Chapter 1
Sustainable Networking, and Why You Should Do It

"You can't hack relationships."

~Scott Gerber and Ryan Paugh,
Superconnector (2018)

1.1 Sustainable Networking and Helping Others

Networking is a tool and an investment. Networking can help you solve research problems, find friends or employment, get advice and support, meet collaborators, and increase your knowledge. And if you wield this tool in the service of your network connections, you will help to create success not just for yourself but for everyone. Done well, *sustainable networking* is an investment in both your community and your career.

But investments take time to mature, whether it's money in a mutual fund or seeds planted in a garden. Just as much of science is a process of slow and diligent preparation for the collection of a few minutes' worth of crucial data, so too is network building a slow process of preparation for that critical moment when you need to call upon your network for assistance. Except there isn't just one moment, there are many, and the persistent cultivation of your network is a continuous and ongoing process that is never finished.

There will always be people who try to hack the process, whatever it is, to make it quicker. But "get rich quick" schemes applied to networking typically focus on short-term personal gains, not on generating mutual success. This kind of selfish behavior has given the term *networking* a bad reputation and caused people to question the ethics of networking.[1,2] If you think of help as a finite resource created by people, and you take more of a resource than you create, then your behavior is unsustainable: the resource will run out. If you try to get rich quickly and always ask for help and never give it, eventually no one will want to help you. So when networking is *not* done in a sustainable manner, it becomes that sleazy, transactional caricature that is used to describe those who seek unfair advantage over others.

This has led some to declare that networking is dead[3] and to attempt to migrate to other terminology such as "connecting," "relationship building," or "community building." The framing used in this book is "sustainable networking," but whatever the nomenclature you prefer, networking is an important concept to understand and to practice, and it is not going away. The landscape has changed dramatically with the proliferation of digital and online networking opportunities, but the way that relationships function has not. Developing quality relationships and networking sustainably with generosity takes time and effort. There is no way to hack your network, just your networking skill set.

Sustainable networking, as discussed here, is an exchange of information and assistance between two or more parties that allows everyone to benefit, increasing the success of the community as a whole. By helping others, you make sure that your network and your relationships are successful and fruitful for years to come. The reputation that you develop through networking will open or close doors for you, depending on how you treat others. Ideally, you want to offer real, useful help before asking someone for assistance, but sometimes you may need to call upon a new connection for help right away, and that is okay. That need may be the reason why a mutual connection introduced the two of you in the first place, but it is important to remember the principle of sustainability: think of help as a resource, and create more of it than you take.

In some discussions on networking, people use the term "return on investment," or ROI. This is an investing and business term that describes what benefits are reaped in exchange for the time, effort, or money originally invested in an enterprise. The ROI of networking is typically high; however, this framing and phraseology, due to their implied transactional nature, are avoided in this text in favor of the concept of sustainability. But if ROI is a useful framework for you, then use it. This is again a nomenclature issue and a matter of personal preference.

The above discussion relates to networking as a concept, but it is also important to understand what behaviors qualify as networking. Networking and socializing are not the same thing. If you have a positive or memorable exchange with someone, get their contact information, and follow up, that is networking. Sustainable networking means creating ongoing relationships based on mutual understanding and support, whether it is in person or online. Networking often involves socializing in a professional context, but there is more to it than that. To turn socializing into networking, you need to (a) have an exchange of information where both parties talk and listen, (b) remember each other, (c) reach out and contact each other at a later date, and (d) maintain that initial contact, even if it is infrequently.

