Christian Stegbauer

The Twelve Basic Assumptions of Network Research

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In a Nutshell—What You Will Learn in This Book

- The book will help you navigate the field of network research. This orientation is demonstrated using the most important basic assumptions. All these basic assumptions are explained and usually provided with real-life examples. The idea is that you can immerse yourself in the mindset of this research direction.
- It explains why network research is interested in relationship structures and why the strength of relationships plays a role. It shows why in network research a certain, purely formal concept of networks plays the main role. Content-related or even normative network concepts do not play a role. Structure in the context of network research means that it mainly depends on relationship patterns. A relationship between two people is too little to speak of a pattern. Only from three people is this possible at all.
- The book also shows how the structures of relationships work. It plays a role that large parts of the network structure are created behind our backs or have always been there (or were there before us). Much is determined by where we are at what time. The term for this is "structuration". This creates structures that are not visible to us. Nevertheless, they are crucial for who we come into contact with. Which friends we have and what influence they have on us is therefore largely not in our hands. There is a clear difference between what we experience and what we can tell, and how relationship structures work.

- Furthermore, this book shows to what extent our behavior is determined by our knowledge of the relationships of others around us. Since the behavior of all depends on their knowledge of the network, we are entwined in sympathies and antipathies. In short—a lot of knowledge is necessary to be socially competent in the network of relationships to navigate. Through the knowledge and the attributions of others that depend on it, it is additionally determined with whom we can make friends. The term for this is the cognitive social structure (engl. CSS for Cognitive Social Structure).
- The book also shows how our culture is created in networks and passed on. The term culture here means nothing other than what we encounter and deal with every day. Culture consists of norms and values, from situational behaviors, from what we think and how we interpret the words and behavior of others. What is understood here as culture consists of various components, one of which is fluid and forms in social relationships again and again. It is adapted and passed on from situation to situation. However, in addition to the uncertain, the component that changes again and again, there is also a part that we cannot influence and that we normally cannot perceive. The book shows how culture is passed on in chains of situations and how components of culture are exchanged between different circles.
- Furthermore, the book also explains how such transmissions of culture can be measured. This is not a method book, but one that brings the basic ways of thinking of network research to the fore.

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Why These Basic Assumptions?

Network research is one of the most important empirical and theoretical directions in the social sciences and parts of the humanities as well. The special thing about it is that not, as is so often the case, it is not the individual who is at the center, but the relationships between people. The relationships between people are not yet enough, we are interested in the structure of these relationships. This involves numerous assumptions, the most important of which I want to name in this booklet. The text is intended to present the basic ideas and in this way help to orient oneself in this field.

I have selected a dozen basic assumptions from network research for the book, which I present here in the necessary brevity. I also show why these are important. Of course, there are also other significant ideas in the individual sections, but I have integrated these into the chapters. In the book, the basic assumptions stand side by side and occasionally one assumption refers to another. Sometimes systematic links might be more necessary, but these can be found in other works (e.g. Stegbauer 2016, 2024).

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At this point, I want to go through the individual basic assumptions by force. I start with the first: It is about focusing on the relationships themselves. Network research takes into account the social contexts in the form of entanglements in relationship patterns in its analyses. The independent approach of the research direction presented here is of particular importance. It distinguishes itself from other research methods with the methods it uses. One even speaks of the anti-categorical imperative (Emirbayer and Goodwin 1994:1414). This postulate stands in contrast to survey research and means the strict orientation towards relations. While in survey research the respondents must be independent of each other, the relationships in network research are a prerequisite for the analysis. In survey research, individual (albeit anonymous) characteristics of respondents are accumulated and related to each other. Explanation is then provided by so-called independent variables such as gender, income level, or level of education, or by combinations of such characteristics. The variables, however, actually explain nothing, because ultimately further assumptions lie behind such characteristics. Most of the time these are also relationships, but these are not included in the measurement or cannot be included because this would contradict the underlying scientific theoretical assumptions. One can say that often what survey research measures in terms of behaviors or attitudes would need to be clarified by network research based on relationship structures or social situations (i.e., when one meets with others). The connections are not in the combinations of characteristics of individuals themselves, but in the relations and in the patterns that result from a combination of the relationships. Due to relational structural conditions, for example, people with high incomes come together with the same. Attitudes are then negotiated there. In situations where members of this social class meet and in reports about it, the attitudes are first created. What is measured in traditional survey research is therefore a product of relationship structures. One therefore measures past the actual explanation because the relational foundations are not taken into account.

One can even go further, and I do, and show in the second basic assumption to what extent the formation of our identities, our desires, and our behavior is a product of relations. The becoming human itself, as

I claim somewhat pointedly,[1] lies in the relationships themselves. We could not survive without relationships. This begins as an infant and accompanies us until death. Our relationships can be seen as a kind of universe in which most of what seems possible to us is demonstrated. When people break out of this, their universe changes and new possibilities arise, which in turn have a retroactive effect on the identity of the people.

The relationships are practically always subject to certain structural patterns that have developed culturally in our societal development. However, the many possibilities of structure formation are also subject to certain restrictions of a much more fundamental nature. These ensure that certain patterns keep appearing and are sometimes even self-similar. The basic patterns that the relationships form are considered in the third basic assumption. The possibilities of the network depend, among other things, on the number of people involved. It makes a difference whether two, three, or more people come together. The most important difference is between two and three, but even with larger constellations, the possibilities of dealing with each other change again and again. The emerging patterns are universal, they cannot be directly influenced by individual people. Conversely, however, the structures influence the people who are entwined in them.

How one deals with each other also depends on the strength of the relationships, according to the fourth basic assumption. Strong relationships are mainly supportive in many ways. With weak relationships, one rather connects the exchange of information. Super weak relationships, on the other hand, are important for developing a common culture, which mainly lives from people copying their own behavior from others. However, when considering the strength of relationships, one must also consider that they often only really work in combinations. For example, if you attend an event with a friend and adapt to the behavior of others there, this is often discussed again in the strong relationship with the friend. The confirmation in the trusted relationship reinforces the effect of the experience.

[1] I claim this following Howard Becker (1956).

Relationships are structured and their patterns can be described. However, a large part of the structures forms behind the People's backs, so the fifth assumption. This means that we as individual people cannot perceive the emergence of the structure that then co-determines us, at all. These processes elude our experience. But this also means that such scientific survey methods that relate to experience, such as surveys or interviews, have no access to what is happening behind the backs of people at all. One should be aware of this fact when using such methods.

The sixth assumption once again shows from a different angle how the structure imposes limits on us humans. Such boundaries often also have something to do with inequality. This inequality arises because the resources in networks are limited due to their structure. Typical are, for example, center-periphery structures. In this case, the people in the center regulate the flow of information in the network and various sides of the periphery do not come into direct contact with each other at all.

Number seven of the basic assumptions refers to the context or one could also call this the ecology of relationships. This too is something that is hardly noticeable for the participants. Friends and relatives for example, determine how we interact with each other even in their absence. Values, norms and conventions for behavior therefore always have also a reference to the other people around us. It is important to us what these people think of us and whether the chosen behavior arrangement is compatible with it. In this respect, we always carry relationships around with us, even if the people are not present or when we consider in small with our partnerships how we shape our relationship.

But not only the relationships that surround us are relevant to behavior, but also our knowledge or our assumptions about the relations of others, so the eighth basic assumption. One should not talk about present people—one talks to them. If it is necessary to talk about people who are present at the moment, one should definitely express oneself positively about these. In the eighth assumption now it is claimed that one should basically know something about the relationships of others before you badmouth someone—even then, when the person is not present at all. If we gossip about someone, who is absent, this should not happen when a good friend or a friend of these people is present. This could then be conveyed to this Person. An existing relationship is thereby affected.

Possibly this even affects further relationships, because through the entanglement of affections, conflicts can also turn positive relationships into negative ones. The background to this are the considerations on structural balancing. The necessity to know about the relationships of the people around us goes far beyond that. We gain orientation through this. This helps us to find out who we can possibly establish a contact with.

