Reciprocity between roles.** In the map, the Learner gives two deliverables to the Customer. The Customer doesn’t reciprocate; instead, feedback goes to the Manager. This is a red flag that points to the potential for misunderstanding and inefficiency.

Figure 6: Sample Value Network Map

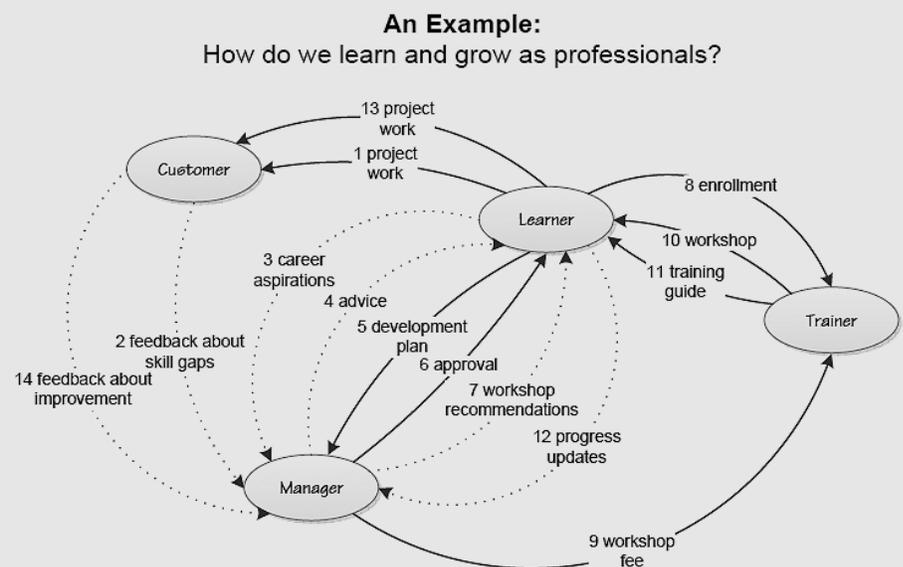
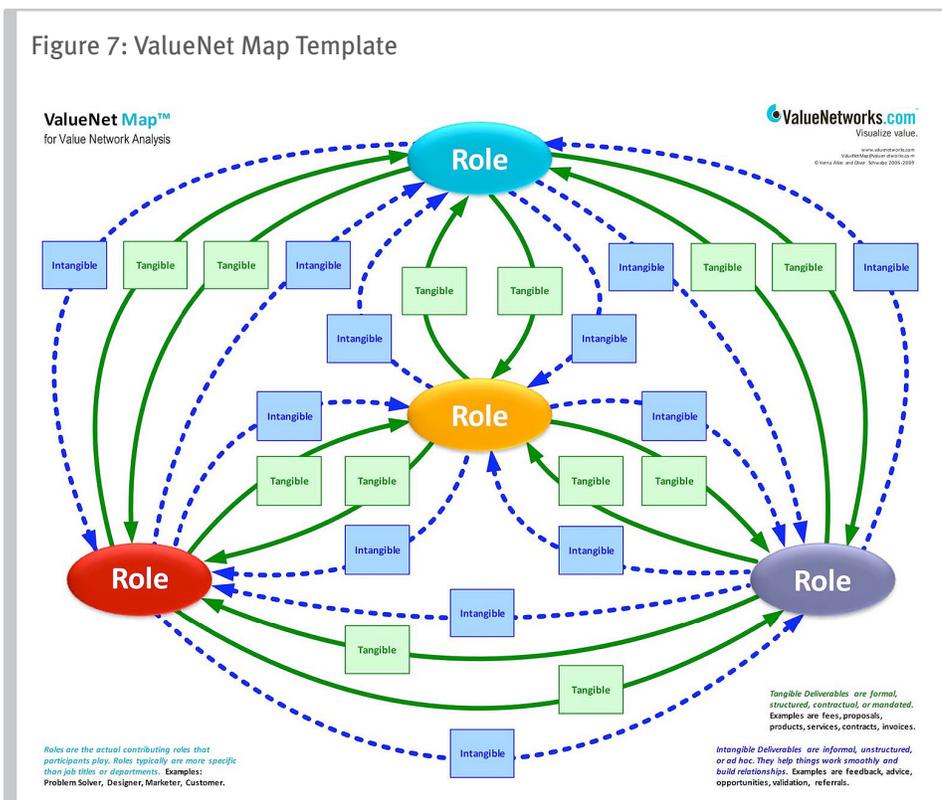


Figure 7: ValueNet Map Template



transactions while dotted blue lines and boxes represent intangibles.

