# Henrich's *The Secret of Our Success*: Trust Tradition

How should people use traditions?

Image: Traditional Hawaiian Meal Preparation, Lahaina Luau, Maui, Hawaii. Photo by Pet_r on flickr.com

## Warm-Up: My Cultural Traditions

Chances are, your family, your school, your religion, your cultural community, or another community you are a part of has some long-standing traditions that you participate in without really knowing why (If you're at the University of Notre Dame, this is certainly true for you!).

**Quick Poll! What is a cultural tradition in which you participate that you have no clue how or why it started?**

To share your tradition anonymously and see what others around the world said, click here: https://forms.gle/aophd4cguc701cCn7

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## Introduction

Photo courtesy of the Department of Human Evolutionary Biology, Harvard University

Joseph Henrich (1968-) is a professor of human evolutionary biology. His research is primarily concerned with psychological approaches to decision-making and culture. In particular, he focuses on cultural learning, cultural evolution, and the emergence of complex human institutions. He utilizes anthropological techniques in his work alongside psychology and economics. He is the current chair of the Department of Human Evolutionary Biology at Harvard University.

One notable piece of Henrich's work is *The Secret of Our Success*. In this book, Henrich explores the concept of culture and tradition as a means of evolutionary success. He argues that rather than only natural selection, collective cooperation among humans through culture and traditions have also contributed to our success as a species. He uses a variety of case studies to argue that intelligence is passed on through traditions that are adapted based on our culture. In this class, we will read Chapter 7 of his book, "On the Origin of Faith." You can find a link to the text here if you prefer to work through that.

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## Key Concepts

- Causal Opacity
- Cultural Evolution
- Overimitation

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## The Curious Case of Cassava

Henrich begins this chapter by exploring the preparation of the staple crop manioc, or cassava, in order to introduce the concepts of **causal opacity** and **cultural evolution**.

Credit: "Cassava root" by Renatosjoao, WikiCommons

*As one of the world's staple crops, manioc (or cassava) is a highly productive, starch-rich tuber that has permitted relatively dense populations to inhabit drought-prone tropical environments. I've lived on it, both in Amazonia and in the South Pacific. It's tasty and filling. However, depending on the variety of manioc and the local ecological conditions, the tubers can contain high levels of cyanogenic glucosides, which release toxic hydrogen cyanide when the plant is eaten. If eaten unprocessed, manioc can cause both acute and chronic cyanide poisoning. Chronic poisoning, because it emerges only gradually after years of consuming manioc that tastes fine, is particularly insidious and has been linked to neurological problems, developmental disorders, paralysis in the legs, thyroid problems (e.g., goiters), and immune suppression. These so-called "bitter" manioc varieties remain highly productive even in infertile soils and ecologically marginal environments, in part due to their cyanogenic defenses against insects and other pests.*

*In the Americas, where manioc was first domesticated, societies who have relied on bitter varieties for thousands of years show no evidence of chronic cyanide poisoning. In the Colombian Amazon, for example, indigenous Tukanoans use a multistep, multiday processing technique that involves scraping, grating, and finally washing the roots in order to separate the fiber, starch, and liquid. Once separated, the liquid is boiled into a beverage, but the fiber and starch must then sit for two more days, when they can then be baked and eaten. Figure 7.1 shows the percentage of cyanogenic content in the liquid, fiber, and starch remaining through each major step in this processing.*