The ninth basic assumption shows something else, namely that our behavior in practically all areas of life is very much dependent on the relationships in which we find ourselves. Network research can prove this, for example with regard to what vices are concerned, the range goes from smoking to obesity. Vices are therefore by no means phenomena that can be easily ended by a personal change in behavior. The behaviors in question manifest themselves in the structure of relationships. As a consequence, this could mean that to shake off a weakness one also has to look for new people. A majority of relationships would have to be questioned. But it doesn't stop at vices like the ones mentioned. Our attitudes and preferences are dependent on the people around us and even the way we dress depends on others. The latter is not 100% true, because we are not slaves of others, but we are also involved in the construction of the culture according to which we behave.

How such cultures will emerge is reported by the tenth basic assumption. This happens on the one hand really on a small scale, in the negotiation of microcultures in personal relationships. Everywhere, where people are together, they produce components of a culture. This of course applies only on a small scale at first. This cultural production occurs through presence in common situations. One can speak here of chains of situations. These lead on the one hand to the formation of relationships and on the other hand to the development of microcultures with those with whom one is in a relationship. The cultural production is ongoing, always when other people are present. This also applies to situations that are less close relationships (see assumption 4 on the strength of relationships) are characterized are.

The eleventh assumption picks up situations again and claims that as a researcher one knows something about relationships, even when one has not directly collected these or was not present in the situation. It is enough if one knows who was present. It is about the duality of people and events (or groups, as Breiger 1974 described this connection). What an event or an event is, there are diverse interpretations. In the original text, which underlies Breiger's investigation, it was about card evenings or charity bazaars. It is about the fact that at such an event people meet. Sometimes an event also denotes a collection of opportunities. This is how one could roughly describe the meeting of employees in departments of organizations. The affiliation to a department would then be considered an event or event, with the knowledge of which one can construct a network. Usually, the bimodal analysis[2] also assumes that all participants must have come into contact with each other. But this is true only for smaller events. As the events get larger, there are regarding interpretation difficulties. We can't really say who has come into contact with whom. So it's a condition of the possibility of having been in a relationship during an event. However, participation in the event is an important prerequisite for similarities in behavior to arise at certain types of events. This is necessary for a perceptible culture to emerge. By culture, we mean primarily behavioral guidelines (for more details, see Swidler 1986) that promise us security about how to behave there.

The last of the twelve basic assumptions picks up the argument of the eleventh assumption and asserts that through common memberships in different organizations, these are in contact with each other. Organizations are an example of people being related in a certain way. Through the contact of people with different organizations, it becomes possible for certain procedures and routines to diffuse through the organizational boundaries. This is also an argument that helps solve problems in organizations and at the same time ensures that procedures in organizations and the way people deal with them resemble each other. Ultimately, the described can also be seen as cultural development across the various areas of a society. Small microcultures developed, which Gary A. Fine (1979) calls idioculture, can spread through overlapping memberships in different organizations and at the same time these microcultural developments remain tied back to the culture in other organizations.

[2] In bimodal analysis, people are usually considered one mode and events as the second mode. By projection, one can now analyze which people attended an event together. Alternatively, it is also possible to represent a connection between events. Here one would say that two events are connected by common visitors.

In my early days in network research, I found a very rudimentary but inspiring list of “propositions” for network analysis once on the website of network researcher Miller McPherson. It was a very short document of only one or two pages in length. That was really decades ago and unfortunately I have not found McPherson’s considerations again on the internet and also not saved on my hard drive. However, the idea of presenting the basic assumptions in brief has moved me ever since. I then presented this in a lecture and always thought that it would be suitable for a short book, which makes it possible to get to know the ways of thinking in this field of science. I am pleased that I now get to present the most important basic assumptions in this form to the interested readership.

Assumption 1: Network Research Focuses on the Relationship and Not the Individual

Societies are characterized by relationships and interactions between people. These relationships do not arise randomly, they follow patterns. Relationships have an important meaning for us humans. Therefore, they also influence the way people behave. Decisions that are made are related to the relationships. The entire culture, that is, what people orient themselves by, arises in interaction with other people, that is, in relationships.

Because this is as described in the first paragraph of this section, it is necessary for the network research perspective to develop its own methods for capturing relationship patterns. Traditional social research is blind to this eye, which captures relationships. To justify why network research needs to take a new look at social events in society, it had to differentiate itself from known procedures. It had to develop its own methods. The development of methods made the research direction to SNA (Social Network Analysis) to social science network analysis. With increasing theoretical justification, network analysis became network research.

One of the reasons why this perspective on relationships and their structure could prevail is that it is superior to traditional research

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methods in some respects. Network research fundamentally does not reject any of the other methods, as it relies on combinations of different methodological approaches (Schweizer 1993[1]). In addition, the interpretations, which also include other methods, are more convincing in the end, as they combine the structure with additional material, for example on properties of the nodes, which stand for people. Such properties are called "attributes" in network research.

Typical traditional research methods can be roughly divided into two categories, quantitative and qualitative.[2]

Quantitative Surveys

In quantitative surveys and their evaluation, one looks for combinations of properties of independent individuals, which are used to explain certain facts. For example, preferences for parties, attitudes or consumption tendencies depend on education, gender or place of residence. What survey research does is similar to the approach of cell biology:

> "...the survey is a sociological meatgrinder, tearing the individual from his social context and guaranteeing that nobody in the study interacts with anyone else in it. It is a little like a biologist putting his experimental animals through a hamburger machine and looking at every hundredth cell through a microscope; anatomy and physiology get lost, structure and function disappear, and one is left with cell biology." (Barton 1968: 1)[3]

Social influences in the quantitative interview should be avoided. The methodology of survey research teaches that attributions made by the respondents in the interview situation can be significant for the result of the survey. The most impressive example of this can be found in

[1] The unfortunately prematurely deceased Thomas Schweizer called this "flesh and bone". The bones correspond to the network structures, while the flesh is formed by the information obtained with the help of other methods. This information is helpful in better interpreting the structure.

[2] Of course, there are a number of other methods, but the classification represents main strands that play a role in the discussion of methods again and again.

[3] I first heard of this impressive quote in a lecture by Jörg Raab. In addition, it should not be concealed that there are nevertheless transitions between network research and the quantitative and qualitative traditional approaches. This is particularly true for the collection of egocentric networks (e.g. Wolf 2010 for the quantitative approach; Straus 2010 for qualitative research).

Steinert (1984): There women were asked whether abortions should be decriminalized in the future. It turned out that the answers differed diametrically depending on who conducted the interviews. Older men brought out a clear majority against decriminalization in the interviews of younger women, when women interviewed the same group the vast majority, however, were in favor of decriminalization. Another impressive study, which strongly questioned the relationship between attitude and behavior, was that of LaPiere (1934): He investigated discrimination based on racism in the USA. He himself often traveled with a couple of Chinese descent. He observed that they were never really treated badly, although he knew about the racism against Chinese in the USA at that time. In short, he conducted a survey in restaurants and businesses that offered accommodations. Practically no one said that he was willing to, serve Chinese in the restaurant or accommodate them in the hotel. In dealing with the couple, however, it was completely different: They were in about 99 out of 100 cases well received—there was no trace of racism to notice and this also applied when the researcher LaPiere himself was not present.

The results show that the surveys, in which people completely independently give their own opinion, are largely pointless. Even if the respondents have an opinion on the topics asked, it depends on the situation in which this position is expressed. Something that can be attributed to survey research is that it (at least in parts) deals critically with its own methods. The researchers who deal with survey research, of course, know about such problems, which are caused by interviewer effects and social desirability[4] and try to counter them. So people were glad, that computers were introduced and no more people had to be put in between to get to the "real" opinion. Since distortions in the answers—as far as this can be investigated—occur especially with controversial, socially rather ostracized or intimate-private behaviors, an experiment was considered, with which the advantages of the new possibility should be demonstrated. So they asked about a delicate behavior via computer: It was about the amount of whiskey consumption. The investigation was

[4] Both causes for errors in interviews must be separated. Social desirability would therefore be a response behavior, which is oriented towards general norms or values; Interviewer effects, on the other hand, result from the constellation in which an interview is conducted: such as older gentlemen vs. younger women as in the example mentioned by Steinert.

carried out in Scotland. The result was as expected. The Scots, when asked by computer, stated that they consumed almost twice as much of the spirit as if an interviewer had asked the relevant persons (Sproull and Kiesler 1991: 46). Such a result, of course, pleases the survey researchers, because apparently better results can be achieved by changing the method. However, I counter this argument by saying that the new method is certainly helpful in capturing the actual consumption of the Scottish national drink. If, on the other hand, you want to capture the very own opinion of people, even the computer-assisted survey turns out to be a rather pointless endeavor. It actually doesn't matter what people think for themselves, the opinion only becomes socially relevant, when it is also expressed. Only with the expression in the circle of other people (i.e. in a network) does the opinion become significant; only then does it affect one's own behavior and that of others.