Sustainable networking is both a philosophy and a set of actions. It is a way of looking at your interactions in the light of how you can help people and how your network gives you the opportunity to help others. As Keith Ferrazzi, author of *Never Eat Alone*, says, "*Real* networking is about finding ways to make *other* people more successful."[4] And the success of your network becomes your success.[5,6]

1.2 What Is a Network, and What Makes It Function Well?

Your network is the people you know, and the people who they know, and so on. From your relative perspective, you are at the center of your own network, but examined from a distance, you are just one node in a much larger web. It's important to think about yourself as a part of this broader community and how much you can do for that large number of people. For example, when attending an event, framing your thinking around what value or information that you can offer the other attendees will serve you and your community better than focusing only on what you want (though having your own goals is also important and will be discussed in Chapter 2). Helping others has tangible benefits for you, but it should be done with a spirit of generosity; telegraphing an expectation of return spoils the good will you created by helping.

The philosophical and mathematical principle of "six degrees of separation" is intimately related to the idea of networking and gives networking its power. The *six degrees* principle, first proposed by the Hungarian author and poet Frigyes Karinthy in his short story "Chain-Links,"[7] states that you can connect any two people in the world by five other people, or six steps of interconnection, thus creating a chain of acquaintants. This is the worldwide network of people that we all exist within, and as Karinthy wrote "the population of the Earth is closer together now than they have ever been before" because of it. And he wrote that in 1929, well before the inception of the internet and before commercial air travel became common.

It turns out that the world is even smaller than Karinthy thought, or at least it is now. A study by Facebook in 2011 found that the degrees of separation for Facebook users are on average 4.74 degrees,[8] with a degree being a social (inter)connection, i.e., there is a high probability (92%, according to Facebook) that if you are a Facebook user and you meet a stranger who is also a Facebook user, you could create a chain of only four people (five degrees) to connect the two of you. Facebook, LinkedIn, and social media in general give us valuable insight and analysis tools to see and understand the network of connections that already exists around us.

Which means that you already have a network. There are many different kinds of networks, defined not just by discipline but by geography, culture, language, school, university, interest, and religion. Your network is made of family, colleagues at work, and friends from school or childhood; they are all nodes in your network. Your network is everyone you already know, and each of those people represents potential access to an entirely new set of people. Networking, in a sense, is the maintenance and creation of these relationships. It can be thought of as the process of finding, developing, and maintaining professional connections, though of course, networking is just as important in the personal sphere as in the professional one. This book focuses on professional networking, but many of the principles that will be discussed here also have applications in the personal realm.

For your network to function well, your connections need to be built on a mutual understanding of needs. If you don't know what someone needs, you can't

really help them. Assistance based on what you *think* a person needs may be a hindrance if it is not what they actually need or want, and it is a waste of your time and energy. This is where communication and empathy are important, because they allow you to understand others as well as express yourself effectively (more on these concepts in Chapter 3), so that a mutual understanding can be established.

Diversity is also important for the health of your network. Your close work colleagues have access to most of the same people and the same information as you. With so many resources and experiences in common, you are less likely to be able to answer questions that they cannot, and vice versa. Cultivating relationships with a broad swath of people from diverse backgrounds will make your network a stronger, more powerful tool, and you will be more able to solve problems. The strength of diversity, as it applies to networking and the workplace, will be discussed in Chapter 6.

1.3 Motivations and Benefits

It might be tempting to dismiss networking as an activity for businesspeople and not something that scientists, engineers, or anyone in STEM fields need to concern themselves about. But the importance of networking extends far beyond your career: STEM fields and the scientific method itself depend upon it. Sharing experimental results so that they can be replicated is at the heart of science, and it is a facet of networking. While working in solitude can be productive and is especially important for creativity,[9,10] collaboration and networking are often necessary to advance particularly large projects or intractable problems.

On an individual level, networking has a wide variety of benefits, ranging from professional to emotional. These benefits include career security, being a better employee, increasing your productivity and knowledge, living longer (yes, you read that right, references to come), and feeling happier and more satisfied with life. Networking can get you jobs, promotions, awards, committee and board positions, speaking engagements, invitations to apply for or review grants, and (book) writing opportunities.