Case Study: Mapping Austin’s Adolescent Health System Value Network

To prepare for our value network mapping meeting, the AHA Steering Committee, which included several young people, limited the scope of this new mapping effort. They reasoned that youth could not be expected to describe the interplay between funders and policy makers. But they could share their views of how the adolescent health system works for them. That would be invaluable knowledge for service providers, policy makers, and funders.

Then the Steering Committee narrowed the scope again. Adolescent health services could include anything from routine annual physicals and broken arms to sexually transmitted disease testing and pre-natal care. Since considerable attention and resources in the community were devoted to sexual health issues, the team took them off the table for the mapping effort. Instead, they decided to focus on what youth identified as most important during a series of focus groups conducted by the AHA Initiative earlier in the year. These under-the-radar issues received little organized, dedicated energy, or attention in Austin at the time:

1. Alternatives to drugs and alcohol
2. Resistance to peer pressure
3. Nutrition
4. Physical activity / exercise options and outlets

» **Potential bottlenecks.** The Manager sends four deliverables. Two of her deliverables—approval and the workshop fee—are potential stoppers. They both have the power to halt the process while waiting for managerial action.

Through this analysis, practitioners can help clients gain a holistic picture of a network and learn how to increase value. Advanced practitioners can use VNA to analyze how senders and receivers perceive value, how well channels in use support the network, and how the network impacts organizational assets like knowledge, brand, and organization capacity. The entire VNA methodology is available online through Allee & Schwabe’s open source book: www.valuenetworksandcollaboration.com.

The Methodology: Value Network Analysis

The ValueNet Map for Value Network Analysis (Figure 7) shows the template for an analysis. Circles represent roles: the actual contributing roles that participants play in the network. Examples of roles are Problem Solver, Sponsor, Designer, and Customer. Participant names are not used since people are often transitory in organizations while roles remain more constant.

Lines represent transactions: deliverables that transfer from one role to another. Fees, reports, feedback, and services are all types of deliverables. Transactions can be *tangible*—mandated by the system—or *intangible*—representative of “extras” that people provide in order to help the system move more efficiently or effectively.

For example, when sending a report to a client, the report is the tangible, mandated deliverable. The follow up call to make sure the report was received is usually intangible: not mandated by the contract between consultant and client yet helpful for maintaining trust and communication.

The convention is to use solid green lines and boxes to represent tangible

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In the mapping session, held in the evening at a local public library, we split into two groups: service providers and youth. Each created maps using scenarios that represented situations in which youth might need help with health-related issues. The maps each group created are reproduced in *Figures 8 and 9*.