Both for the expression and for the subsequent behavior, however, apparently different rules apply. It's about social situations in which people orient themselves to each other and are only willing to bring in their secret ideas depending on the situation. In other words: It's about relationships, which frame the situation at this moment. This situation moderates the expression of opinion. This happens in such a way that the expressions differ depending on which other people are present. So it depends more on the social situation with others than on a very own opinion asked in the quiet chamber.

In the situations described by LaPiere, relationships develop very quickly and the same applies to the situation in the interview. However, we are dealing with completely different contexts: Claiming to want to do something in a conversation (interview) with a supposedly like-minded person and how one then actually behaves in the face of others, are two completely different pairs of shoes. A perspective that cares about the relationships, therefore, appears superior to the one that only looks at individual opinions. Especially since survey research tries to explain differences in opinions also through individual characteristics. Now the objection could come that every sociology is a sociology of relationships—sociology without relationships makes no sense. Of course, Max Weber founded a sociology of social action, with the "peak" of interpersonal understanding forming the purpose-rational action. This action is best interpersonally communicable. But this is the case because it simultaneously takes the least consideration of relationships. Traditional and value-rational action, on the other hand, are significantly more prerequisite-rich, but could certainly also be communicated well within a cultural community. Ultimately, the type of justification for the action here also depends on the relationship, as you can see. However, Weber is less concerned with the action itself than with its justification and communicability.

Qualitative Interviews

Qualitative interviews typically capture individuals with their unique subjectivity. Here too, the interest is usually focused on individual people. While qualitative interviews will not achieve "representativeness", they do provide more insight into the backgrounds of what moves people. When we ourselves have conducted qualitative interviews (usually supported by guidelines), we were mostly interested in the stories that were told to us. These stories, we thought, were indications of the worldview and the order of ideas of the people we interviewed in this way. In such stories, social contexts come to the fore, with subjectivity playing a role in interpreting the backgrounds of the stories. What I want to say is: Traditional qualitative social research, which puts the whole person in his or her becoming at the center, does not help us much in clarifying behavior that is induced by relationships that are shown in a picture of relationship structures.

The Pattern of Relationships in Focus

In contrast to these two approaches, network research is usually not about individual people, but precisely about the context destroyed by traditional interviews, about the relationships between different people. However, the connection between people, let's say in a couple relationship, is not enough; we are interested in relationship structures (Radcliffe-Brown 1940).[5]

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[5] However, network aspects were incorporated into surveys as egocentric networks. For this purpose, a so-called network or name generator is used. This allows certain aspects of personal networks to be captured. Techniques are also available for qualitative research with which personal networks are recorded, for example by presenting concentric circles that are supposed to represent distances in personal interviews (Kahn and Antonucci 1980: 272).

To explain social facts in network research, one therefore relies on the structure of relationships. In this way, the embedding of people is taken into account much better than with surveys or interviews. This embedding allows people to become human in the first place, and on the other hand, it clarifies the structures in which people interact. It addresses the consequences of the structures in which people live.

The structure is represented and analyzed using matrices or equivalent procedures. People are referred to as nodes, the relationships between them as edges. However, network research is not limited to the analysis of relationships between people, it can also be groups, organizations or countries, whose relationships are mapped in this way and whose patterns are examined.

Assumption 2: Identities—What We Are, We Become Through Relationships

Our identity and thus our individuality only arise through influence and confrontation with other people. However, we also influence others. From a network research perspective, we could also modify the claim and say that the individual arises through the intersection of social circles (according to Simmel 1908). The fact that we see ourselves as individuals is a product of modernity, which is characterized by the fact that the relationship structures changed.[1] In pre-modern times, individuals as we know them today did not exist. People lived in the place where they were born (at least that's the idealized view behind it).[2] However, this view lacks quite a bit. The systematic exceptions that already existed at that time, such as long-distance trade, which already in the Middle Ages led to very far-reaching relationships, are not taken into account. This also

[1] The emergence of sociology itself is also something that is associated with modernity. Industrialization led to such far-reaching societal changes that a scientific reflection became necessary.

[2] Tönnies (1991, first 1887) distinguished between community and society. People in communities did not yet have an individual will, he assigned them the essential will; on the other hand, modernity brought forth society, in which one was much freer. Society corresponds to the arbitrary will, which presupposes individuals.

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includes the division of inheritance, which forced part of the population to leave their homeland. Perhaps the mechanism triggered by wars, which also stirred up the population at that time, was even greater. Perhaps we don't need to draw the contrast so sharply, it is enough if we state that the number of circles in which we move has increased significantly on average since then.

Individualization and Modernity

Ethnology (see e.g. Schnegg 2010), which used to deal with societies that were not yet modernized to the same degree as ours, invented the term multiplexity for this: Many different types of relationships are shared with the same people. Perhaps it is easier to explain this by saying that leisure time and working time are shared with the same people. In modern times, on the other hand, we speak of uniplexity. We interact in different social circles and thus split the relationships into different functionalities. Individuality thus arises through the diversity of social circles with which we are in contact. This is a by-product of the parental home, school, clubs and associations, cliques and working groups, memberships in organizations and the like. The development of individualization itself can hardly be influenced by us. It is the product of social processes and is described, for example, within the framework of a systems theory as functional differentiation.

The embedding of people thus fans out into different social circles (which can be understood as a network and can also be empirically captured relatively easily as a personal network). According to the original idea of Georg Simmel, there are no two people who interact in exactly the same circles. Now this Simmelian image of the intersection of social circles is a really very simple model, which can hardly describe the entire process. Just a note on this: For example, there is a lack of assumption about how the different positions, which the various participants take in the circles, affect. Stereotypical positions, which are simultaneously subject to negotiations[3] are subject to[4] explain the behavior within the circles. An example: Even if the term "henpecked husband" seems to be somewhat outdated, it refers to a person who has to subordinate at home, while in another circle they may have a lot to say. So in the example mentioned, very different positions are taken in the circles in which one moves.

Both together can be strictly interpreted sociologically as individualization and identity formation. The more our relationships, in which we humans are involved, fan out, the less dependent we are on just one single circle. Through contact with various social circles, we come into contact with more different ideas. This puts us in contact with a wide variety of people in many different ways. Another consequence of the fanning out of relationships is that people are becoming less and less dependent on a specific context. If strong conflicts should arise in one of the circles, they are far less threatening to people's existence than in premodern times. In this way, we are much freer today than was the case in earlier times when the various circles had not yet fanned out so far.

Identity and Cultural Tools

In addition to this perspective, which first focuses on individualization, a second direction of view is also possible. This is also dealt with in a slightly different form in assumptions eleven and twelve: Technically in the terminology of network analysis, we are talking about bimodal networks. The following consideration also involves a societal function, which will be briefly outlined here. The circles are in contact with each other through overlapping memberships of individuals. The special function here is that

[3] The term negotiation appears again and again in this booklet. Negotiation does not necessarily mean negotiation, but it also means recognizing behavior in others. The behavior is elevated to the realm of possibility by this type of negotiation in the respective circle and it is not unlikely that it will be adopted by others in the future.

[4] This is referred to as Nadel's paradox: positions are recognizable, although there are diverse behavioral options in the same position (DiMaggio 1992, regarding Nadel 1957).

in this way the culture within a society does not diverge too far. I consider culture, following Ann Swidler (1986), as something that permeates everyday life and manifests itself primarily in the situations already mentioned. The participants bring their knowledge into the situations, which applies to situations of the respective type (provided the type of situation can be identified). There is always great uncertainty when we are confronted with a new type of situation and therefore the tried and tested routines cannot be used. We encounter such types of situations all the time, behavior in the seminar room is somewhat different from that in the lecture hall; we behave very differently at a music festival. However, we also have to distinguish the festivals according to the types of music that are played there. If you are in the opera, the headbanging is at best a slight rhythmic nodding of the head, while the music rarely has a captivating swing. What we know about culture and how we use this knowledge is therefore also dependent on the situations we have come into contact with. In any case, people's behavior is also part of their social identity. Identity is the basis for variations in behavior, which makes us humans unique.