In many places, stable life-long employment at one employer is a thing of the past, if it ever existed. In 2018, the U.S. Bureau of Labor Statistics released a report stating that the median number of years that salaried employees had been at their current job was 4.2 years, and that for workers in the age range of 24 to 35 years it was shorter: 2.8 years.[11] The fact is that your employer has many considerations beyond the quality of your work that you cannot control, and it is possible to be let go even when you have been producing good work. If you network sustainably and regularly, whether you choose or change jobs or are forced to by circumstances, you will have at your disposal a network of people who you have helped to succeed and who will be happy to help you, which will make the transition smoother. And your network will follow you over the course of your entire career. In the modern era, a good professional network *is* the new career stability.

There are also many interesting job opportunities that are not promoted through official channels and that can be accessed only through networking. It is

estimated that between 40–85% of job opportunities are never advertised.[12] On the more conservative end, the 40% value is generated by looking at data published by the U.S. Bureau of Labor Statistics and noting that *more* people are hired than there are open, advertised positions. The higher end (85%) takes into account the use of advertising on social media and people who are hired through referrals or networking, even if it is an advertised position.

This is the hidden job market: jobs that you can only access through networking. Your networking activities will also give you access to unadvertised opportunities to collaborate, learn, expand your knowledge and experience, and help others to do the same. Access is one of the most significant career benefits of networking. Success and access are a virtuous cycle; the more access you have, the more resources you have at your disposal to help your connections, and the more success you can help people generate within your network, which in turn feeds your career success and improves your access. This virtuous cycle is much the same as the one associated with Opportunity Momentum: the more you engage in an activity, the more access you will have to opportunities to do that activity. (Opportunity Momentum was introduced in the Preface and is discussed in more detail in Chapter 2.)

You may think that if you are happy in your job, then you have no need to network because networking is a job-seeking activity, and it is. A 2019 LinkedIn survey revealed that 85% of the approximately 3,000 survey respondents found their current job through networking.[12] But while networking is an excellent way to find a job, as discussed above, if you treat it as *only* a way to find a job, and only at the moment when you change employment, you will fall into the unsustainable, transactional-side of networking. It becomes totally about what you want and when you want it, without consideration for the needs of others. How to sustainably network your job hunt is the topic of Chapter 12.

Beyond finding or changing employment, networking increases the breadth of your understanding. This is why volunteering is such an excellent networking activity; you help someone by giving your time and, in exchange, you learn valuable new things and meet new people. Networking with people outside of your niche of expertise is also important, as well as networking with people outside of your discipline. Often, we are too close to a problem to see a solution, but those who are further removed will ask new and surprising questions, and generate fresh and novel solutions, specifically because of their distance from the problem. This is how networking can serve you as a collaborative problem-solving tool.

Getting things done at work is also a lot easier when the people in your organization like you and want to help you. Networking within your place of work, including across disciplines and departments, gives you opportunities to help your colleagues, and generates ideas and goodwill. So thinking proactively about how you can help them is a valuable investment in your own work and in the success of your company.

The ability to network and connect with others is important in both work and personal life. People typically collaborate with and hire people whom they like, and people who have strong personal networks have a greater sense of well-being,

live longer, and have greater overall happiness than those who are less well networked.[14,15] A 2012 study published in the British Medical Journal, showed with statistical significance that people over 75 who had a rich social network on average lived 2.7 years longer than those who did not.[16] A 2006 study demonstrated that people get a greater sense of well-being from making new acquaintances than from spending time with people they already know, even if they are introverts[17] (more on introversion and extraversion in Chapter 3). So networking is not just a career skill, it is a life skill.

Studies have also shown that helping others generates feelings of happiness and wellbeing,[18] which is another excellent argument for sustainable networking: it feels good. TED speaker and author Adam Grant discusses in his book *Give and Take* how helping others not only makes us feel better but also motivates us to work harder.[9] So networking in a fashion that helps your contacts can boost your own productivity. Grant's studies show that people who give a lot but maintain self-interest and keep up their own work tend to be the most successful. These people also tend to control their time by scheduling how much of it they give to their contacts, so they still have time for themselves and their own projects.