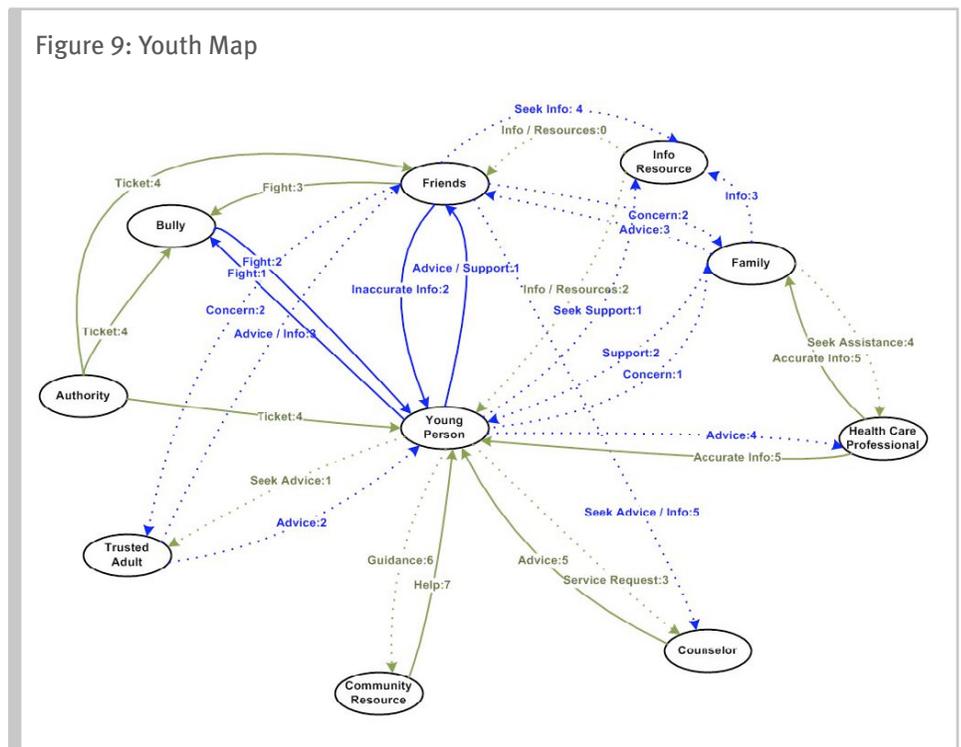
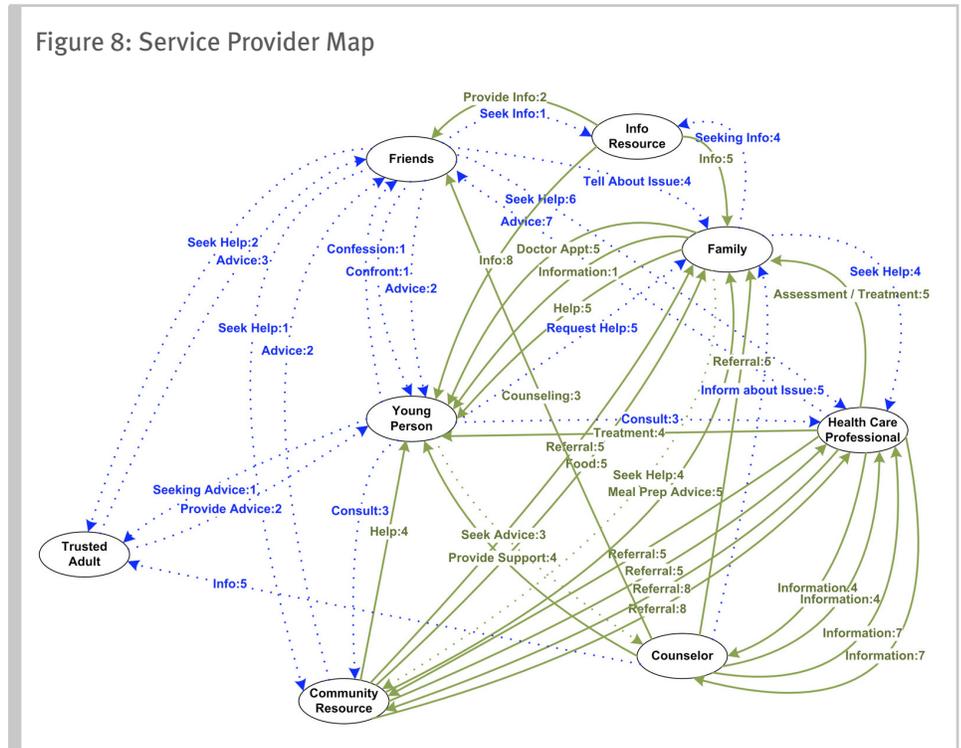
In each map, roles are laid out identically. The Young Person, the one seeking assistance, is always in the center. Then, starting at 12:00 and proceeding clockwise, we find the other roles: Friends, Info Resource, Family, Health Care Professional, Counselor, Community Resource, and Trusted Adult. On the youth map, two additional roles are included—Authority and Bully—which the youth added in response to a bullying scenario.

