**Petr Matous – The social network and the strength of long ties**

>> Welcome to the podcast series of Raising the Bar, Sydney. Raising the Bar in 2017 saw 20 University of Sydney academics take their research out of the lecture theatre and into bars across Sydney, all on one night. In this podcast you'll hear Petr Matous' talk, the Social Network and Strength of Long Ties. Enjoy the talk.

[ Applause ]

>> Thank you. Good evening. First, audience engagement. Who is on Facebook? Raise your hands. Richard, we all know you are, although you hide it great. So this talk is about social networks. But the point I want to make that social networks are not just about Facebook or social media or Twitter or social networking sites. People have been making social networks with each other for a long time, well before the internet, well before phones, telegraphs or any other technology. There is a theory that it's the superior capacity of Homo sapiens to form extensive networks that helped us dominate the world for better or worse. So this theory goes on that it's our mental capacity that limits the number of meaningful relationships we can have. According to Robin Dunbar the neocortex capacity of humans is to have around 150 meaningful relationships with other people. That doesn't sound like much. But it is still more than what other primates can have. And that's where our advantage comes from. So what does it mean? Dunbar defined these meaningful relationships in a serious way, and in a less serious way, that I'm going to use tonight. Apparently the people from your top 150 are the kind of people if you bump into them in a bar uninvited, you don't feel awkward to join them for a drink. So you can test tonight who is in your top 150, and who is not. And the way this works is that because the capacity of your neocortex is limited, new friends push out old friends. So it is sad, but unfortunately, you know, you can know many people, but there's only limited brain capacity of how many people can you really feel close to, or how many people you would do favours for, and how many people would do favours for you. So don't confuse these real-world social relationships with social networking online. You can have 1,000 friends on Facebook, but the 10th friend has kind of lost its meaning on Facebook. It's because friendship on Facebook doesn't cost anything. So it doesn't necessarily have a real-world significance. And according to Dunbar even among your 1,000 friends on Facebook, probably at every point of your life there will be maybe around 150 that have really some meaning to you. So people's brain capacity hasn't changed much over thousands of years. But what has changed is our technology. So the size of our networks, apparently the meaningful part, remains roughly constant, but this shape is very different. Thanks to technology now the top 150 can be almost anywhere in the world. I live in [inaudible] and I don't know anyone in my building. I live in an apartment. I don't know who my neighbours are. I know some people in Brazil and other countries, but I don't know who are the people next to me. And that wouldn't be possible in the old days of door-to-door societies. And I blame the Industrial Revolution for not knowing my neighbours. Before the bike was invented, apparently in England, the average distance between the birthplaces of spouses was one mile. Yeah.

[ Laughter ]

And according to popular magazines at that time when bicycles were new, they were considered morally hazardous. And just like social media now, because you could jump on a bike and in 15 minutes you could be doing somewhere something, you know, outside far away from your guardians. So in the last centuries transportation and information technologies enabled people to create these longer links. And this process has further sped up since the days of the internet. To realise the significance of the internet for the distance over which we can have relationships, and for the whole connectivity of the world, let's go back to the time before the internet. So, we're in the 1960s. And in the 1960s researchers could do things that could be done only in the 1960s. Now we have, you know, ethical review boards and all of that. But back in the 1960s social psychologists, like Stanley Milgram, they could do experiments, most famously what he did his experiment on obedience to authority, he showed that actually people are willing to torture other people if they're told so by researchers, which was quite shocking. And this man, Stanley Milgram, he also did social network experiments. His most famous social network experience gave us the phrase "six degrees of separation." Have you heard about six degrees of separation? It comes from an experiment where he asked people in Nebraska, Omaha, to send a package to someone, a particular individual in Boston, that they didn't know. And they couldn't just use the address. They could send the package only by sending it to someone that they directly knew on a first-name basis somewhere with instructions to send it farther on, and hoping to get it to the goal in a minimum number of steps. Now what really happened is that almost all of the packages got lost. That's not what his paper says. His paper talks about the packages that were delivered. And the few that were delivered on average, not maximum, but on average took six steps from Nebraska to Boston. Now because of geographical challenge commentators of the time, the conclusion was the whole world is connected within six degrees of separation, because Nebraska and Boston was as far apart as they could imagine covering the whole world that is significant. And, so, that's where the six degrees of separation come from. The reason why this worked this way is something that I'm going to talk about a little bit later. But first I want to talk about replication of this experiment that was much more successful. And it was done actually by an Australian scientist thirty years later. Duncan Watts did the same thing around the whole world, this time really the whole world, including other countries that are not USA. And he asked people in 1998 to send an email in a similar fashion to two people on the other side of the globe. And this time, for thousands of people that they approached around the world, it actually did take six steps typically to get an email to anywhere on the other side of the world. And, so, it's 1998, and, so, the globe is really connected through email, so it's for people who own computers and who are on email. Yeah? This kind of network, where you can get from one side to another just in few steps, is called small world network. There is actually a technical term used in graph theory. So small world networks are networks in which you have a small number of very long links that make the whole network quite highly connected. So if you have only a few people in the whole world that have a couple of very long links, it makes the whole world much smaller. So say, Katie, has it ever happened to you that you went on a date with someone, and found out that the person is actually the best friend of someone that you used to date? No.