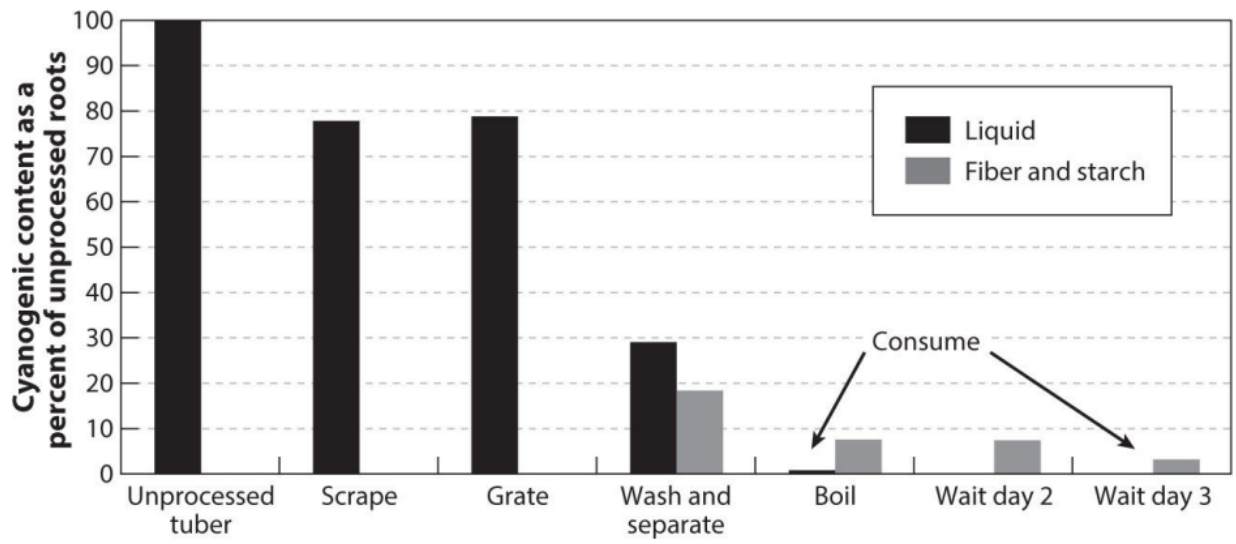


**Figure 7.1**. Effects of each major step in the Tukanoan manioc processing technique. Percentages are relative to the raw tuber.

*Such processing techniques are crucial for living in many parts of Amazonia, where other crops are difficult to cultivate and often unproductive. However, despite their utility, one person would have a difficult time figuring out the detoxification technique. Consider the situation from the point of view of the children and adolescents who are learning the techniques. They would have rarely, if ever, seen anyone get cyanide poisoning, because the techniques work. And even if the processing was ineffective, such that cases of goiter (swollen necks) or neurological problems were common, it would still be hard to recognize the link between these chronic health issues and eating manioc. Most people would have eaten manioc for years with no apparent effects. Low cyanogenic varieties are typically boiled, but boiling alone is insufficient to prevent the chronic conditions for bitter varieties. Boiling does, however, remove or reduce the bitter taste and prevent the acute symptoms (e.g., diarrhea, stomach troubles, and vomiting). So, if one did the common-sense thing and just boiled the high-cyanogenic manioc, everything would seem fine. Since the multistep task of processing manioc is long, arduous, and boring, sticking with it is certainly nonintuitive. Tukanoan women spend about a quarter of their day detoxifying manioc, so this is a costly technique in the short term.*

*Now consider what might result if a self-reliant Tukanoan mother decided to drop any seemingly unnecessary steps from the processing of her bitter manioc. She might critically examine the procedure handed down to her from earlier generations and conclude that the goal of the procedure is to remove the bitter taste. She might then experiment with alternative procedures by dropping some of the more labor-intensive or time-consuming steps. She'd find that with a shorter and much less labor-intensive process, she could remove the bitter taste. Adopting this easier protocol, she would have more time for other activities, like caring for her children. Of course, years or decades later her family would begin to develop the symptoms of chronic cyanide poisoning.*

*Thus, the unwillingness of this mother to take on faith the practices handed down to her from earlier generations would result in sickness and early death for members of her family. Individual learning does not pay here, and intuitions are misleading. The problem is that the steps in this procedure are*

*causally opaque—an individual cannot readily infer their functions, interrelationships, or importance. The **causal opacity** of many cultural adaptations had a big impact on our psychology.*

*The point here is that **cultural evolution** is often much smarter than we are. Operating over generations as individuals unconsciously attend to and learn from more successful, prestigious, and healthier members of their communities, this evolutionary process generates cultural adaptations. Though these complex repertoires appear well designed to meet local challenges, they are not primarily the products of individuals applying causal models, rational thinking, or cost-benefit analyses. Often, most or all of the people skilled in deploying such adaptive practices do not understand how or why they work, or even that they "do" anything at all. Such complex adaptations can emerge precisely because natural selection has favored individuals who often place their faith in cultural inheritance—in the accumulated wisdom implicit in the practices and beliefs derived from their forbearers—over their own intuitions and personal experiences. In many crucial situations, intuitions and personal experiences can lead one astray, as we saw with our lost explorers (the nardoo was satisfying). To see this more clearly, let's look at some more cultural adaptations.*

