[For me, this story begins about 15 years ago,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html%22%20%5Cl%20%221000) [when I was a hospice doctor at the University of Chicago.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#4000) [And I was taking care of people who were dying and their families](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#7000) [in the South Side of Chicago.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#10000) [And I was observing what happened to people and their families](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#12000) [over the course of their terminal illness.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#15000) [And in my lab, I was studying the widower effect,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#18000) [which is a very old idea in the social sciences,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#20000) [going back 150 years,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#22000) [known as "dying of a broken heart."](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#24000)[So, when I die, my wife's risk of death can double,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#26000) [for instance, in the first year.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#29000) [And I had gone to take care of one particular patient,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#31000) [a woman who was dying of dementia.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#34000) [And in this case, unlike this couple,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#36000) [she was being cared for](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#38000) [by her daughter.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#40000) [And the daughter was exhausted from caring for her mother.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#42000) [And the daughter's husband,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#45000) [he also was sick](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#47000) [from his wife's exhaustion.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#50000) [And I was driving home one day,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#52000) [and I get a phone call from the husband's friend,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#54000) [calling me because he was depressed](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#57000) [about what was happening to his friend.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#59000) [So here I get this call from this random guy](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#61000) [that's having an experience](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#63000) [that's being influenced by people](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#65000) [at some social distance.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#67000)

[And so I suddenly realized two very simple things:](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#69000) [First, the widowhood effect](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#72000) [was not restricted to husbands and wives.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#74000) [And second, it was not restricted to pairs of people.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#77000) [And I started to see the world](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#80000) [in a whole new way,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#82000) [like pairs of people connected to each other.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#84000) [And then I realized that these individuals](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#87000) [would be connected into foursomes with other pairs of people nearby.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#89000) [And then, in fact, these people](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#92000) [were embedded in other sorts of relationships:](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#94000) [marriage and spousal](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#96000) [and friendship and other sorts of ties.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#98000) [And that, in fact, these connections were vast](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#100000) [and that we were all embedded in this](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#103000) [broad set of connections with each other.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#105000) [So I started to see the world in a completely new way](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#108000) [and I became obsessed with this.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#111000) [I became obsessed with how it might be](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#113000) [that we're embedded in these social networks,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#115000) [and how they affect our lives.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#117000) [So, social networks are these intricate things of beauty,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#119000) [and they're so elaborate and so complex](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#122000) [and so ubiquitous, in fact,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#124000) [that one has to ask what purpose they serve.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#126000) [Why are we embedded in social networks?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#129000) [I mean, how do they form? How do they operate?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#131000) [And how do they affect us?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#133000)

[So my first topic with respect to this,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#135000) [was not death, but obesity.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#138000) [It had become trendy](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#141000) [to speak about the "obesity epidemic."](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#143000)[And, along with my collaborator, James Fowler,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#145000) [we began to wonder whether obesity really was epidemic](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#148000) [and could it spread from person to person](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#151000) [like the four people I discussed earlier.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#153000) [So this is a slide of some of our initial results.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#156000) [It's 2,200 people in the year 2000.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#159000)[Every dot is a person. We make the dot size](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#162000) [proportional to people's body size;](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#164000) [so bigger dots are bigger people.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#166000) [In addition, if your body size,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#169000) [if your BMI, your body mass index, is above 30 --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#171000)[if you're clinically obese --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#173000)[we also colored the dots yellow.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#175000) [So, if you look at this image, right away you might be able to see](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#177000) [that there are clusters of obese and](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#179000) [non-obese people in the image.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#181000) [But the visual complexity is still very high.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#183000) [It's not obvious exactly what's going on.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#186000) [In addition, some questions are immediately raised:](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#189000) [How much clustering is there?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#191000) [Is there more clustering than would be due to chance alone?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#193000) [How big are the clusters? How far do they reach?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#196000) [And, most importantly,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#198000) [what causes the clusters?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#200000)

