INTRODUCTION Design and Social Behavior

In 2004, my son Noah was turning one year old and I had a problem: How do I make him a birthday cake? He was seriously allergic to dairy, soy, and egg. A misread food label or a bite snuck from another child's plate at daycare could send us to the emergency room. But he was turning one – I wanted him to have birthday cake. I found a website called kidswithfoodallergies.org, and asked on the forum there: Did anyone have a dairy-, soy- and egg-free cake recipe? In response to my query, I got a flurry of warm welcomes from parents on the site. They shared an excellent safe cake recipe, and provided a host of other support. Parents on the site helped me figure out how to make a clear and effective allergy-awareness sheet for his daycare teachers. They shared tips for how to safely order food in a restaurant. Their experience was invaluable, and they also were emotionally supportive in a way no one else could be. Parenting an allergic toddler is stressful, and they understood completely.

After a few months on the site, I started welcoming new members and answering their questions. I became a local expert on a few topics. Together, the community of parents *built up a body of shared knowledge*. Online communities are good at constructing knowledge. As we'll see in Chapter 3, the more you learn about the social nature of knowledge, the more you can see why social media is good at

helping create it. Noah was lucky enough to outgrow his food allergies by the time he turned five. When I posted a picture of him eating his first piece of real pizza, other parents said it brought tears to their eyes.

This book is about the design of online communities, with an emphasis on how online communities can build (or fail to build) knowledge. To truly understand how the internet is creating knowledge, we need to understand other critical aspects of designing online groups – community, collaboration, identity, management of bad behavior, and the influence of market forces.

Online communities take many forms. I am part of a Facebook group of friends I've known since graduate school who like video games, and a subreddit of people (who I've never met) who are fans of my favorite television show. I'm part of groups for academic parents, people who volunteer to moderate a subreddit, and alumni of my elementary school, high school, college, and graduate school. I find each of these groups to be supportive in different ways.

In each group, I share different details about who I am, and I behave differently. Amy the professor, Amy the mom, and Amy the *Grey's Anatomy* fan are quite different. Norms of self-presentation are formed by a combination of software affordances and learned behavior, and those norms change group dynamics.

Each of these groups also shapes my understanding of the world. My knowledge and beliefs about how to approach safety for kids with food allergies were shaped by conversations on the food allergy group, and my opinion of the writing in *Grey's Anatomy* season seventeen has been

shaped through conversation with my fellow fans. Online conversation constructs new understandings.

The internet creates new ways for us to interact, understand the world, and share our understanding with others. These processes are supported and shaped by systems that are designed by humans. This book is about the interaction between design and social behavior – all the ways that the design of the internet shapes the human behavior and knowledge that emerge as a result.

One of the most powerful affordances of the internet is its ability to create community. Before the industrial revolution in the nineteenth century, "community" was a geographically bounded concept (Hampton and Wellman 2018). Travel was slow and hence rare, and people looked to others nearby for social support and fellowship. These patterns evolved significantly with the introduction of the automobile. With the introduction of internet communication, it's possible to find community based on shared interests and values, independent of geography. The parents on the food allergy group are located all over the world, but the internet brought us together.

What is a "community"? Is a group of people interacting on a Facebook group or subreddit a "community"? In Chapter 1, I'll use ideas from the prototype theory of categories to define what a "community" is. Eleanor Rosch showed that categories in the mind are based on "prototypes" or "best examples" – a robin is a better example of a bird than an emu or a penguin. Similarly, we understand the idea of "community" in relation to prototypical communities in our minds, like small towns or church groups.

Ray Oldenburg's work on "third places" shows us why we need places that are neither work nor home, and how these supportive communities are designed. I'll show how the detailed design features of online spaces can help them serve as third places. Finally, sociological research sheds light on how online communication has reshaped the kinds of community and strong and weak ties we all rely on in our lives.

A second core contribution of the internet is its support for collaboration. In Chapter 2, I'll introduce some powerful examples of constructive uses of online collaboration – like Wikipedia and citizen science. Why do people spend hundreds of volunteer hours writing encyclopedia articles or counting birds? I'll explain the incentive structure in peer production, and what kinds of things are possible using peer production methods. I'll explore citizen science in some detail, and then introduce Yochai Benkler's theory of why peer production is important, and what factors are important for a peer production project to succeed.

Yes, people can create things together online – but are they any good? In Chapter 3, I'll answer the question of whether you should believe Wikipedia. Building on ideas from epistemology, metaphysics, and social construction of knowledge, I'll explore what it means to "know" something, and how good a job Wikipedia does at building knowledge. I will argue that "truth" exists (even if we only have indirect and unsure access to it) and knowledge is socially constructed. Social consensus is our best metric for what "is true," but sometimes that consensus can be wrong.

Chapter 4 is about "knowledge-building communities," and how the internet *changes how we think*. People increasingly

come to learn things not alone but as part of a group – what everyone else around you believes shapes what you believe. The internet is a catalyst for this process. When a group of people work together to accomplish a task, they form what is called a "community of practice." Collaboratively constructing knowledge online is a process that takes place in a community of practice. I'll explain how communities of practice operate through the work of Jean Lave and Etienne Wenger. The knowledge-building process is strongly supported by elements of the software environment as well as the people working together. This is a kind of "distributed cognition," and work by Edwin Hutchins can help us understand it better.

Chapter 5 is about identity. As people interact in online venues, they need to represent who they are to others. The details of how we do this matter. Sociologist Erving Goffman explains how, in the face-to-face world, we are always performing roles. These elements of identity translate into the online world. One of the key questions for online activity is the role of anonymity. I'll explain the advantages and disadvantages of anonymous interaction. In fact, we're all really some degree of "pseudonymous" (between anonymous and identified) most of the time anyway. How identity is represented turns out to be one of the most powerful design decisions that you make in creating an online communications environment.