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## It's Better to not Know

An important component of cultural evolution is knowing the reason behind a particular tradition. In some cases, this knowledge is necessary to properly execute and understand the cultural practice. For example, many religions commemorate the onset of adulthood as an opportunity to affirm one's faith, such as confirmation in Catholicism, a bar/bat mitzvah in Judaism, and others. Such events rely on an individual understanding the implications of one's commitment to one's faith; otherwise, the moment loses its significance. If Seth doesn't know that having a bar mitzvah confirms his Jewish identity and commitment to be involved in the Jewish community, then the event no longer has meaning. In these situations, knowledge about the reasoning behind one's culture is necessary.

On the other hand, though, there are some situations where knowing the reasoning behind cultural traditions is counterintuitive to that culture. In this section, Henrich explores this phenomenon and argues that not understanding certain cultural practices is often necessary for those traditions to be successful and provide meaning to a community. If their reasoning is discovered, those traditions risk no longer being practiced. To convey this point, Henrich draws from the Naskapi hunters who rely on a divine ritual to guide their hunting, not realizing it's simply a randomizer.

As you read this excerpt, consider whether there are any traditions in your life that you don't understand the reasoning behind. Is that lack of knowledge necessary to appreciate that cultural practice?

*As I noted, much work in psychology shows that people (well, at least educated Westerners) are subject to the Gambler's Fallacy, in which we perceive streaks in the world where none exist or we believe that we are "due" after an extended losing streak. In fact, we struggle to recognize a sequence of hits and misses as random — instead, we find phony patterns in the randomness. One famous*

*version of this is the hot-hand fallacy in basketball, in which people perceive a player as suddenly better than his long-term scoring average would suggest (it's an illusion). This is a problem for us, since the best strategies in life sometimes require randomizing. We are just not good at shutting down our mental pattern recognizers.*

*When hunting caribou, Naskapi foragers in Labrador, Canada, had to decide where to go. Common sense might lead one to go where one had success before or to where friends or neighbors recently spotted caribou...That is, hunters want to match the locations of caribou while caribou want to mismatch the hunters, to avoid being shot and eaten. If a hunter shows any bias to return to previous spots, where he or others have seen caribou, then the caribou can benefit (survive better) by avoiding those locations (where they have previously seen humans). Thus, the best hunting strategy requires randomizing. Can cultural evolution compensate for our cognitive inadequacies?*

*Traditionally, Naskapi hunters decided where to go to hunt using divination and believed that the shoulder bones of caribou could point the way to success. To start the ritual, the shoulder blade was heated over hot coals in a way that caused patterns of cracks and burnt spots to form. This patterning was then read as a kind of map, which was held in a prespecified orientation. The cracking patterns were (probably) essentially random from the point of view of hunting locations, since the outcomes depended on myriad details about the bone, fire, ambient temperature, and heating process. Thus, these divination rituals may have provided a crude randomizing device that helped hunters avoid their own decision-making biases. The undergraduates in the Matching Pennies game could have used a randomizing device like divination, though the chimps seem fine without it.*

*This example makes a key point: not only do people often not understand what their cultural practices are doing, but sometimes it may even be important that they don't understand what their practices are doing or how they work. If people came to understand that ... bone divination didn't actually predict the future, the practice would probably be dropped or people would increasingly ignore ritual findings in favor of their own intuitions.*

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## Man is a Cultural Animal

You've heard from Aristotle that humans are political animals. Others have claimed that humans are social animals. In this passage, Henrich demonstrates that humans are cultural animals: We tend to copy each other when we see someone achieve our desired result, even when copying goes against our instincts or our judgment. This is a process psychologists call **over-imitation**.