Let's now look again at the social circles within which we repeatedly find ourselves in familiar (sometimes also new) situations. Especially in initially unknown situations, new combinations of cultural tools (cultural toolkit[5]), consisting of norms, values, previously experienced patterns of action and understanding of symbols, arise. However, the use of cultural tools is subject to a double restriction: They must be compatible with both the identity and the situation. Since there is such a great variety of situations, it is not always easy to meet these two requirements.

Identity from Uncertainty

In relation to the formation of identities, the book by Harrison White (1992, 2008) is of course also worth mentioning. The emergence of identities is a result of control efforts in his work. In relation to White, one could also say, identities arise from the endeavor to reduce uncertainties.

[5] A term by Ann Swidler (1986), which will be discussed in more detail later.

This happens, for example, by orienting one's behavior towards what one has previously experienced in a situation of a similar type. This corresponds to my thinking at this point.

Identities therefore arise from the interplay of networks in which people have to find their way. However, this view also shows that our identity is shaped by different facets. These facets may not always fit together. The different circles can also help to deal with the different aspects, because it is often possible to separate the circles from each other and thus we can avoid conflicts. Some positions are difficult to reconcile; it could also be that a mixing of the circles would bring together different milieus that would hardly be compatible with each other. So many of us keep the different circles apart and can then act our position in the circles without threat. But exactly this, the merging or separating of circles, can be demonstrated in an examination of the structure of relationships.

Assumption 3: Two, Three, Under Ten, Many—Basic Rules of Structure Formation

Network research deals with structures. One can imagine that a certain "mass" is necessary for the determination and interpretation of structure. If it's only about two people (nodes), then only one relationship (edge) can arise, or two if it's an asymmetric relationship. In this case, the relationship from person A to person B would be different than the other way around. So we start with three, the so-called triads. Here, relatively complex constellations can already be present. These can be interpreted in terms of content or form. As more people are added, the structures also change. They also become more complex. So let's start with the consideration of triads.

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Triads

At least two people are necessary for a relationship.[1] However, a structure that only includes two is not particularly interesting. One reason for this is that such a structure is fragile and no variations of the structure are possible. It's quite different with three. What these variations could be, there are a number of hints in Simmel's "Sociology" in the chapter on the "Quantitative Determination of the Group". Constellations such as the laughing third, divide and rule, the mediator etc. (Simmel 1908) are typical for triads, i.e. when three people are involved. This also includes the secret as a social fact described by Simmel. At least two people must share a secret and it must be hidden from at least a third person. Simmel's idea was that these are constellations that cannot be traced back to two people—it is an emergent phenomenon. The structure only takes effect when another person is added to the two.

Another basic rule is transitivity. This is important, especially for considerations of dynamics in networks, as it can predict the emergence of relationships. It is assumed that if there is a relationship between person A and person B and between person A and person C, there is a high probability that a relationship will also develop between B and C (exceptions are different contexts, which are sometimes deliberately kept separate—see the previous assumption). If the prediction about the establishment of a relationship is correct, a Simmelian triad ("Simmelian Tie", Krackhardt 1998) is formed, which according to Krackhardt is "super strong and sticky".[2]

The idea of the Simmelian triad by Krackhardt goes back to the assumption of transitivity. In addition, properties of relationships are often also transferred during this process (such as the use of informal address between people who would otherwise have used formal address). This so-called process of triadic closure is reflected in numerous variations of the clustering coefficient. The value of this measure increases

[1] I believe it has already been said that in network research, the entities are not always humans. Often, animal societies (e.g. Chase et al. 2022; Lusseau et al. 2003) are studied or aggregated actors are included in the analysis, like organizations and states or blocks, which consist of structurally similar nodes, in block model analysis.

[2] This is the title of his essay: "Simmelian Ties: Super Strong and Sticky" (Krackhardt 1998).

when triadic closure occurs. The assumption of transitivity is one of the most important basic assumptions for relationship development in networks. The idea of transitivity is very important because it also includes a consideration of dynamics in networks. This dynamic comes to an end with the transitive closure, so the basic idea of network theory at this point. I think that's correct, but when Krackhardt (1998) describes such closed triads, in which everyone is positively connected, as super strong, I'm a bit skeptical. The actual triadic constellations described by Simmel all carry a sting in them, which prickles at the unity of the triadic constellation. With Simmel himself (I have already mentioned the constellations above), it's always about conflicts, whether a laughing third party is happy about the dispute of the other two or as the one who divides and rules, sows discord or a secret is hidden from a third party, it's always about a division of the triad and not about it representing a super strong connection. Only the third party as a mediator could be seen as someone who tries to settle disputes. Thus, the mediator would be able to restore the unity of the triad—and perhaps also save the Simmelian triad.

Further considerations can be made with triadic constellations: The theory of structural balancing assumes that the relationships between two people to other people (instead of the other person, it can also be an object) are moderated by positive or negative relationships (Heider 1946, 1958). If one is a supporter of a left-wing party, he can hardly be friends with someone who politically wants the opposite, for example by being a member of a far-right political organization. From the objects originally mentioned by Heider, relationships of a dyad to a third person were later made (Cartwright and Harary 1956). In the wake of triad research, considerations were also developed on structural balancing. These include the following rules of the valences of relationships: The friend of your friend is also your friend, the enemy of your friend is simultaneously seen as an enemy; the friend of your enemy is also classified as an enemy and the enemy of your enemy is seen as a friend (see Stegbauer 2018: 109–116 for an application of these rules). These considerations are actually a theory of cognitive dissonance. However, if there are conflicts within a relatively closed system, it is suitable for explaining why a larger number of people also split into two groups or components.

One thing is often neglected in the considerations of triadic constellations: Even though the structure only becomes interesting with three, as one could say, the three people but almost never occur in isolation. The constellations are therefore influenced by other people (see also assumption seven on the ecology of relationships). This should never be forgotten, even if the ideas around the three are already very suitable for the formation of hypotheses and derived analyses.

If you increase the number of participants, the same thing happens what you could learn from the triadic constellations, only over and over again, according to Simmel, who introduces the principle of self-similarity here. However, in four-person constellations, you often find two dyads, which interact with each other—dyads are before the threes in the counting (more on this in Stegbauer 2016). Even if I take the example of the four-person constellation as a critique of Simmel, of course the basic patterns of the triads can also occur there.

The Small Group

The next number is not quite precisely determined, but has been present in sociology for a long time: the small group. If small groups or cliques are integrated into larger networks, we speak of cohesive subgroups. There are numerous definitions for the group phenomenon. But one could say, the group in its common definition as a small group begins above three and ends below ten or just above that. The size is determined here as in the following orders of magnitude according to human capacities. Here it is mainly cognitive, spatial and temporal capacities that act as constraints: Everyone must be able to come into contact with everyone else (as a requirement, for example, from Homans in his book on group sociology 1951, German 1960[3]). Such a small group can get by with relatively little internal structure. Classically it was claimed that leaders emerge (e.g. also Homans 1951). When the group becomes larger than the small group limit allows, the groups break down into subgroups. An

[3] Research in organizations that deal with capacity limits in such sizes under the keyword "Span of Control", as an example Urwick (1956), also goes in the same direction.

example of this are dinner invitations from friends. At a table with six people, you can still easily have a common conversation. If the number of invitees increases, the phases in which everyone talks to each other become smaller and smaller. Finally, only the neighbors and those who sit directly opposite each other, come together as conversation partners together. In order for everyone to understand each other, the basic volume becomes increasingly larger, which further restricts communication possibilities.