You may be wondering how all this touchy-feely, emotional stuff is relevant to a book on *professional* networking for scientists and engineers. It's a fair question. Emotion is relevant because there is a lot of crossover and blending between our personal and professional networks. Some of your strongest and most valuable professional networking connections will also be your friends and classmates from graduate school, with whom you bonded through the process of research and graduation. You will likely socialize and develop friendships with your colleagues at work. Sometimes you may have purely personal relationships develop professional facets, as friends and family have careers and jobs, too.

Human beings are emotional creatures that are capable of science and logic. Part of what makes us human, and what makes networking as much an art as it is a science, is our emotions. Humans make many decisions based on emotion, not logic; there is evidence that we *cannot* make decisions without the use of emotion.[19] Our awareness of our emotions, how we handle them, and our ability to empathize and recognize emotions in others is vital for our ability to communicate effectively and is therefore an important part of networking.

Becoming a good networker is one of the best things that you can do for your own happiness and success, as well as the success and happiness of those in your network, both personal and professional. Networking done right, i.e., sustainably, is a win–win situation that makes things better for everyone.

1.4 Communication, STEM, and Networking

We as scientists and engineers can tend to have a dim view of social skills, communication and networking included. There is a proclivity to either box ourselves in as being bad at networking and social interaction, or to downplay their importance as skills. Or perhaps we do the former because of the latter: to excuse ourselves from the need to do something that we fear doing because we feel inept.

We call social abilities "soft skills," which sounds derogatory next to the important "hard science" that we do.

Compounding the issue, networking and communication are typically not part of a formal STEM education, and as such, many scientists and engineers do not know how to do it well, nor do they consider it to be important. Actor, author, and science communication advocate Alan Alda wrote in his book *If I Understood You, Would I Have This Look on My Face?* about speaking with the presidents of higher-learning institutions and asking if they would consider educating their science students in communication.[15] The response was almost invariably no, because there is too much science to teach.

And so, in STEM, our communication education is typically left to chance. After all, if our institution of higher education did not place a premium on it, then why should we as individuals? We spend years honing our analytical and problem-solving abilities, training how to align an optic, calibrate a device, or meet a specification, and then we neglect our communication and networking skills, or make them low priorities.

But communication skills are critical for science. You may not need a lot of communication skills to do your lab work or to make derivations, generate part drawings, or model complex phenomena, but without communication, science is dead. First and most fundamentally, if scientists had not shared and published their knowledge and findings, we wouldn't live in the world that we do today, and that includes not having all those nice textbooks we used in school. Being able to communicate and convey your results is as important to science as the measurements and data themselves. If you can't share or communicate your results so that others can replicate your experiments and add them to the body of scientific knowledge, is it really science?

Beyond that, much of the money that funds scientific research, at some point up the hierarchical chain, is not awarded by a scientist or engineer. In many countries, few policymakers have a scientific or technical background. If scientists and engineers cannot communicate to funding agencies and decision makers why their work is important, and cannot get the funding to do the work, that is science that doesn't happen. As to the future of STEM and the next generation of scientists and engineers, young people will be more likely to study STEM if they can understand what it is and why it is interesting and important. And it is the scientists and engineers of today who need to explain this to them.

Being able to communicate well is also important on an individual and everyday level. You need to be able to discuss your work with your research group or coworkers, and to get help when you need it. You can be incredibly talented technically, but if you can't work well with a team, i.e., communicate effectively with others, you are less likely to be considered a good hire and to get a job. It doesn't matter how good your work is if you never get the opportunity to do it.