*Crucial to making cultural adaptations like manioc, corn, or nardoo processing work is not only faithfully copying all the steps, but also sometimes actually avoiding putting much emphasis on causal understandings that one might build on the fly, on one's own. As shown above, dropping seemingly unnecessary steps from one's cultural repertoire can result in neurological disorders, paralysis, pellagra, reduced hunting success, pregnancy problems, and death. In a species with cumulative cultural evolution, but only in such a species, faith in one's cultural inheritance often favors greater survival and reproduction.*

*Dovetailing with the above field observations, experimental work with children and adults on the fidelity of cultural learning allows us to put a microscope on the cultural transmission process. Recently, psychologists have studied the when and why of people's willingness to copy the seemingly irrelevant steps used by another to get to a reward. In a typical experiment, a participant sees a model engage in a multistep procedure that involves using simple tools to push, pull, lift, poke, and tap an "artificial fruit" (often a large box with doors and holes). The procedure usually results in obtaining some desirable outcome, such as a toy or snack. Some of the steps in the procedure are not apparently required to achieve the goal of getting the reward. Sometimes people even copy steps with no evident material-physical connection to the outcome. Notorious for inappropriately naming of behavioral patterns, psychologists have labelled this not-particularly-shocking phenomenon* ***overimitation****.*

*...*

*The robust results from these kinds of experiments are that children and adults are rather inclined to copy whatever the model does to obtain the reward. People even copy the irrelevant actions when they are alone, after they think the experiment is over, and when they've been told explicitly not to copy any irrelevant actions. However... people are more likely to copy irrelevant actions when the model is older and higher in prestige. This is also not merely some tendency of little children: assuming the problem is sufficiently opaque, the magnitude of "overimitation" increases with age. This also isn't just educated Western peoples. Research in the Kalahari Desert in southern Africa, whose populations lived as foragers until recent decades, show them to be at least as inclined to high-fidelity cultural transmission as Western undergraduates.*

*Our reliance on cultural transmission, however, goes much deeper. In addition to acquiring practices and beliefs, which may violate our intuitive understandings, we can also acquire tastes, preferences, and motivations. These too can be acquired in the face of our instinctual or innate inclinations. Such acquisitions do not mean we lack instincts or innate inclinations, but merely that natural selection has endowed our cultural learning systems with the ability to, under the right conditions, overwrite or work around them.*

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## Overcoming Instinct: Why Chili Peppers Taste Good

Some traditions involve activities that seem unsafe. For example, bullfighting involves significant potential harm to oneself at the hands of an untamed bull. Regardless of potential danger, though, these traditions are still practiced and lauded in cultures across society. Henrich argues that although some activities are counterintuitive to our evolutionary biology, our cultural adaptations supersedes our inclination to avoid dangerous activity. Our desire to engage in these traditions is rooted in a reinterpretation of their danger, viewing it as positive, not negative.

Henrich expands upon this argument in the next section, where he also suggests that some cultural

adaptations also serve a beneficial purpose from an evolutionary standpoint. To demonstrate his argument, he relies on a variety of spices, particularly chili peppers. As you read this excerpt, consider Henrich's rationale for why we engage in dangerous activity. Do you think his argument is convincing?

*Why do we use spices in our foods? In thinking about this question keep in mind that (1) other animals don't spice their foods, (2) most spices contribute little or no nutrition to our diets, and (3) the active ingredients in many spices are actually aversive chemicals that evolved to keep insects, fungi, bacteria, mammals, and other unwanted critters away from the plants that produce them.*

*Several lines of evidence indicate that spicing may represent a class of cultural adaptations to the problem of food-borne pathogens. Many spices are antimicrobials that can kill pathogens in foods. Globally, the common spices are onions, pepper, garlic, cilantro, chili peppers (capsicum), and bay leaves. Here's the idea: the use of many spices represents a cultural adaptation to the problem of pathogens in food, especially in meat. This challenge would have been most important before refrigerators came on the scene. To examine this, two biologists, Jennifer Billing and Paul Sherman, collected 4578 recipes from traditional cookbooks from populations around the world. They found three distinct patterns.*