[So we did some mathematics to study the size of these clusters.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#202000) [This here shows, on the Y-axis,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#205000) [the increase in the probability that a person is obese](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#207000) [given that a social contact of theirs is obese](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#210000) [and, on the X-axis, the degrees of separation between the two people.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#212000) [On the far left, you see the purple line.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#215000) [It says that, if your friends are obese,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#217000) [your risk of obesity is 45 percent higher.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#219000) [And the next bar over, the [red] line,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#222000) [says if your friend's friends are obese,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#224000) [your risk of obesity is 25 percent higher.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#226000) [And then the next line over says](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#228000) [if your friend's friend's friend, someone you probably don't even know, is obese,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#230000) [your risk of obesity is 10 percent higher.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#233000) [And it's only when you get to your friend's friend's friend's friends](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#236000) [that there's no longer a relationship](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#239000) [between that person's body size and your own body size.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#241000)

[Well, what might be causing this clustering?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#245000) [There are at least three possibilities:](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#248000) [One possibility is that, as I gain weight,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#250000) [it causes you to gain weight.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#252000) [A kind of induction, a kind of spread from person to person.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#254000) [Another possibility, very obvious, is homophily,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#257000) [or, birds of a feather flock together;](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#259000) [here, I form my tie to you](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#261000) [because you and I share a similar body size.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#263000) [And the last possibility is what is known as confounding,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#266000) [because it confounds our ability to figure out what's going on.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#268000) [And here, the idea is not that my weight gain](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#271000) [is causing your weight gain,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#273000) [nor that I preferentially form a tie with you](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#275000) [because you and I share the same body size,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#277000) [but rather that we share a common exposure](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#279000) [to something, like a health club](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#281000) [that makes us both lose weight at the same time.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#284000)

[When we studied these data, we found evidence for all of these things,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#287000) [including for induction.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#290000) [And we found that if your friend becomes obese,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#292000) [it increases your risk of obesity by about 57 percent](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#294000) [in the same given time period.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#297000) [There can be many mechanisms for this effect:](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#299000) [One possibility is that your friends say to you something like --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#302000)[you know, they adopt a behavior that spreads to you --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#304000)[like, they say, "Let's go have muffins and beer, "](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#307000)[which is a terrible combination. (Laughter)](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#310000)[But you adopt that combination,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#313000) [and then you start gaining weight like them.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#315000) [Another more subtle possibility](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#318000) [is that they start gaining weight, and it changes your ideas](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#320000) [of what an acceptable body size is.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#323000) [Here, what's spreading from person to person](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#325000) [is not a behavior, but rather a norm:](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#327000) [An idea is spreading.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#329000)

[Now, headline writers](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#331000) [had a field day with our studies.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#333000) [I think the headline in The New York Times was,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#335000) ["Are you packing it on?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#337000) [Blame your fat friends." (Laughter)](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#339000)[What was interesting to us is that the European headline writers](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#342000) [had a different take: They said,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#344000) ["Are your friends gaining weight? Perhaps you are to blame."](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#346000)[(Laughter)](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#349000)[And we thought this was a very interesting comment on America,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#354000) [and a kind of self-serving,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#357000) ["not my responsibility" kind of phenomenon.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#359000)

[Now, I want to be very clear: We do not think our work](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#361000) [should or could justify prejudice](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#363000) [against people of one or another body size at all.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#365000) [Our next questions was:](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#369000) [Could we actually visualize this spread?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#371000) [Was weight gain in one person actually spreading](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#374000) [to weight gain in another person?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#376000) [And this was complicated because](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#378000) [we needed to take into account the fact that the network structure,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#380000) [the architecture of the ties, was changing across time.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#383000) [In addition, because obesity is not a unicentric epidemic,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#386000) [there's not a Patient Zero of the obesity epidemic --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#389000)[if we find that guy, there was a spread of obesity out from him --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#392000)[it's a multicentric epidemic.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#395000) [Lots of people are doing things at the same time.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#397000) [And I'm about to show you a 30 second video animation](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#399000) [that took me and James five years of our lives to do.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#402000) [So, again, every dot is a person.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#405000) [Every tie between them is a relationship.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#407000) [We're going to put this into motion now,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#409000) [taking daily cuts through the network for about 30 years.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#411000)