[ Laughter ]

I just hypothetically. These things can happen.

[ Laughter ]

And when they happen, what do people do? Right? People say, "Oh, what a small world." And the date is saved. Everything goes fine. So that's how it works. So the whole world is connected because of these long links. And it may sound weird that you may be just six friendships away from dictators in Africa, or the USA. But because of these long links, you know, if you know anyone who has some friend in Washington, you are already just two steps away. And then that's how it works. So this is a small world. But is it really a small world for everyone? That's the question. What about the people who are not on the internet? If you're an average Sydney Seiler, you can hop on planes, you can take holidays overseas, you can study abroad, you can work abroad. If you're an average person in a low-income country, statistically speaking, you're probably a farmer, and you spent your whole life in your village where you were born, and you hang out just with your neighbours. Now that's okay if you like your neighbours. But if you're someone like me, then it might be a little bit boring. But, no, even if you like your neighbours, it is not good. And I will explain again by going back to the 1960's why it is not good if you have no long links. So do we have any students in the room? A couple. Yes. Great. So this research comes from a Ph.D. student, Mark Granovetter, in the 1960s. He was running around Boston asking people how did you get your job. The question that is on the mind of many students. And he was surprised what he found. When he interviewed people systematically it came out that most people that found recently a job, found the job through the help of someone that they didn't know very well. And he called this the theory of weak ties. So he thought it was weird. It was, well, it was interesting. So he wrote a paper about it. Submitted it to a journal. It got terribly rejected. So he submitted it to another journal. And it has become the most cited paper in the history of social science, which is an encouraging fact for some of us.

[ Laughter ]

One day. Yeah. His paper is called "The Strength of Weak Ties." Granovetter argued that weak ties are good for you, not because they're weak, but essentially, he didn't put it in these words, but essentially because they are long. The problem with strong ties is that the strong ties that you have, the ties to people that you see often, that you like, that you like to hang out with, they probably also hang out with people who are like you. And they probably also, again, talk about similar things as you talk with them. And, so, the problem with strong ties is that although, you know, everyone is happy, everyone likes each other, and it's like this, you know, happy little bubble, you don't get to hear many things that you don't agree with, or that you didn't know already. And that's why the weak ties are good, because they're long, they are more likely to be long, and they jump outside of this bubble to different bubbles around the world, and teach you something that you didn't know already. So technology can make or break bubbles. Google and Facebook feed us stuff based on what we liked previously, and what our friends liked, and philtre out stuff that we don't like, or that is too far away. People used to marry in bubbles. They used to marry someone that parents liked, or who was a friend of a friend, or who goes to the same church, or who belongs to the same neighbourhood. Now technology has changed that. With online dating more than 30% of American marriages start between complete strangers that met online. That's data from more than five years ago. And it must be increasing. And, so, studies show that that the internet is in this way contributing to creating somewhat more of a pluralistic society, because people of different races and different ethnicities that would not otherwise come together are becoming life partners thanks to the internet. The only way outside of the internet that is increasing, the only mode how people find their life partners outside of the internet, is in bars. I just let it out there. Tonight might be the night.