Lines represent the interactions between roles. Normally, mandated activities are green solid lines and optional activities are blue dotted lines. One interesting outcome of the youth mapping discussion was that youth added another type of line: a solid blue line (represented in *Figure 9* by darker solid lines). These lines represented

activities that were not a formal part of the system, but were socially mandatory. Is going to friends first when you have a problem essential to the Austin adolescent healthcare system? No. But it is social

suicide to circumvent friends, according to the youth mappers. The solid blue line came to represent these kinds of socially mandatory activities.

Numbers show the sequence of



Sequence of Activities in Value Network Mapping

Adapted from Allee and Schwabe (2011).

1. Clarify the scope and boundaries for the mapping effort.
2. Identify the level for the mapping: street-level, city-level, country-level, etc.
3. Get the right people in the room.
4. Develop scenarios that describe the typical experience that someone encounters when interacting with the ecosystem.
5. Identify roles that are important within the ecosystem.
6. Brainstorm transactions that occur within the ecosystem. Categorize them as tangible or intangible and place them on the map along with arrows showing the direction of movement.
7. Sequence activities to test that all transactions are included.

activity. For example, if you look at the youth map, you will see that a lot of things happen almost simultaneously. The Young Person goes to Friends for Advice/Support (1), a Trusted Adult to Seek Advice (1) or get Advice (1), the Info Resource (internet) to Seek Support (1), and to the Family to express Concern (1). In the bullying scenario, they'll also go immediately to the Bully for a Fight (1). This interaction was represented by a solid blue line since it was considered mandatory by the youth. Not fighting would have been socially self-destructive.

We learned a tremendous amount from our mapping initiative. A few of our most significant realizations related to different world views, the importance of trusted adults, and the challenge of authority.

Different World Views. A quick look at the two maps side by side shows that service providers and youth see the world very differently. Service providers see much more activity between the Health Care Professional, Counselor, and Community resource. In comparison, the lower right hand corner of the youth map is positively sparse; there are very few interactions between service providers. These maps dramatically, and quickly, show the different viewpoints of the two groups.

The Importance of Trusted Adults. On the youth map, most of the live interactions are between the Young Person, Friends, and Trusted Adult. According to the youth mappers, young people always go first to their friends since, socially, it is taboo to circumvent them even though they often give inaccurate advice. Ideally, the Trusted Adult balances inaccurate information with accurate advice, listens compassionately, helps young people think through options, and asks helpful questions. The trust between the adult and the youth is significant and fragile. Most adults in young people's lives are not trusted; they have too often broken confidences. Young people without a Trusted Adult in their lives lack a valuable resource and ally.

The Challenge of Authority. One of the most startling discoveries was the relationship between youth and authority figures. Many youth have their first contact with a non-family authority figure when a school principal or security officer writes them a "ticket." The tickets operate like parking citations: youth are required to pay a fine or perform community service when they receive a ticket. If they do not pay or if they collect a certain number of tickets, they are suspended. As a result, all young people involved have incentives to stay away from authority figures—rather than seek help—lest they get punished.

As a result of the mapping, the AHA Initiative realized that they needed to focus on helping adults build trusting, positive relationships with youth. Service providers realized they needed to align better with the realities of young people's worlds. Finally, youth learned much about the large number of free services available to them.

Summary

The theory and practice of business ecosystems and value networks are evolving. Today, more people are creating innovative tools and methods for navigating ecosystems. Notable among these are Human Systems Dynamics tools created by Eoyang and Holladay (2012) and the suite of Blue Ocean Strategy tools created by Kim and Mauborgne (2005). Ecosystem mapping and value network analysis are two powerful tools for helping companies and communities begin to understand their contexts and the value they generate within those contexts.

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