As most internet users are increasingly aware, interacting online is not all cute kittens and heartwarming stories. The internet can be *nasty*. In Chapter 6, I'll explore the ways we can regulate online behavior. Larry Lessig divides regulation into laws, social norms, markets, and technology.

As we'll see, ideas about "free speech" vary around the world, and laws about hate speech are quite different in the United States compared to other nations. Where we draw the line between free speech and illegal speech is the most hotly contested issue about the internet. What is at stake is not just what we all read or watch, but *who we are*. At its worst, the internet can make insane and hateful ideas seem normal, and make it easy for new people to be radicalized. On the other hand, if some speech is not allowed, who decides where to draw the line? How do we make balanced decisions about what content to allow?

How online platforms are financially supported shapes them in fundamental ways. In Chapter 7, I address how market issues shape what online sites exist and what they become. This is particularly relevant for how sites manage inappropriate content and bad behavior. What kind of behavior management takes place depends on what a site can afford. I argue that today's commercial sites can't deliver what is healthy for people or for society, because making key decisions steered by the profit motive doesn't magically make the right thing happen. We need more public investment in non-profit platforms driven by values.

Finally, in Chapter 8, I explore what we can do to make the internet better. I revisit the previous topics (community, collaboration, knowledge building, identity, behavior management, and market forces) and explore what constructive steps are possible for members of online sites, and for designers of those sites. Education is another important missing ingredient. To understand the internet,

people need a more nuanced understanding of the nature of knowledge, free speech, and more.

This book is based on what I have learned iteratively over the course of more than twenty years teaching the class "Design of Online Communities" to undergraduate and graduate students at Georgia Tech. In addition to explaining online interaction, I hope you'll find the theories I introduce useful, and pick the most relevant and go read the originals.

1 Are Online "Communities" Really Communities?

In 2009, then-Georgia Tech master's student Vanessa Rood Weatherly and I interviewed members of the "brand community" website for owners of Mini Cooper cars. This quote from one of our research subjects has always stuck with me:

> I had a grandson who was born premature and died and everybody was just really supportive and everybody was there for me. I couldn't talk to anybody else about it on a daily basis. But I could talk [on the Mini Cooper website]. So I'd check in every day . . . They were actually the first people I told when the doctor said he wasn't going to make it. That's the first place I went. I couldn't wake anybody else up at 3 in the morning. When it's like that, intense and close, it's easier to reach out to other people sometimes through the website and say it . . . They weren't so close that they were that involved, so they could listen and give me advice better . . . My daughter got a kick out of the fact that when she was sent to the hospital in Denver, I think she got 12 packages, cards, or flowers from people from the Mini site before she got anything from friends or family. They responded so fast. Overwhelmed by them before she ever even got anything from people who actually knew her. So like I said, it's a lot of support. (Rood and Bruckman 2009)

If it is 3 a.m. and you are facing devastating news, who would you turn to for support? It seems counterintuitive

that this bereaved grandmother would turn to a website for fans of a car brand. But for her, the site was a supportive community. The site was not a substitute for friends and family she knows face-to-face, but a powerful supplement.

Humans do better when we support one another – when we form supportive communities. The discipline of sociology is focused on studying all the ways that groups of people can be organized, and how that shapes the mutual support that emerges as a result. Internet communication reshapes social support in complicated ways. In this chapter, I will explain the ways that the internet has changed the forms that community takes. But first, we need to step back and define "community."

What Is a "Community"?

What is your idealized notion of a "community"? Are the subscribers of a subreddit a community? What about people who follow a hashtag on Instagram? What really is a "community"?

Cognitive science can help answer the question. I will argue that the word "community" refers to a *category* of associations of groups of people. To understand "community," it helps to have a more nuanced view of a "category." Eleanor Rosch found that categories in the mind are not organized by simple rules of inclusion and exclusion, but by *prototypes*. Each category has one or more best or "focal" members. For example, a robin or sparrow is a better example of a bird than an ostrich or penguin (Rosch 1999). These best members are the prototypes for the category, and we understand other members in relation to the best members.

Within a category, each item has a degree of membership. The degree of membership of an item in a category depends on its similarities to and differences from the focal members (Lakoff 1987). Rosch notes, however, that talking about "the focal members" of a category is a linguistic convenience. It would be better instead to refer to the "degree of prototypicality" of each member of the category. Some that have a high degree of prototypicality we may informally call the prototypes for the category.

Surprisingly, degree of prototypicality is objective – it can be measured with reaction-time studies. A person asked if a robin is a bird will respond more quickly than when asked if a penguin is a bird. The difference is a fraction of a second, but is measurable and repeatable. These results are generally consistent across individuals from a particular cultural background (Rosch 1999).

Categories can have either clear or fuzzy boundaries. For example, the categories "car" and "truck" have fuzzy boundaries, and sport-utility vehicles (SUVs) are members of both groups. However, SUVs are somewhat remote members of both the "car" and "truck" categories – a Ford Explorer is not an ideal example of either a car or a truck.

The prototype theory of categories answers lots of hard questions. Suppose you are in an art museum looking at a monochrome, painted canvas, and wondering whether this is "art." The answer is: "Art" is a prototype-based category. Works of art with a high prototypicality for Western culture are things like the Mona Lisa by Leonardo da Vinci and paintings of water lilies by Claude Monet. A monochrome canvas "is art" in the same sense that a