[The dot sizes are going to grow,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#414000) [you're going to see a sea of yellow take over.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#416000) [You're going to see people be born and die --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#419000)[dots will appear and disappear --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#421000)[ties will form and break, marriages and divorces,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#423000) [friendings and defriendings.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#426000) [A lot of complexity, a lot is happening](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#428000) [just in this 30-year period](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#430000) [that includes the obesity epidemic.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#432000) [And, by the end, you're going to see clusters](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#434000) [of obese and non-obese individuals](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#436000) [within the network.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#438000) [Now, when looked at this,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#440000) [it changed the way I see things,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#443000) [because this thing, this network](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#446000) [that's changing across time,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#448000) [it has a memory, it moves,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#450000) [things flow within it,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#453000) [it has a kind of consistency --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#455000)[people can die, but it doesn't die;](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#457000) [it still persists --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#459000)[and it has a kind of resilience](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#461000) [that allows it to persist across time.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#463000)

[And so, I came to see these kinds of social networks](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#465000) [as living things,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#468000) [as living things that we could put under a kind of microscope](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#470000) [to study and analyze and understand.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#473000) [And we used a variety of techniques to do this.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#476000) [And we started exploring all kinds of other phenomena.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#478000) [We looked at smoking and drinking behavior,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#481000) [and voting behavior,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#483000) [and divorce -- which can spread --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#485000)[and altruism.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#487000) [And, eventually, we became interested in emotions.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#489000) [Now, when we have emotions,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#493000) [we show them.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#495000) [Why do we show our emotions?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#497000) [I mean, there would be an advantage to experiencing](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#499000) [our emotions inside, you know, anger or happiness.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#501000) [But we don't just experience them, we show them.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#504000) [And not only do we show them, but others can read them.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#506000) [And, not only can they read them, but they copy them.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#509000) [There's emotional contagion](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#511000) [that takes place in human populations.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#513000) [And so this function of emotions](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#516000) [suggests that, in addition to any other purpose they serve,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#518000) [they're a kind of primitive form of communication.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#520000) [And that, in fact, if we really want to understand human emotions,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#523000) [we need to think about them in this way.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#526000)

[Now, we're accustomed to thinking about emotions in this way,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#528000) [in simple, sort of, brief periods of time.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#531000) [So, for example,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#534000) [I was giving this talk recently in New York City,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#536000) [and I said, "You know when you're on the subway](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#538000) [and the other person across the subway car](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#540000) [smiles at you,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#542000) [and you just instinctively smile back?"](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#544000)[And they looked at me and said, "We don't do that in New York City." (Laughter)](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#546000)[And I said, "Everywhere else in the world,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#549000) [that's normal human behavior."](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#551000)[And so there's a very instinctive way](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#553000) [in which we briefly transmit emotions to each other.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#555000) [And, in fact, emotional contagion can be broader still.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#558000) [Like we could have punctuated expressions of anger,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#561000) [as in riots.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#564000) [The question that we wanted to ask was:](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#566000) [Could emotion spread,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#568000) [in a more sustained way than riots, across time](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#570000) [and involve large numbers of people,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#573000) [not just this pair of individuals smiling at each other in the subway car?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#575000) [Maybe there's a kind of below the surface, quiet riot](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#578000) [that animates us all the time.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#581000) [Maybe there are emotional stampedes](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#583000) [that ripple through social networks.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#585000) [Maybe, in fact, emotions have a collective existence,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#587000) [not just an individual existence.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#590000)

[And this is one of the first images we made to study this phenomenon.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#592000) [Again, a social network,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#595000) [but now we color the people yellow if they're happy](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#597000) [and blue if they're sad and green in between.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#600000) [And if you look at this image, you can right away see](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#603000) [clusters of happy and unhappy people,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#605000) [again, spreading to three degrees of separation.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#607000) [And you might form the intuition](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#609000) [that the unhappy people](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#611000) [occupy a different structural location within the network.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#613000) [There's a middle and an edge to this network,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#616000) [and the unhappy people seem to be](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#618000) [located at the edges.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#620000) [So to invoke another metaphor,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#622000) [if you imagine social networks as a kind of](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#624000) [vast fabric of humanity --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#626000)[I'm connected to you and you to her, on out endlessly into the distance --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#628000)[this fabric is actually like](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#631000) [an old-fashioned American quilt,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#633000) [and it has patches on it: happy and unhappy patches.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#635000) [And whether you become happy or not](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#638000) [depends in part on whether you occupy a happy patch.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#640000)