The Large Group

If groups become even larger, typical structures can also be recognized. A striking example for me is the study on large groups by Rauch (1983). In this study the course of larger group meetings (larger than small groups, such as teacher conferences) is described. Ultimately, negotiate in such meetings with more people than in small groups but also few people with each other. The amount of those who mainly speak is limited to the size of small groups. Only a few can speak with each other at a time. An explanation for this are also capacity problems: This causes the large groups to break down into subgroups. A result of this is that there is then less pressure than in small groups towards a uniformity of opinions that includes all participants. The main speakers stand, according to the study by Rauch, in front of factions that keep their speakers through declarations of support in the discourse. The structure could be easily described with network research. In particular, the positional analysis would be suitable for the description, because the gallery (or the audience, those who do not actively participate), the involved middle class and the speakers can be clearly separated from each other based on the structure of their communication. Corresponding data from observations could also be examined using network analysis methods. Block model analysis would certainly be suitable for this (see also assumption eight on cognitive social structure).

With How Many People Can We Actually Be in Contact?

Among the numbers that play a role in network research, is also that we humans cannot come into contact with any number of others or maintain a relationship. A controversial limit due to its origin would be the 150, the so-called Dunbar number (Dunbar 1993).[4] Even those who are friendly to everyone and wants to be friends, can't do that, there's not enough time. But it's not just that, what also doesn't suffice, is the cognitive capacity[5] of us humans. From our friends and acquaintances we often also want to know, with whom they are in a relationship. Although we as social beings already have a certain talent for this, the capacity of our memory ends very quickly in the face of the large numbers that result from an increasing number of relationships (see also assumption eight about the cognitive social structure). If you wanted to remember the relationships of all of Dunbar's assumed 150, you would already have over 11,000 characteristics of relations (150*149/2) between friends and acquaintances that you would have to remember.

In network research there is the rule that the measure of density of a network decreases as the network becomes larger. The density measures the proportion of realized relationships to the possible relationships in a network. This is logical, because the number of possible relationships does not grow linearly, but quadratically with the increase of people in the network.

If the number of people becomes even larger, then we are in the realm of masses. Here too, there must be substructures, because not everyone can interact with everyone. One solution that network research (Stegbauer 2024) offers for this is not in the construction of relationships in the traditional sense. Observations or knowledge of other people's behavior

[4] I do not want to withhold my problems with this number from you: It was obtained by extrapolating the brain size of monkeys to that of humans. I consider such a procedure to be problematic because it represents a simplification and does not take into account other influences, such as culture (such as Breithaupt 2009 for the example of mirror neurons, see also Stegbauer 2024).

[5] A well-known example concerns the limit of short-term memory. Here we speak of the magical Miller's number, which states that on average you can only remember seven things at once; 7 minus or plus 2 is the formula (Miller 1956).

are sufficient to orient oneself. We would then speak of super weak relationships (see the following assumption four about the strength of relationships).

So when the number of nodes in a network increases, substructures must emerge. Such patterns can, for example, be described in a total network as specific patterns, such as cohesive subgroups or center-periphery structures. A complete equality structure in the sense that everyone is connected to everyone in the same way (as in the example of the Simmelian triad), cannot exist in larger networks. Cognitive and spatiotemporal restrictions prevent this. Everywhere where people meet, a relationship structure must emerge, a structureless state is unthinkable. But since all people (with no variations) are subject to the same restrictions, one often finds a certain self-similarity in the resulting relationship structures. For these reasons, it is almost always worthwhile to examine the structures more closely. This should be possible in most cases with the tools of network research.

Assumption 4: Strength of Relationships and What That Means for Us

In network research, we roughly distinguish three different degrees of strength of relationships. All three relationship strengths vary in terms of their characteristics and their tasks. Important are also combinations between the different degrees of strength that occur within relationship structures. Of course, there are transitions between these, meaning that one cannot precisely distinguish whether it is still a weak or already a strong relationship. Sometimes the three different degrees of strength are also viewed as categorical. The latter means that one clearly distinguishes the types of relationships from each other or can distinguish them. If it is correct that the relationship strengths to be distinguished in degrees of strength can be viewed as different categories, then one can deduce from this, that, when the relationship strength changes, the character of the relationships also changes as a result. For example, acquaintance would become friendship if the relationship were transformed from a weak to a strong one. In the transformation of a super weak relationship to a weak one, a weak relationship would arise if both were to start a conversation and remember each other at a repeated meeting and perhaps then pick up the thread of conversation again. To integrate the phenomenon of the super weak relationship into network research, I recently wrote a book

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(Stegbauer 2024). As already evident in this paragraph, we distinguish in network research strong and weak relationships and most recently also super weak relationships.

Strong Relationships

Strong relationships (strong ties), as much is clear to us, are of great importance to all of us: partners, friendships and close relatives, parents, children, grandparents are linked by strong relationships. Sometimes direct work colleagues are also included in the category of strong relationships. What do we need such relationships for? Most people understand this when they think of the people listed. Here, support relationships are first and foremost: with the partner, one raises one's own children. The grandparents certainly help with this, if they are available on site. At least for occasional care, they can usually be involved. After all, most parents have to reconcile their job and the children. On the other hand, the children are also involved to a certain extent in services that range from working in the garden, setting up digital devices to functions in the care of the parents.

One problem with considering the strength of relationships is that this concept reduces the diversity that exists in relationships to one dimension. On the other hand, it is possible to distinguish quite different types of strong relationships from each other. Not every strong relationship does the same for the partners involved. Depending on which of the listed positional relationships these count, relationships differ in numerous dimensions. An exemplary list can be found in an essay by Stegbauer (2010: 111).

Thus, the characteristics of parent-child relationships are clearly distinguishable from those of a partnership. This is of course completely clear and it is true, even though both types are strong relations: This concerns, for example, the distinction of dimensions such as one-sided responsibility, inescapability of the relationship and the legitimacy of sex. Parents are initially very one-sidedly responsible and have custody for their children. One could go even further and claim that children could not cope without close reference persons, as is usually the case with parents.

This is by no means the case for partnerships. An indication of this is the high separation rate (Klein and Kopp 1999), which can be determined in official statistics at most for the divorce of marriages. Many more connections are already dissolved before marriages were made from them. Actually, marriage is even an institution that is not necessary for partnerships. Beyond that, one would say that partnerships are fundamentally solvable. They do not possess the close ties, like blood relationships (somehow I resist the term), but the term indicates the familial relationships. While all partnerships can be dissolved, this is practically not the case for kinship. These connections are carried with you for a lifetime and even periods of estrangement do not disguise the fact that these bonds still exist.

Friendships dissolve even faster than partnerships. However, the concept of friendship is the most difficult to define of all types of close connections. Although one would say that friendship is also something that differs between cultures, that's not all: friendships also differ from relationship to relationship, as many elements within the relationship are negotiated. Often friendships are associated with a certain context. Many friendships pass away when the context or we would also say the foundation, which is created by structuration, is missing. This means that due to changed circumstances, you no longer cross paths every day. It could be that one person moves to another city or even just that they are transferred to another department and no longer pass by the other's office by chance.

I have already pointed out the different conditions of interaction. These include the assumption of responsibility, mutual assistance, because this is expected in kinship relationships. Exclusive to the various types of strong connections is also that of the three mentioned types of strong relationships, parent-child relationships, friendship and partnership, only in one type of relationship is having sex not taboo. In partnerships, this is constitutive of the relationship. In friendships, it is rather rare, I would say, but between parents and children, sex is absolutely taboo. What strong relationships have in common in most cases is that the people are in active exchange and therefore know a lot about each other. In addition to knowledge about the other people, information about other things also floats in strong relationships. It is said that information is redundantly present in such relationship systems.

Weak Relationships

The second type I want to discuss here deals with weak relationships (weak ties): Their importance was not immediately recognized, if one includes the history of network research. Initially, the focus was more on strong relationships, because the effect of the relation is unmistakable. Marc Granovetter (1973) wrote an essay on the strength of weak relationships. One reason for initially turning to strong relationships was certainly that the effects of the relationship structure had to be clarified first on obvious research objects. This is a pattern that is often followed in the sciences. Lévi-Strauss, for example, also initially developed his structuralist theory on kinship relationships, where the structures were most striking. Only later did he turn to the myth buildings, which as pure brainchildren, however, had similarities to the non-negotiable descent relationships (Lévi-Strauss 1980). Once one has become relatively certain of a fact in science, one tries to confront the gained insights with rather unlikely cases. This then reveals whether the considerations can have a further validity, i.e. whether the theory can carry beyond the obvious cases. In qualitative research, such relationships have become known as the method of maximum contrasting (e.g. Oevermann 2002). I do not want to claim that this was actually the overriding justification in the considerations of weak relationships. The maximum contrasting is a principle that is applied to test a theory developed on the basis of empirical research. Test statistics cannot naturally be applied in such cases, because usually only very few interviews can flow into such research. But if one applies the principle of contrasting, the validity and scope of such findings can be significantly increased. But one could also say that it is a principle of thought, which is about transferring insights to different cases.