1. *Spices are, in fact, antimicrobial. The most common spices in the world are also the most effective against bacteria. Some spices are also fungicides. Combinations of spices have synergistic effects, which may explain why ingredients like chili powder (a mix of red pepper, onion, paprika, garlic, cumin and oregano) are so important. And ingredients like lemon and lime, which are not on their own potent antimicrobials, appear to catalyze the bacteriakilling effects of other spices.*
2. *People in hotter climates use more spices, and more of the most effective bacteria killers. In India and Indonesia, for example, most recipes used many antimicrobial spices, including onions, garlic, capsicum, and coriander. Meanwhile, in Norway, recipes use some black pepper and occasionally a bit of parsley or lemon, but that's about it.*
3. *Recipes appear to use spices in ways that increase their effectiveness. Some spices, like onions and garlic, whose killing power is resistant to heating, are deployed in the cooking process. Other spices, like cilantro, whose antimicrobial properties might be damaged by heating are added fresh in recipes.*

*Thus, many recipes and preferences appear to be cultural adaptations that are suited to local environments and that operate in subtle and nuanced ways not understood by those of us who love spicy foods. Billing and Sherman speculated that these evolved culturally, as healthier, more fertile, and more successful families were preferentially imitated by less successful ones. This is quite plausible given what we know about our species' evolved psychology for cultural learning, including specifically cultural learning about foods and plants.*

*Among spices, chili peppers are an ideal case. Chili peppers were the primary spice of New World cuisines prior to the arrival of Europeans and are now routinely consumed by about a quarter of all adults globally. Chili peppers have evolved chemical defenses, based on capsaicin, that make them aversive to mammals and rodents but desirable to birds. In mammals, capsicum directly activates a*

*pain channel (TrpV1), which creates a burning sensation in response to various specific stimuli, including acid, high temperatures, and allyl isothiocyanate (which is found in mustard and wasabi). These chemical weapons aid chili pepper plants in their survival and reproduction, because birds provide a better dispersal system for the plants' seeds than other options (like mammals). Consequently, chilies are innately aversive to nonhuman primates, babies, and many human adults. Capsaicin is so innately repellent that nursing mothers are advised to avoid chili peppers lest their infants reject their breast milk, and in some societies, capsicum is even put on a mother's breasts to initiate weaning. Yet adults who live in hot climates regularly incorporate chilies into their recipes. And those who grow up among people who enjoy eating chili peppers not only eat chilies but love eating them. How do we come to like the experience of burning and sweating—the activation of pain channel TrpV1?*

*Research by the psychologist Paul Rozin shows that people come to enjoy the experience of eating chili peppers mostly by reinterpreting the pain signals caused by capsicum as pleasure or excitement. Based on work in the highlands of Mexico, children acquire this preference gradually, without being pressured or compelled. They want to learn to like chili peppers, to be like those they admire. This fits with what we've already seen: children readily acquire food preferences from older peers. The bottom line is that culture can overpower our innate mammalian aversions when necessary and without us knowing it.*

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## Summary

Henrich concludes this chapter by noting that although we may be able to uncover the roots of particular cultural traditions, that information is useless without also recognizing the broader structures those practices derive from. To truly appreciate the role of cultural traditions in humanity's evolutionary journey, one must understand the complex, societal structures that gave rise to these traditions.

As you read this final excerpt, determine whether you can identify any social structures that may relate to cultural traditions in your own life. How does that assist you in understanding your cultural practices?

*As a product of this long-running duet between cumulative cultural evolution and genes, our brains have genetically adapted to a world in which information crucial to our survival was embedded implicitly in a vast body of knowledge that we inherit culturally from previous generations. This information comes buried in daily cooking routines (manioc), taboos, divination rituals, local tastes (chili peppers), mental models, and tool-manufacturing scripts (arrow shafts). These practices and beliefs are often (implicitly) MUCH smarter than we are, as neither individuals nor groups could figure them out in one lifetime. For these evolutionary reasons, learners first decide if they will "turn on" their causal-model builders at all, and if so, they have to carefully assess how much mental effort to put into them. And if cultural transmission supplies a prebuilt mental model for how things work, learners readily acquire and adhere to those.*

*Of course, people can, and do, attempt to break down complex procedures and protocols in order to understand the causal links between them and to engineer better versions. They also alter practices*

