

## WESTERN SCIENCE SPEAKS PODCAST SEASON 3, EPISODE 4

### EPISODE TITLE

Nice Guys Finish Last ... Or Do They?

### PODCAST SUMMARY

On this episode of the Western Science Speaks podcast we explore why attributes such as kindness and selflessness have triumphed over some less altruistic traits in evolution. Geoff Wild from the [Department of Applied Mathematics](#) stops by the podcast for a discussion ranging from the evolutionary benefits of "niceness" to how to the incorporation of social media into our daily lives has changed our perceptions of one another.

### INTERVIEW

You're listening to the Western science speaks podcast. Presented by Henry Standage.

#### Henry Standage 0:17

Looking at life through the lens of evolutionary theory can be a bit disorienting. Surely, we're more complicated people, with more freewill afforded to us than simply just being programmed to survive and pass on our genes. Yet, it's an entirely necessary field of study in social behaviour. Why do we strive to help others? And what evolutionary benefits does niceness grant us? Geoff Wild from the Department of Applied Mathematics hones in on these questions in his research. He joins Western Science Speaks for a podcast about altruism, genetics, and how the incorporation of social media into our daily lives has affected our social behaviour with one another. Here it is now.

#### Henry Standage 1:05

You look at a particular type of behaviour, social behaviour, can you explain what that term represents?

#### Geoff Wild 1:13

Social behaviour is any behaviour that influences the success, or what biologists might call fitness, of the individual acting on the behaviour, as well as the success of that individuals neighbours. The extent to which I might exploit some resource, maybe a fishery is an example of a social behaviour from selfish. Should I remove a lot of fish then I'll have a lot to eat and so maybe I'll have a really good chance of surviving the winter. But if I do remove a lot of fish, then there are fewer for those around me and so maybe their prospects over the winter aren't so rosy, really, most social behaviours can be thought of as being more or less selfish, or if you're kind of more glass half full, more or less selfless. And perhaps a better way to express this would be to say that social behaviours are really any kind of behaviours that can be organised on some kind of continuum, with selfish behaviour being at one end and selfless or cooperative behaviour being at the other.

#### Henry Standage 2:13

And so how has this sort of behaviour evolved since we've come to know life?

#### Geoff Wild 2:18

That's a great question. I'd say social behaviours have played and continue to play a key role in the evolution of life. And it's easy to pick out any number of social behaviours in nature, parental care, dispersal away from one's birthplace, suppression of reproduction, and each of those behaviours have critical consequences for individual success in the wild. The central idea in much of my research is that individuals who opt out various social behaviours, actors, tend to be genetically related to the neighbours who are on the receiving end of their behaviour. So well, a selfless act doesn't pay an actor directly, the fact that the actor has some genetic stake in its

neighbour success does in fact mean that a selfless act will pay off indirectly. Sure, the actor incurs a cost but on balance its genetic lineage might be better off as a result.

### **Henry Standage 3:16**

One assumes that we've gotten more nitpicky as times gone on, so first it's survive and then oh, you can't kill people. And then it's, don't eat the food while you're still in the grocery store.

### **Geoff Wild 3:28**

There are certain social norms that I think we've come to accept and certainly social behaviours have likely become more refined, as our organs have become more advanced, I mean, we're very different than a little molecule of RNA floating around in a primordial soup, we have higher cognitive capacity, I can remember what you did to me last week and I can use that to inform my behaviour going forward, right.

### **Henry Standage 4:01**

So, as a comparison, you think cavemen hundreds of thousands of years ago, were starting a fire for another caveman, in the same way that you agreed to do this podcast, do you think we're more generous now?

### **Geoff Wild 4:14**

That's a great question. It's also a difficult question. I think we have perhaps more opportunities to be generous now, do we take them up more often than our caveman ancestors? I don't know.

### **Henry Standage 4:32**

So, moving on, you're looking at the evolutionary advantages of seemingly altruistic behaviour. What hidden advantages have you hypothesised or being able to uncover?