The great importance of weak relationships was brought to Granovetter's attention when he conducted a study on how engineers got their jobs (Granovetter 1974). It turned out that job-seeking engineers very often got the information that led to finding a new job neither through job ads nor from close friends, but from acquaintances. So if you are looking for a job or an apartment, you should not only announce this in your close circle of friends, but also talk to acquaintances who you see less often.

Close relationships are not particularly helpful, because their knowledge is usually already known to the job seeker. Therefore, information has a low novelty value. In this respect, weak relationships can be very helpful. Weak relationships lead out of one's own close context. Already in his first essay, Granovetter (1973) describes the problem that it becomes difficult to interfere in community matters if there are not enough weak relationships.

In qualitative network research, when conducting interviews, a tool is often used to help the interviewees recapitulate the people who are in relationship with them. It is a sheet with a point in the middle, surrounded by two, three or four larger circles. This procedure is called the method of Concentric circles (Kahn and Antonucci 1980; Straus 2010). The closer relationships are drawn by the interviewee in the circle near the center, the less close ones come in the circle behind it, and the distant acquaintances, if such weak relationships are remembered at all, are drawn even further out.

In contrast to the above, another category of relationships can be distinguished based on their strength. These can hardly be captured with the tools of traditional network analysis. One can even ask whether these are relationships in the classical definition at all. These are the super weak relationships. If the criterion for the importance of relationships is that they are behaviorally relevant, then this type of relationship must definitely be included. Very often this type of relationship arises ad hoc, e.g. because one is at the same place at the same time with other people, even if one does not know them at all. But if a justification for network research is to be able to explain why people behave in one way or another, then super weak relationships are a category that should not be neglected.

Super Weak Ties

Super weak relationships (super weak ties): As the term already suggests, these are even weaker than the weak relationships. They are not even acquaintances. To have a super weak relationship, it is enough to be at the same place at the same time. If one can observe how the others behave, one can orient oneself to it. This is always the case. However, the transmission of behavior is particularly effective in situations of great uncertainty. Then one assumes that the other people present know more about the behavior on the occasion of this type of situation. I have looked more closely at why almost all tourists in front of the Leaning Tower of Pisa take "tower holding pictures". The behavior jumps over.[1] The tourists on site observe how the others behave. In short: strange. It takes a moment for them to understand what is going on. People line up with the tower and the accompanying others to take a picture that makes it look like they are preventing the Leaning Tower from falling over. What you also see are variations of the "classic" picture, some kick against the tower or formations are formed to support it even more firmly. The variations can be interpreted as a competition for the best photos. Here, complete strangers orient themselves to each other and this happens across cultures. It is rare to experience such situations where people from different cultural circles actually orient themselves to each other.

However, someone has to start this behavior—and that every day: Since it is unlikely that the tourists invent the same picture every day anew, there must be another source for this behavior. The internet is the only thing that comes to mind: On Instagram, for example, there are many tower holding pictures. If you search for Pisa, that's usually the first thing you see (Stegbauer 2024). As a result, the first tourists are already there in the morning, who start to photograph the iconic pictures for this place. The other tourists who arrive later can then orient themselves to the behaviors presented by the others.

However, the behavior does not always jump over. For this, at least a few conditions must be met: for example, you have to like each other or at least be in the same position (so only travelers are interested in taking these kinds of photos, not locals). The condition of being likable is perhaps even exaggerated, better said, it is often enough that you do not completely reject those to whom you adapt your behavior.

The prerequisite of mutual observation with simultaneous presence is not even mandatory. This is the case with some of the visitors to the tower square, because they have already informed themselves beforehand about the typical kind of pictures that one must bring back from there. In

[1] More details on super weak relationships can be found in Stegbauer (2024).

another study, we observed such jumps in the media itself (Stegbauer 2018). It was about shitstorms. In a shitstorm, the participants oriented themselves to what the others had already written in the stream of news before them. This way, I was able to show that certain motifs in the posts in a discussion forum were picked up and led to new messages on the same topic. This proves that people also orient themselves to each other when they can't even look at each other. Their artifacts are enough to already have an orienting effect. However, the forums were set up in such a way that only one-sided opinion was represented there. Contradiction was not tolerated there. Therefore, one can assume a certain basic sympathy for those who remained there. They are relatively homogeneous in terms of their political attitudes.

The fact that behavior can also be transmitted via super weak relationships between strangers in certain situations supports the spread of similar behavior. This could also be described as a mechanism for the transmission of culture. This is especially true for those types of situations that are subject to a certain public. Usually, one must see the others or follow what they do through media in order to generate behavioral effectiveness.

The Interaction of Different Relationship Strengths

Until now, I have only considered the effect of the different relationship strengths individually. In fact, one must also consider another Consider this: The combinations of the different types of relationship strength play an important role in explaining the effect of relations. For example, Ron Burt (1992) built his considerations on bridging structural holes on Granovetter's insight into the importance of weak relationships. His idea was that hardly any new ideas emerge in closely connected groups. So there is a certain static. This applies equally to all groups with strong internal relationships. This is because the information within these groups is largely evenly distributed. We speak of a ubiquitous distribution of information. Each individual practically knows the same as the others.

You can hardly tell a joke without the others starting to yawn and claiming that the joke has already grown a beard. This is because you spend a lot of time together and communicate a lot with each other. However, between different groups, according to Burt's consideration, there is a large information gradient. New ideas then arise through the transfer of information between the groups. So there is an information gap between the different groups. This gap is referred to as a "structural hole". Such holes between the separate groups need to be bridged. This brings new information into the various groups. This new information stands for the possibility of introducing innovations there.

Burt trains future managers at his university in Chicago. He advises them to put themselves in a broker position. This means that you must be able to recognize such structural holes before you can use them for yourself. The use of such information gaps is particularly advantageous because the person who stands between the groups is able to broker information. This person can therefore control the flow of information and act in his own interest. I do not necessarily adopt this interpretation of Burt's, but it is a typical argument that very vividly illustrates how different degrees of relationship strength interact or can be thought of together. The idea that different information or solutions to problems can be transferred between different circles, on the other hand, is very illuminating. I will discuss this in more detail in Basic Assumption twelve when it comes to showing how different organizations are connected to each other.

Not only the combination of weak and strong relationships is important, the same applies to links of the other types of relationship strength. For example, for those from super weak and strong relationships, the mechanism to be negotiated here does not differ so much from Burt's analysis: If, for example, a large open-air festival is to be attended, those who have already attended such an event can pass on their observations to the greenhorns in the group. In this way, culture that has been acquired through super weak relationships is transferred to smaller network constellations, i.e. those characterized by fewer people and stronger relationships.

Assumption 5: Behind Our Backs—Relationship Structures Also Work When We Do Not Perceive Them

The fact that there are structures behind our backs means that these are not or only to a very small extent perceptible. Even if you know nothing about them, they are still there and influence us. What's more, in many areas these invisible structures determine us. What one learns, what one experiences, is not necessarily what has brought about this experience in terms of social order.[1] So we know almost nothing in our everyday life about the constellation that guides us. But this also means that interviews to investigate the consequences of these structures are unsuitable. How can you have something explained by an interviewee that he himself does not know?

Every person behaves in a certain way and so do the other people in the environment in which one is located. The explanation that results from this almost always arises from one's own perspective of experience or that of the others with whom one speaks. Simple explanations for actions or behavior towards other people refer to purpose rationality or the psyche

[1] Indeed, the theme of the difference between experience and structure can already be found in Simmel (1917): "The perhaps insoluble unity that the concept of the individual signifies is not an object of knowledge at all, but only of experience; the way in which everyone knows it in themselves and in others is incomparable to any other kind of knowledge."