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>> Back to low-income farmers. My colleagues and I have done many surveys of low-income farmers and their social networks in developing countries. In one of the first surveys we wanted to test how does people's personality relate to the shape of their networks. And, so, we included some standardised questions from psychological questionnaires. Yes or no questions that are aimed to measure your personality. And, you know, sometimes rural households, farming households are difficult to access. The team was moving in a four-wheel-drive. We couldn't get all the way. Then the research assistants had to walk for several hours until they found the household where we were supposed to test the questionnaire. And there was this one guy sitting in front of his house. No one else around. And, so, they come over and explain the purpose of this academic research, and gain his consent, get everything signed. And then they start the psychological component statement number one--sometimes I like to spend time alone. And the guy looks around over the empty landscape, responds sadly, "No, I don't." We tried several times and this question just didn't work. But it made us realise the reality of rural isolation. No one in these kinds of places likes to be alone. And there's lot of optimism in the international development literature that the technology could somehow help with this. But the main purpose of this survey was to really map the shape of the networks. And we wanted to find out how far people know other people in context without cars, without the internet, prior to phones arriving, and all of that. And we also wanted to measure the weak ties, not just really the friends, but these important ties to other people. But it is hard to capture these. How do you measure that? If I ask you, "[inaudible], can you name everyone that you know?" It will not work. Right? So we need to do something else. And we devised, or we used this method when we gave people random names selected from Ethiopian census. And, so, we will ask questions like, "Do you know anyone whose name is Tabisay [phonetic spelling]? Anyone is fine. So how do you know Tabisay? If you want to ask Tabisay something, how do you contact him," and so on. And because of the randomness of the names, we get representative sample of everyone they know, including the weak ties. And what we found out is that, first of all, Ethiopians walk a lot. If you ask them, "How do you contact someone?" "I go there." And it's no wonder that the country produces some of the fittest people in the world. But what we also found out is that people's social networks are extremely geographically limited, because they have to walk everywhere. Most people that the respondents know lived within 15-minutes walking distance from their house. So in other words, almost no links. Our research has also shown that the long links, the lack of long links is related to problems such as poverty and environmental degradation, because people do not get access to very life-essential information that is outside of their villages. But long links are also important in industrial societies. We have done research in Japan. We have analysed thousands of patents that Japanese companies file in different parts of Japan. And by classifying these patents, we could see that different towns in Japan and different prefectures have strengths in different fields of industrial innovation. Different types of knowledge is embedded in different regions through the people who live there. And it makes science sound somewhat strange that in such a hyper-connected society there is still a thing that some regions can somehow know things that are not known in other regions. But think about, for example, Silicon Valley. That's, you know, this cluster that for some reason exists, although you could, you know, collaborate with anyone anywhere over distance. The reason is that people still exchange a lot of information only through face-to-face. And a lot of information, or a lot of innovation, comes up only through people bumping into each other, and mingling and chatting and recombining things that someone else said, and, you know, mingling in bars and coming up with new things. Tonight we could have had a webinar. But for some reason, you know, we just brought everyone together, because it wouldn't be the same. Right? We also saw that firms in Japan that partnered with other firms that are farther away then to increase their profits, because they have access to different types of knowledge that is not available in their region. And importantly after the Great East Japan Earthquake we surveyed firms in the affected region. And the firms that had partners farther away recovered much faster, because they had partners who could support them who were not in the affected region. So there are multiple advantages to that. Long links are most important for people who have lack of access to some information that's essential for them. We go back to Ethiopian villages. There are many villages where farmers suffer from land degradation. And they could have fixed it by locally abundant manure, but they don't because no one else in the village does it. And they don't know people in other villages, or in other regions who do that. And you can read a lot of reports in international development literature, and you can read statements from tech companies that are very optimistic about creating links across regions by new technology that will fix that. So we thought, okay, we'll fix this. Very well. We will help these farmers. And we gave them mobile phones. We came to a region in Ethiopia that had mobile phone signal, but didn't have mobile phones yet. And we conducted a lottery. We conducted a lottery and gave hundreds of mobile phones to farmers who didn't have them before in a region that people didn't have phones before. The reason for the lottery was that