### **Geoff Wild 4:43**

That's a great question. Because at face value many social behaviours, especially the more selfless ones seem disadvantageous. And you know, explaining why these selfless acts, the selfless behaviours are actually advantageous is important, if we want to understand life, you know, think about those those RNAs I mentioned a moment ago, those things constitute the first signs of life on Earth and their success depended on the selfless act of those among them who acted as enzymes. This selflessness would have been open certainly to selfish behaviour, free riders, you know, selfish molecules, who spend all their time letting others do the hard work, the hard work associated with reputation propagation of one generation of molecules to the next. And these free writing molecules could have just sat back so to speak and reaped all the benefits

### **Henry Standage 5:43**

We're built for teamwork.

### **Geoff Wild 5:45**

Yeah, but why didn't these free riders really, really flourish? You know, why didn't selfishness prevail over selflessness? Why didn't the emergence of life on Earth simply just ride to a halt? So like your question suggests there must be something in it for these seemingly selfless individuals otherwise, you know, why would they persist over time and my work really endeavours to explain what it is that's, that's incentivizing selfless behaviour, not just for molecules floating around in some molecular soup, but also for parents caring for their young individuals risking death to leave the safety of their birthing face. Individuals putting off having offspring of their own, you know, maybe even help others raise and care for the offspring that they produce.

### **Henry Standage 6:49**

In high school, I took a philosophy course and I was asked to write something and end up writing about if so there's a stat that if the world's existed for an hour, we've been here for about the equivalent to the second. And there's something to be said about that, when you have all these individuals trying to make themselves remember throughout time, when we've been the rulers of the earth for such a small amount of time that we should just hope our species gets remembered. I think there's something to say about that prioritisation of the species over

the individual. So maybe it is more helpful for me to be selfish, but humanity thrives on cooperation, and hopefully we can stick around as long as we can do that.

**Geoff Wild 7:28**

So, I'm going to push back a bit on that on that sentiment. I think that adaptations, behaviours, whose only advantage is to promote the success of the group are vulnerable to being undermined, undermined by selfless behaviour there. I think there has to be something more fundamental in it for selfless individuals or individuals who act out selfless behaviour. And the central idea of my research, is uncovering the details of what is in it for the selfless individuals. And really the detail that I might hone in on is the benefits of promoting the success of genetic relatives.

**Henry Standage 8:29**

Right. And I was just going to go to that just now. You're a mathematician by trade. How are you able to view these concepts through an analytical lens? And you just mentioned genetic relatedness there. That's one thing you attempt to measure, but what else do you look at?

**Geoff Wild 8:44**

So, in short, I'm trying to uncover the logic that underlies a particular social behaviour and really, I don't imagine that animals in the wild are actually analysing their behaviour using some sort of logical framework. Instead, I'm working from the assumption that natural selection, a key force of evolution will shape social behaviours to appear as if there's a logic that's underlying. So, to do this, I come up with a list of pros and cons essentially associated with actions and I try to predict whether one of these pros or cons will outweigh the other. This is where the math comes in. I use math to measure the value we ought to assign to the various pros and cons in our list. Now first, I need to figure out the value that should be assigned to different kinds of evolutionary success, like an individual's own survival versus its own reproduction. The math here is the same kind of math used by life insurance companies to attach value to risk. For me, though, I use math not to estimate risk but rather to understand the different flavours of success in the wild and importantly the kind of value I'm talking about here is established by, you know, Mother Nature herself. Individuals have no choice but to agree on those measures. Those aren't the only measures I use, but they're one key class of measure. See, the other kind of measure has to do with private, what I would call private value. Private value that an actor, an individual carrying out a social behaviour, might assign to its neighbours based on genetic relatedness. For this I need mathematical models that help me predict lines of descent and ultimately, the probability that an actor of a social behaviour shares genes with the individual on the receiving end of said behaviour. So once I have all these values in place, I can put them into my mathematicians pros vs cons list and see whether the selfish behaviour from the individuals perspective, not a group perspective, but an individuals perspective is the you know, quote unquote, logical choice.