[(Laughter)](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#643000)

[So, this work with emotions,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#645000) [which are so fundamental,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#648000) [then got us to thinking about: Maybe](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#650000) [the fundamental causes of human social networks](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#652000) [are somehow encoded in our genes.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#654000) [Because human social networks, whenever they are mapped,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#656000) [always kind of look like this:](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#659000) [the picture of the network.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#661000) [But they never look like this.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#663000) [Why do they not look like this?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#665000) [Why don't we form human social networks](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#667000) [that look like a regular lattice?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#669000) [Well, the striking patterns of human social networks,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#671000) [their ubiquity and their apparent purpose](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#674000) [beg questions about whether we evolved to have](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#677000) [human social networks in the first place,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#679000) [and whether we evolved to form networks](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#681000) [with a particular structure.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#683000)

[And notice first of all -- so, to understand this, though,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#685000) [we need to dissect network structure a little bit first --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#687000)[and notice that every person in this network](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#690000) [has exactly the same structural location as every other person.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#692000) [But that's not the case with real networks.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#695000) [So, for example, here is a real network of college students](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#698000) [at an elite northeastern university.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#700000) [And now I'm highlighting a few dots.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#703000) [If you look here at the dots,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#705000) [compare node B in the upper left](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#707000) [to node D in the far right;](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#709000) [B has four friends coming out from him](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#711000) [and D has six friends coming out from him.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#713000) [And so, those two individuals have different numbers of friends.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#716000) [That's very obvious, we all know that.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#719000) [But certain other aspects](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#721000) [of social network structure are not so obvious.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#723000)

[Compare node B in the upper left to node A in the lower left.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#725000) [Now, those people both have four friends,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#728000) [but A's friends all know each other,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#731000) [and B's friends do not.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#733000) [So the friend of a friend of A's](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#735000) [is, back again, a friend of A's,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#737000) [whereas the friend of a friend of B's is not a friend of B's,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#739000) [but is farther away in the network.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#741000) [This is known as transitivity in networks.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#743000) [And, finally, compare nodes C and D:](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#746000)[C and D both have six friends.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#748000) [If you talk to them, and you said, "What is your social life like?"](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#751000) , [they would say, "I've got six friends.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#754000) [That's my social experience."](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#756000)[But now we, with a bird's eye view looking at this network,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#758000) [can see that they occupy very different social worlds.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#761000) [And I can cultivate that intuition in you by just asking you:](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#764000) [Who would you rather be](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#766000) [if a deadly germ was spreading through the network?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#768000) [Would you rather be C or D?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#770000) [You'd rather be D, on the edge of the network.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#773000) [And now who would you rather be](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#775000) [if a juicy piece of gossip -- not about you --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#777000)[was spreading through the network? (Laughter)](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#780000)[Now, you would rather be C.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#782000)

[So different structural locations](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#784000) [have different implications for your life.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#786000) [And, in fact, when we did some experiments looking at this,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#788000) [what we found is that 46 percent of the variation](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#791000) [in how many friends you have](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#794000) [is explained by your genes.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#796000) [And this is not surprising. We know that some people are born shy](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#798000) [and some are born gregarious. That's obvious.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#801000) [But we also found some non-obvious things.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#804000) [For instance, 47 percent in the variation](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#806000) [in whether your friends know each other](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#809000) [is attributable to your genes.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#811000) [Whether your friends know each other](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#813000) [has not just to do with their genes, but with yours.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#815000) [And we think the reason for this is that some people](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#818000) [like to introduce their friends to each other -- you know who you are --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#820000)[and others of you keep them apart and don't introduce your friends to each other.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#823000) [And so some people knit together the networks around them,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#826000) [creating a kind of dense web of ties](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#829000) [in which they're comfortably embedded.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#831000) [And finally, we even found that](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#833000) [30 percent of the variation](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#835000) [in whether or not people are in the middle or on the edge of the network](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#837000) [can also be attributed to their genes.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#840000) [So whether you find yourself in the middle or on the edge](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#842000) [is also partially heritable.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#844000)