Communication does not happen simply when something is said. If your audience cannot understand you, nothing is being communicated, even if you are speaking and they are listening. You can speak all day in ancient Greek, but if your audience doesn't speak ancient Greek, then nothing will be communicated. As a

speaker or communicator, it is your responsibility to make sure that your audience is following you; it's not the other person's job to catch up if you have lost them. This is called *adapting to your audience*, and it involves changing your content and mode of expression to make it easier for your audience to understand. If you want to communicate something, you need to check your approach, explain it differently or with different words as needed, so that your audience can follow what you are saying. In this way, communication is like a partner dance, and it requires empathy and self-awareness (more on this in Chapter 3).

Improving your networking skills is an investment in your network, your career, and in science itself. Your abilities to get a job, win funding for your research, do your job effectively, share your data and results, negotiate a salary, and meet new people depend on your communication skills. Communication is also important in your friendships, filial relationships, and intimate partnerships.

Communication skills are to networking what a saw, hammer, and nails are to carpentry: essential tools necessary to get the job done. This may all seem like a daunting task, but the good thing is that all of these networking, communication, and social skills are *teachable*. They are something you can tackle the way you would any research problem: with study, analysis, and data collection. And practice. Lots and lots of practice. Chapters 4 and 5 go into detail about conversational in-person communication skills, and Chapter 10 covers topics related to remote and written communication for networking.

1.5 The Dunning–Kruger Effect

When it comes to networking and communication, it is important to be able to make (accurate) assessments of our own abilities to find areas that need improvement. And we need to beware of feeling too confident. While a lack of confidence and social anxiety are their own obstacles, overconfidence can be worse, because it can lead us to dismiss the idea that we need to improve and subsequently result in inaction. The Dunning–Kruger effect describes how this ignorance of our own ignorance (meta-ignorance) can lead to inaccurate, and inflated, assessments of our abilities.[21] In other words, the less you know about something, the less you are able to assess your ability related to it. This is because the ability to make an accurate assessment depends on an understanding of the topic, and if one does not understand the topic, the skills for assessment are also missing. A quote often misattributed to Einstein, Aristotle, and several other historical figures is, "The more you know, the more you know you don't know." The complement to this statement would be, "The less you know, the less you know you don't know." That is the Dunning–Kruger effect.

This phenomenon is mentioned here because it is a reminder that there is always room for improvement, even (and especially) if we believe that our skills are complete. Networking and communication are often neglected or dismissed by STEM professionals, but they are activities and abilities that, if you work at and practice them, will benefit you and those around you. The Dunning–Kruger effect will also enter into the discussion on self-awareness, empathy, and communication in Chapters 3–5, as well as the exercises that appear at the end of each chapter.

> **Author Anecdote**
> As mentioned in the Preface, for a long time I had trouble being a good conversational partner. I dominated conversations, barely letting others get a word in edgewise, and I thought I was good at conversation because I talked so much. This was the Dunning–Kruger effect in action: I thought that dominating conversations made me good at conversation because I didn't understand that a conversation should flow in both directions. It took me a long time to understand what I was doing wrong. It was a slow process as my overall self-awareness developed, even after I realized that I had a problem. But as will be discussed in Chapter 3, self-awareness is important for networking and communication, and it can be consciously practiced and improved, as can conversational skills which are discussed in Chapters 4 and 5.

Exercises

(1) Spend some time thinking about and examining your existing networks. Take notes or look through your LinkedIn and/or other social media connections. Think about your connections, both personal and professional: coworkers and colleagues, family, neighbors, old classmates, teammates, and childhood friends. Having a clear picture of who you are already connected with can help you when you begin to consider your networking strategy in Chapter 2.

(2) Consider your current career and professional situation, both good and bad. Take some notes about how you could use the good parts of your situation to help others and the ways in which you might be able to improve the bad parts of your situation with the help of others.

(3) Think about your communication skills, both written and verbal. What are you already reasonably good at? What do you think needs improvement? (Hint: If you think your communication skills need no improvement, please revisit the discussion on the Dunning–Kruger effect.) Is there anything holding you back from making those improvements? This exercise will help you begin to become more self-aware, an important trait discussed in Chapter 3.

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