**Henry Standage 11:05**

And I'm interested in the psychology underlying all of this. So how conscious are we of the advantages of some of these social behaviours?

**Geoff Wild 11:16**

Okay, that's a difficult question. And I'm not sure that we're conscious of advantages or disadvantages of social behaviours. But I think evolution has shaped us to react to social situations and in adaptive ways. Maybe we don't recognise it, but you know the signs of our evolutionary tasks may still be there. You know, possibly the best evidence of this, I think comes from experimental economics. There's this great game that economists often have undergraduate students play and it's called the ultimatum game. I don't know if you've heard of it, but it's a little two player game. And each of each of the players have his or her own role. One will be called proposer. The other is what we could call the acceptor. So, the two players are presented with some amount of money, let's say 10 bucks and they have to decide how to split. The proposer proposes a split. Usually it's just a simple split like, I'll take \$1 you take \$10 I'll take two you take eight and so on and so forth. Then when faced with the proposal, the acceptor can decide yes or no, accept or not. If the acceptor accepts, then the proposal is carried out and the sum of money is split as proposed. If the acceptor turns down the proposers offer, then both walk away with nothing. So from a rational perspective, you would think that if I was proposer and you were acceptor and I offered to split

\$10 with you by taking nine myself and leaving you with \$1, you should rationally speaking be okay with that. Because having \$1 is better than having nothing, right? If you turn me down then you get nothing if you accept my proposal, you at least get a buck. It'll get you maybe half of the newspaper. But that's not how the game gets played.

**Henry Standage 13:32**

If I go for five, five -

**Geoff Wild 13:33**

Why do you think five, five, because you have some sort of, and I'll argue that there's some hardwired sense of fairness that's driving that reaction to my unfair proposal? I guess from a naive perspective is a little surprising, but it's not so surprising when you try to put that reaction into a broader evolutionary context, right? If I take my \$9, and you take your \$1, and I go out and I buy a flashy thing to attract a tonne of mates, well, that puts you at an evolutionary disadvantage relative to me. And so, it seems from that perspective, it's quite natural that you would want to do what you could to keep us on an even playing field. And if that means turning me do.

**Henry Standage 14:26**

I was going to say most likely, if you offered me one, and you're keeping that I would just keep zero.

**Geoff Wild 14:33**

Yeah, you don't have your loony, but at least we are on a level playing field. Right. And so from an evolutionary perspective, I think that at least an evolutionary perspective clarifies these sorts of otherwise strange outcomes from these extreme experimental social setups.

**Henry Standage 14:58**

Now that's a really good example. I like that. Alright, so we know that there's some advantages in selflessness and cooperative behaviour. But what about for the person who's being offered something to show trust and accepting, should we be predisposed to scepticism?

**Geoff Wild 15:15**

Okay, so you're asking a trained scientist, and I'll always say that scepticism is advisable. But if you're asking what lessons might evolutionary theory, the evolutionary theory of social behaviour hold for us, I think I think one answer to your question could be use the information available to you right? I think alluded to this earlier on in our conversation, but adjusting your own behaviour based on your neighbour's social reputation can certainly be advantageous. Theory tells us that adjustments based on past experience you have with social partners can also be used. There's a rich set of examples available to us in computer tournaments played by digital social agents. Those tournaments have shown that having a memory albeit a short memory can actually help you. And we have seen tremendous success of these algorithmic digital agents whose algorithm tells them whatever you just did to me last time, I'm going to do back to you next time. And so, if you're if you're mean to me, or if you were mean to me last time, I'm just going to give it right back. If you're contrite, and you say, okay, Geoff, I'm sorry. I'll be nice to you. Then you will be repaid in kind. I guess, maybe not scepticism but a short memory a short but vengeful memory.