[Now, what is the point of this?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#847000) [How does this help us understand?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#850000) [How does this help us](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#852000) [figure out some of the problems that are affecting us these days?](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#854000) [Well, the argument I'd like to make is that networks have value.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#858000) [They are a kind of social capital.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#861000) [New properties emerge](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#864000) [because of our embeddedness in social networks,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#866000) [and these properties inhere](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#868000) [in the structure of the networks,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#871000) [not just in the individuals within them.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#873000) [So think about these two common objects.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#875000) [They're both made of carbon,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#877000) [and yet one of them has carbon atoms in it](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#879000) [that are arranged in one particular way -- on the left --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#882000)[and you get graphite, which is soft and dark.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#885000) [But if you take the same carbon atoms](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#888000) [and interconnect them a different way,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#890000) [you get diamond, which is clear and hard.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#892000) [And those properties of softness and hardness and darkness and clearness](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#895000) [do not reside in the carbon atoms;](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#898000) [they reside in the interconnections between the carbon atoms,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#900000) [or at least arise because of the](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#903000) [interconnections between the carbon atoms.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#905000) [So, similarly, the pattern of connections among people](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#907000) [confers upon the groups of people](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#910000) [different properties.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#913000) [It is the ties between people](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#915000) [that makes the whole greater than the sum of its parts.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#917000) [And so it is not just what's happening to these people --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#920000)[whether they're losing weight or gaining weight, or becoming rich or becoming poor,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#923000) [or becoming happy or not becoming happy -- that affects us;](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#926000) [it's also the actual architecture](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#929000) [of the ties around us.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#931000)

[Our experience of the world](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#933000) [depends on the actual structure](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#935000) [of the networks in which we're residing](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#937000) [and on all the kinds of things that ripple and flow](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#939000) [through the network.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#942000) [Now, the reason, I think, that this is the case](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#945000) [is that human beings assemble themselves](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#948000) [and form a kind of superorganism.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#950000) [Now, a superorganism is a collection of individuals](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#954000) [which show or evince behaviors or phenomena](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#957000) [that are not reducible to the study of individuals](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#960000) [and that must be understood by reference to,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#963000) [and by studying, the collective.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#965000) [Like, for example, a hive of bees](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#967000) [that's finding a new nesting site,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#970000) [or a flock of birds that's evading a predator,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#973000) [or a flock of birds that's able to pool its wisdom](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#975000) [and navigate and find a tiny speck](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#978000) [of an island in the middle of the Pacific,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#980000) [or a pack of wolves that's able](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#982000) [to bring down larger prey.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#984000) [Superorganisms have properties](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#987000) [that cannot be understood just by studying the individuals.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#989000) [I think understanding social networks](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#992000) [and how they form and operate](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#994000) [can help us understand not just health and emotions](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#996000) [but all kinds of other phenomena --](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#999000)[like crime, and warfare,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1001000) [and economic phenomena like bank runs](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1003000) [and market crashes](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1005000) [and the adoption of innovation](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1007000) [and the spread of product adoption.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1009000)

[Now, look at this.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1011000) [I think we form social networks](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1014000) [because the benefits of a connected life](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1016000) [outweigh the costs.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1018000) [If I was always violent towards you](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1021000) [or gave you misinformation](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1023000) or made you sad or infected you with deadly germs, [you would cut the ties to me,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1028000) [and the network would disintegrate.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1030000) [So the spread of good and valuable things](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1032000) [is required to sustain and nourish social networks.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1035000) [Similarly, social networks are required](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1039000) [for the spread of good and valuable things,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1041000) [like love and kindness](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1044000) [and happiness and altruism](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1046000) [and ideas.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1048000) [I think, in fact, that if we realized](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1050000) [how valuable social networks are,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1052000) [we'd spend a lot more time nourishing them and sustaining them,](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1054000) [because I think social networks](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1057000) [are fundamentally related to goodness.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1059000) [And what I think the world needs now](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1062000) [is more connections.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1064000)

[Thank you.](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1066000)

[(Applause)](http://www.ted.com/talks/nicholas_christakis_the_hidden_influence_of_social_networks.html#1068000)