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of people. In fact, however, there is usually a relationship context[2] when we look at the behavior of other people. But this is often not explainable or understandable by the individual. The problem of making one's own behavior understandable to someone else also applies, for example, to the other types of social action mentioned by Max Weber (apart from purpose rationality), such as traditional, value-rational or affectual action (Weber 2002, first 1922). Nevertheless, if explanations for actions or behaviors are given to someone else, the relationships are always taken into account (Tilly 2006). However, this happens in a different way than meant here: The participants do not name the true reasons, but those that are least damaging to the relationship.

It is not understandable for the individual because he often does not perceive the influence of the relationships so precisely and also does not know how the relationships came about. In fact, the individual has no overview of the structure of his own or the surrounding network. You also know very little about the emergence of the relationship structure around you. In everyday life or while you are yourself one stands at the center of their observations and their interpretation. Even in the center, you can only have an overview of a small part of the network. The transmission of information, of cultural tools, etc., takes place via structures that the individual cannot recognize (i.e., behind their own back).

Friends Who Are Meant for Each Other

The results of what makes up the structure also belong to the non-perceptibility. We are talking about structuration (Giddens 1984): This is about who is able to meet at all. This is the decisive factor for entering into a relationship with each other. Structuration, so to speak, pre-sorts possible relationships. It seems to us as if we choose our company (the friends and partners) ourselves, and/or we have the impression of being chosen by someone else. The firm belief, for example, of the students I

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[2] The fact that explanations derived from experiences, as opposed to those based on relationship structures, have little success, was already found by Durkheim (1897) in his study on suicide.

talk to about this, is that they choose their friends themselves. They are more open to the argument just mentioned, that we do not have the opportunity to choose from everyone. It first depends on who we can meet. But this is only a small, already filtered amount of possible friends. This condition of the possibility of meeting is, for example, dependent on everyday routines (workplace, routes, times, in short: time and space in which one is present) or access restrictions (such as memberships or demarcations, which can also be established via prices, as far as possible places for relationship initiation are concerned). Much of what is measured as homophily (McPherson et al. 2001), that is, people who resemble each other in terms of their characteristics (attributes) or attitudes, take up relationships with each other, is due to the fact that structuration causes similar people to come into contact with each other rather than dissimilar ones.

Opportunities to Get to Know Each Other

But that's not all: Who we get to know depends on the respective context and how open we are at the moment of meeting. So the opportunities to get to know each other are not always equally distributed. Thus, openness depends on the situation one is in at the moment when one encounters the other person. The openness of this moment turns into a relative closure as soon as one has met other people. Thus, students often meet their friends at the very beginning of their studies, namely during orientation week. Why then? At that moment they don't know anyone yet and are therefore ready to enter into new relationships. But even from this group, not even an active choice takes place, but in the end it is usually those who happen to sit next to each other during the critical time span who become friends with each other. This is at least my experience when I ask in the lecture hall who is friends with whom. Usually, it turns out exactly what I just described: The two know each other from orientation week.

Saturated Friendships and Craving for Contacts

Even to this argument, further considerations can be attached: Those who move to another city for their studies are more likely to find those who have also moved for their studies. Somewhat less likely, however, is contact with those who are less mobile and study at their school location. This is an effect of the fact that the latter already have numerous contacts from their school days. Often it is even the case that their parents and sometimes even their grandparents still live in the same place. They are busy with these relationships, because maintaining relationships with friends and acquaintances is time-consuming. Mutual visits and joint activities require time. Also, one cannot always decide for oneself who one wants to meet, the friends and the parents determine this to a certain extent. Birthdays and other parties are celebrated together. When one is invited, those who invite expect the adult children or friends to actually come.

New friends would disrupt the relationship arrangement to a certain extent. The underlying social mechanism suggests that in this case there is less necessity to make new acquaintances. The demands made by existing relationships ensure that the less mobile students often miss the opportunities to get to know each other. Those who are mobile, for the reasons mentioned, are more likely to get to know the other mobile students. As a newcomer in a new city at an unfamiliar university, one is literally craving for contacts. The others, who are also looking for new friends, are in a similar situation. It is probably also the case that the mobile students have better grades, perhaps precisely because they are not so distracted by their friends, at least at the beginning in the new place. If the particularly committed ones run into each other in this way, it could mean that the newly "immigrated" ones end up with better results. This should apply particularly to those who change their place of study, as they bring experiences from other locations. In what way the location where one studies has an effect, I will show in the following paragraph.

Whether You Have Friends Depends on the Place of Study

A few years ago, I offered a joint course with a colleague from a neighboring university. We had developed a seminar together, which could be attended by students from both universities from outside. We had thought of "Springschool" as the title for the seminar, because the event took place during the semester break. The seminar was offered and was also open to outsiders. For practice purposes, we asked about the contacts among the students that already existed before the seminar. The result was that the students at the university with a less broad sociology offering had much denser[3] relationships among each other than those from Frankfurt. Sociology is in Frankfurt (together with Bielefeld) the largest in Germany and thus significantly larger than in the neighboring university town. If the range of courses is smaller, you have to necessarily cross paths with everyone else you study with in seminars. This is not necessarily the case in Frankfurt.[4] Of the students from Frankfurt, significantly fewer knew each other before they attended this event. The organization of studies therefore also determines the structure of relationships in the end. It is crucial when it comes to who you can get to know. This result is something that also eludes experience or you experience the consequence in that the students in a city like Frankfurt are lonelier. This may not apply to everyone individually, but it should be true on average. Positively interpreted, there is another possibility: If the number of relationships that are established is actually significantly lower due to the described mechanism, then it could be that the relations are more intense.

[3] Density refers to a network measure that indicates the proportion of realized relationships to possible relationships. From one university with a smaller sociology department, we had 15 participants, from Frankfurt with a sociology department 3–4 times as large, there were 13 students. 52% of the possible relationships were realized at the university with the small sociology department and 32% at the Frankfurt University. It was asked who knows whom by sight, the data were symmetrized. In fact, there were already acquaintances between the groups, but as expected, they were significantly fewer; just under 6% of the participants knew each other, even though they studied at different universities.

[4] Although it also depends on the course of study in departments with a broad range of courses. In recent years, so many specialized master's programs have been created that a very similar situation to that in the city with the narrower course of study is created by the then reduced range of courses.

Against this idea, however, is that in large cities the social circles should be much more differentiated. This means that there are more uniplex relationships than in a smaller university town. Uniplex relationships, however, are usually not as strong as multiplex ones. A particular advantage of smaller university towns is the faster acquaintance with fellow students.[5] There you not only meet at the university, but also more often in your free time, for example in the pub. This makes smaller cities more attractive in terms of getting to know other students than large universities. This is true, even though the latter actually have more to offer, as they enable a broader study.

We Do Not Know How the Circumstances Work

If I summarize this basic assumption once, it becomes quite clear to what extent factors that one can hardly influence oneself and that one does not even perceive, influence the formation of relationships. From the perspective of each individual, it then appears that one is possibly lonelier in the larger city. Perhaps the students blame themselves for this. In fact, however, individual effects such as frequent loneliness are a result of the organization of studies, over which one has no influence. The other arguments mentioned also go in a similar direction. As a rule, we do not understand the structures that co-govern us at all. These are namely beyond our perception (the experience). For us, getting to know another person then appears as a coincidence. However, this coincidence is by no means something that arises from a special chance. One could say, it is a kind of fate. The underlying mechanism could be described in a modification of the term coined by Adam Smith as a kind of "invisible hand". The arguments as to how the structure of relationships influences us will be continued in the following assumption.

[5] Choosing a Study Program: Advantages of Small Universities—SparCampus.de, https://www.sparcampus.de/blog/studienwahl-vorteile-kleiner-universitaeten/ (11/27/2023).

Assumption 6: The Structure of Relationships Limits Us

This assumption is about the specific restrictions that the structure imposes on us. This was in a similar form already the subject of the previous basic assumption. Some relationships lead to a dead end, while others provide us or a group with a lot of opportunities. But let's just take a closer look at it.

Cut Off from the Rest of the Network

Not all resources of the network are accessible to everyone. On the one hand, this is the case because of the structuration, which restricts the possibilities of forming relationships, on the other hand, the structures are sometimes such that some nodes (here we mean people) are either cut off or only have a fragile connection to the rest of the network. A fragile connection breaks quickly. Anyone who is in such a place in the network, is generally in a precarious situation. This affects, for example, the social integration in the network and possibly also the flow of information that reaches one.