*through experimentation, errors in learning, and idiosyncratic actions. Nevertheless, as a cultural species, we have an instinct to faithfully copy complex procedures, practices, beliefs, and motivations, including steps that may appear causally irrelevant, because cultural evolution has proved itself capable of constructing intricate and subtle cultural packages that are far better than we could individually construct in one lifetime. Often, people don't even know what their practices are actually doing, or that they are "doing" anything. Spicy-food lovers in hot climates don't know that using recipes involving garlic and chili peppers protect their families from meat-borne pathogens. They just culturally inherited the tastes and the recipes, and implicitly had faith in the wisdom accumulated by earlier generations.*

*Finally, we humans do, of course, construct causal models of how the world works. However, what's often missed is that the construction of these models has long been sparked and fostered by the existence of complex culturally evolved products. When people have accurately speculated on why they do something, this realization often occurs after the fact: "Why do we always do it this way? There must be a reason.... Maybe it's because ..." However, just because some people have speculated accurately as why they themselves, or their groups, do something in a particular way does not mean that this is the reason why they do it. An enormous amount of scientific causal understanding, for example, has developed in trying to explain existing technologies, like the steam engine, hot air balloon, or airplane. A device or technology often preexisted the development of any causal understanding, but by existing, such cultural products opened a window on the world that facilitated the development of an improved causal understanding. That is, for much of human history until recently, cumulative cultural evolution drove the emergence of deeper causal understandings much more than causal understanding drove cultural evolution.*

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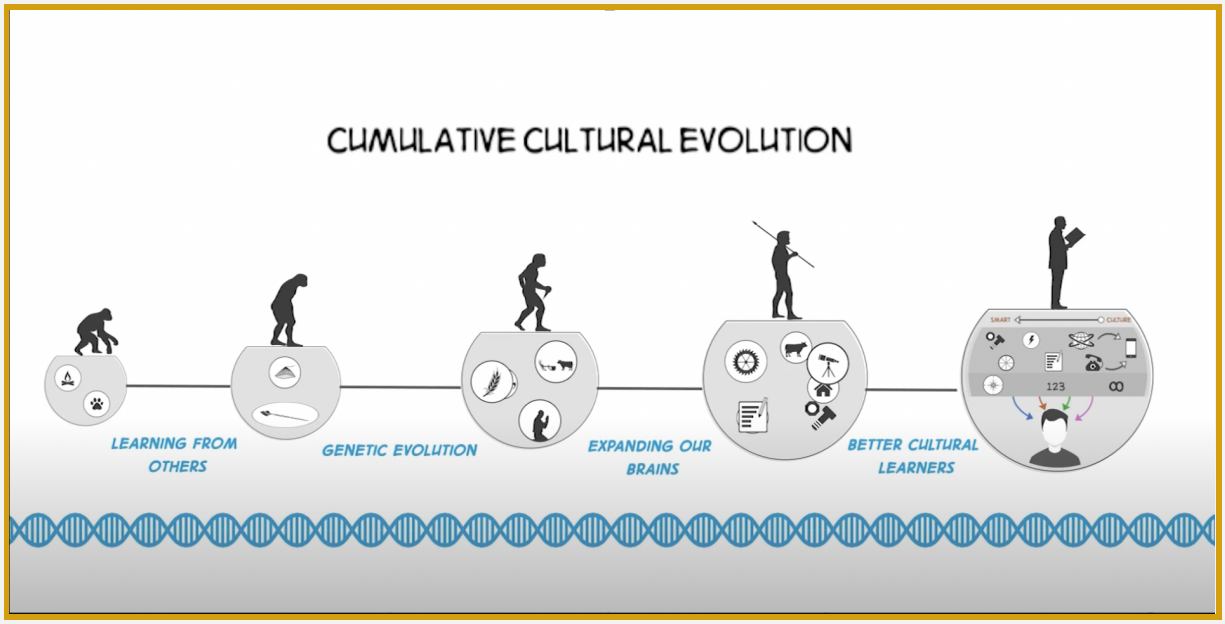
Watch this: "The Secret of Our Success Joe Henrich Revised" (Joe Henrich)

https://www.youtube.com/watch?v=tlzh54-bpBs.

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## Acknowledgements

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