we wanted to randomise the donation of the phones. Yeah. The beauty of randomization is that you can have one group of people to which you do something or give something, and one group randomly selected, there is on average completely the same including things that you cannot see to whom you do not connect the intervention. So you can compare that if one of the groups starts behaving differently, it's something about the intervention that changed it. That is the logic behind trial of new drugs. You don't know, you know, the condition of different people. But if you randomise it, you can see the causal impact of what you did. There is one catch. In the trial of drugs, use placebo to control for just sort of kind of imagine effects of the intervention. That's much harder to do when you're giving people phones. You cannot give them a fake phone, and see what happens. But still. So we did this experiment. And the result was quite disappointing. The thing is if you give phones or information, communication, technology to people who are so geographically constrained, who are so immobile, they just don't know anyone who would they call to. Everyone they know is in their neighbourhood. So they could either yell out of their hut, or they can use their phone and make a phone call to their neighbour. And that's what happened. People don't use these technologies to call someone that they don't know very well. It just feels weird. It just, you know, doesn't feel good. So this didn't completely work. We tried another thing in Indonesia. Indonesia is a bit different, because people have motorbikes. People are slightly more mobile. Whereas in Ethiopia most of the links were within one kilometre. In Ethiopia they are more like ten kilometres long. And what we saw in Indonesia people used phones to contact people at the edge of their network. So if it's closer than ten kilometres, again, jump on a motorbike or walk, talk to them face-to-face. And maybe call them first, but then go and talk to them face-to-face. Hey, I want to ask you something. Okay. I'll go and ask you something. If it's more than ten kilometres, probably you don't know people, so you don't call them. The informants explained to us it just feels weird. It feels cold. It's hard to explain things on the phone. I cannot ask someone about something if I don't show up face-to-face. That's just rude. Now that sounds like a sign of excessively traditional society. But if you think about it, we do that all the time in a different scale. The executive leaders of our organisations keep flying to meetings that could have been done online. But, you know, some things are just not as good online. It's not so much fun having a business dinner over Skype, or a beer over Skype. So, finally, we did a third and last experiment with which I will end tonight. We invited people on trips as it's seen that mobility is something that is much more relevant, or that can make much more change than these virtual links. So we conducted a lottery again in Indonesia. And this time we invited people on three-day trips to different regions where they can meet local farmers, and participate in them in social activities for three days, make friends hopefully, come back home. And this time we found results that made us happy. One and a half years later, we resurveyed the farmers, and we found that the farmers made friends that they still kept in touch with one and a half years later, both by phone and by face-to-face. And these farmers, who were in the beginning on average the same like everyone else, that's why we picked them randomly, have become important sources of information within their communities. We could, from surveys of everyone, these people are much more likely to be named as a useful source of information, because these people had access to information somewhere outside to something that the people in the villages didn't know. And also these people were early adopters of practices that were good for the environment, or good for their farms, such as use of manure, organic fertilising. So junkets can work. Let's bring this closer to home. Let me quote John Walkowiak, a senior Aboriginal man, that told me this about [inaudible] people in Central Australia, about how he and people in his community were initiated into adulthood, what sort of learning you have to go through before you become a real man. So John says, "Our worldview comes from land, different parts of land hold different stories. We need to go to different places to put the pieces of knowledge together." Excuse me. And I think this is a beautiful summary of the whole idea. And it is true, not only for people in Central Australia, not only for Ethiopian farmers, but for everyone. It's good to step out of your spatial bubble from time to time. If you're a student, or if you have children who are students, or if you will have children who will be students, think about a report that was published this month by the Institute of International Education. They followed graduates since 1999, and measured how well they performed over time. And they found that people who participated when they were students in mobility programmes, tend to benefit in many ways expanding their horizons in several different ways. Most importantly, they found something which corresponds to the finding that we found in Indonesia. With our trips the participants that were taken farthest away from their villages statistically significantly have become much more influential in their own villages. A similar thing with students. The study finds that the students who participated in mobility experience that [inaudible] them to most unfamiliar culture, with most unfamiliar language, had the best job prospects in the long-term. The conclusion of my talk is please drink responsibly. And make friends from different postcodes tonight. Thank you very much.

[ Applause ]

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