**Henry Standage 16:55**

Yeah, so there's a billion examples. But for instance, if I'm climbing up the ladder, and you offer to hold the ladder for me or help me out with something like that, what's the evolutionary advantage for me to accept that offer? I'm putting, I'm putting my fate in your hands a little bit there. But also, you're offering a selfless act, but then it's a difficult decision on the surface for me.

**Geoff Wild 17:26**

What's there to incentivize me from kicking the ladder out from underneath you? I feel like I would be incentivized not to betray your trust. If I kicked the ladder out from underneath you, and you managed to, you know, fall to safety, then you're going to go around and tell other people what a jerk I was and that's going to follow me

around. Reduce my value. Reduce the likelihood with which I will form future social partnerships, and possibly come back to bite me in the behind, right. So yeah, they're all sort of knock on or higher order effects that could act as cheques and balances to our, our behaviour in any given scenario.

**Henry Standage 18:27**

As a 19-year-old there's this whole digital landscape that people spend more of their waking hours on, than they don't. And it's a pseudo pleasant social media climate where everyone's super nice to each other on the surface all the time behind screens. And I'm interested in what your thoughts are on how we interact with one another in that domain, and what impact is it going to have on future behaviours?

**Geoff Wild 18:53**

That's a great question. Certainly, if these different social media platforms widen our social circles. I think that's true. And theories tell us that when our social circles get wider, that really sets the stage for selfish and possibly anti-social behaviour. I've tried to take some of these selfless/selfish ideas and apply them to things like disease evolution, for example. My research collaborators and I have found that when diseases can't spread very far, they tend to be less virulent, they tend to kill, at least we predict that they will tend to kill their hosts possibly at reduced rates. As we start spreading disease, over broader and broader spatial scales. We predict that they will become more virulent and they'll kill us or their hosts with greater frequency. The basic idea being that if you start spreading diseases around, they are less likely to be competing against strains of diseases to whom they're related to. They're away from their family. And when you're away from your family, when you're around individuals who success you have no genetic stake, then you're willing to exploit resources, the resources around you, at a very high rate. And if those resources are us, then you know, we're in trouble. And I can see parallels here between the predictions that we've arrived at for disease evolution. Virulent behaviour on the part of pathogens and virulent behaviour in social media platforms. And as we widen the scope of individuals with whom we interact, we have less interest in their well being. It's harder for people to keep track of our reputations. And basically, basically there's less incentive for us to be kind to one another. I mean, I can see, you know, if I look through social media, if I look at social media through the lens of an evolutionary biologist, I think, you know, some of these measures that the news outlets are taking to, to have people post comments with their actual identities, that those are measures and possibly positive measures, things that we could do to work against the anti social forces that might otherwise drive us.

**Henry Standage 21:31**

I think the thread between public value and social media has gotten much more prominent because I've met people in person, they've seemed low key they've seemed like a quieter person, and then I see them on social media. Oh, they have 15,000 followers. Sounds super dark, like a black mirror episode, but somehow, they are more valuable than I thought they were, in that they know more people. They have more opportunities to do stuff because they have all these people following them. They have more positive comments coming through their streams.

**Geoff Wild 22:10**

That's a great point. I hadn't even thought about it. I mean, keep in mind, I'm not at the age where I pay a lot of attention to social media. Certainly, interacting with high status individuals. Certainly, adjusting one's behaviour based on individual social statuses is adaptive. That's, that's a whole different follow up.

**Henry Standage 22:39**

Even if they're totally dull but you know, they have that value online, and they can give you a platform if they post pictures with you. It's a whole new world that you have to take account for.

**Geoff Wild 22:52**

Yeah, I got to get more followers on Twitter feed or my Twitter account, I guess.

**Henry Standage 23:00**

# Western Science

Thanks for taking the time to warm up and chill out with the Western science speaks podcast. We'll see you next time.