We would talk about a fragile connection, for example, if a part of the network can only communicate with the core of the entire network

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through a single person. If this single mediator drops out, then a whole part of the network loses access to all others. People who establish such connections are therefore very important. In network research, such connection points are given great attention. This is done, for example, by developing so-called Betweenness measures (Freeman 1978), with which such connections can be evaluated. On the one hand, it is possible, with the centrality measure Betweenness, to determine which people maintain such endangered connections. On the other hand, with the measure of Edge-Betweenness, there is a possibility to identify particularly important relationships in terms of the cohesion of a network component.[1]

Often, an individual can hardly do anything to regain connection with the other parts of the network. For example, when my grandmother died, I saw large parts of my relatives for the last time. I knew this part of the relatives through their visits to my grandparents or through parties to which they were invited. After Grandma's death, however, there was no longer a direct reason for a meeting or their visit to us, which I still somewhat regret. But I myself never had such a strong relationship with these people that I would have sought contact on my own. The result is similar to the experience one has when couples separate. After a breakup, the friends of friends also reorganize themselves. Depending on which part of the couple one is closer to, the relationships of one or the other partner are lost to us. We no longer meet these people at parties, for example, that are organized for birthdays.

Relationship Prohibitions

Structures of relationships also play a role on other levels, namely as limitations of possibilities. Numerous norms in society contain relationship prohibitions. The song "Spiel nicht mit den Schmuddelkindern" ("Don't play with the ragamuffins") by Franz Josef Degenhardt is perhaps still in the ears of some (probably older and German) people. It expresses much more than just to say that the children of the better society should stay away from

[1] A component is referred to as a part of a network that is connected. If a network consists of only one component, there are no isolated nodes and no isolated subnetworks.

the poorer part of the population. In part, parents move when they would otherwise have to send their children to a school with poorer or migrant children, which then results in a segregation of the population in the city. In the end, the cities divide in such a way that relatively homogeneous neighborhoods emerge. As a result, for example, the poor and marginalized live together. The better-off also find themselves in a neighborhood with similar people. The same applies to marriage rules: Here too there are still demarcations between different social strata and groups (Teckenberg 2000). Even if there are no explicit rules and most of us believe that these are love marriages. This not only affects religiously motivated limitations, but also the marriage between partners from different social strata.

However, it would be very important for mobility in society that contacts between the different layers of society are promoted. Only in this way can the poorer learn the soft skills that are not taught in school, but are necessary for social advancement.[2]

Why We Never Cross Paths with Some People

The importance of structuration was already addressed in the previous assumption. Here it means that certain circles of the population hardly meet. This happens because there are few intersections between the social circles (including education, profession, and leisure). Where one is at what time is mostly determined by which part of the overall network of a society one belongs to. In addition to prohibitions on socializing, this also results in different possibilities of meeting. In summary, this means that not everyone has the chance to come into contact with everyone else.[3]

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[2] We report on the idea of institutionalizing contacts between different layers in the Aschaffenburg Youth Study (Stegbauer et al. 1998). Information on culturally conditioned behavioral differences can be found in Bourdieu (1992).

[3] Judith Kleinfeld (2002) has described, using the example of Milgram's experiments, that there were indeed problems in overcoming social barriers. In Milgram's Small World experiments, a specific person in a distant city was to be reached. This was done by sending the letter to an acquaintance who was closer to the target person. This person in turn sends the letter on in the same way, etc. In variations of the experiment, black people were included in the USA in addition to white people. Thus, letters that were addressed from whites to blacks (or vice versa) arrived much less frequently. See also the discussion in assumption eight on the cognitive structure. There I deal explicitly with considerations on Small Worlds.

However, bridging normally disconnected areas of the network is also particularly important because it prevents society from being torn apart too much by these mechanisms of divergence. From another perspective, one could also say that the different perspectives and information that circulate in the different parts of the network cannot otherwise be exchanged. Mediators who can bridge the different areas are, if there are only few connections to certain parts of the overall network, able to control the flow of information. So there is an inequality in terms of the distribution of information, which can be described by an analysis of the structure.

When diversity is discussed, it is usually about the equal participation of people who would otherwise have unequal opportunities. Interestingly, less attention is paid to social inequalities due to different origins in the vertical location (class or layer) of society, although this type of inequality is also considered one of the dimensions of diversity.[4] From the perspective of network research, diversity stands for social, cultural, or information resources, which can be ensured by the diversity of people in a network.

Long-Term Structures: The Decisive Factor Is When We Are Born

When we talk about diversity, we can also address another topic at this point, which we usually don't notice in everyday life. Recently, however, it has been discussed more often in public, also in the sociological feuilleton (Bude 2024). The talk is of generations, such as the boomers, to which I also belong. So, diversity of origins was not part of the experiences that I could have made during my school time. This applied at any rate to the village and later the small town where I went to school in the 1960s and 1970s. It was only during my apprenticeship that I came into contact with people from other countries, because they were

[4] The dimensions are usually defined as follows: gender, sexual orientation, age, ethnic origin & nationality, religion & worldview, disability, social origin. Diversity Dimensions—for Diversity in the Workplace (charta-der-vielfalt.de) https://www.charta-der-vielfalt.de/fuer-arbeitgebende/vielfaltsdimensionen/ (11/27/2023).

also training in the large chemical company in Germany. This continued at university. In my youth, there were no vegetables like zucchini, eggplants, and even bell peppers were rare. I didn't know pomegranates and mangoes. Many of the fruits were brought by migrants, which greatly enriched our culture, an effect of the increased diversity through immigration.

A generation later, my children—now in the big city—have grown up quite naturally with others of completely different origins and are of course friends today. This allows them to learn much more about cultures than was the case in my generation. The Boomer cohorts were strong in births and it was much harder than today to establish oneself in terms of educational opportunities and in professional life. Because we older people will soon retire, or are already largely in retirement, additional opportunities are opening up. I was recently surprised when a sociology student told me that he had immediately found a job in the controlling department of a large bank after his studies. Now, the issue of generations is not usually the subject of network research. However, I wanted to mention it here because it is also part of the structures that are not immediately perceptible, and yet they are of great importance for our lives.

Depending on when you were born, you experience different things. Depending on when you grew up, you get to know contemporary history on the side. Some of my generation (including me) are surprised when students no longer recognize Franz Josef Strauss (an important politician in Germany in the 1960s to 1980s, leader of a governing party and Minister-President of Bavaria, after whom Munich Airport was named) in a picture. This just happened to me when I showed such a picture to my student teachers. Not a single one of the approximately 40 present recognized the person depicted. However, we easily forget that what seems completely normal to us older people would have to be explicitly learned from books or documentaries by today's students.

What is described here stands for so much: the opportunity to travel, the technology one grew up with, sports one could choose. But it also stands for the fear that the generational contract no longer works and that the pension insurance (In Germany, pensions for older people are paid for by those in employment) has become obsolete at some point. But who in the younger generation cares about retirement? What I want to say is, it's not just time and space, it's also the generation you belong to that shapes structures.

So, you are thrown into a situation at birth that you then have to deal with. The date of birth determines who you can come into contact with, and thus also what experiences are possible. You learn from experiences.

Inequality Is Reflected in the Pattern of the Network

A typical pattern that repeatedly emerges in network research in connection with inequality is the so-called center-periphery pattern (Stegbauer 2001; Stegbauer and Mehler 2020). You can imagine it like this: In the center are people who connect the periphery with each other. The periphery itself has no way of directly relating to each other. In geography, this means that the periphery is usually connected to the center. If you want to get from one place in the periphery to another by public transport or via a highway, this usually only works if you take the route via the center. A similar constellation is also found in the social sphere, where there are people who have many contacts and are therefore in the center.[5] People who have significantly fewer relationships always encounter someone with many contacts in communication. It is not possible to get out of one's own small circle in any other way. Feld (1991) explains the paradox that our friends always have more friends than we do.

Central people have a position that provides them with more resources than is the case in a peripheral position. Therefore, centrality is often associated with social capital. Someone who occupies a central position would then be able to control the flow of information. Therefore, centrality is interpreted as an individual characteristic. The problem, however, is that centrality always depends on the overall constellation in a network.

[5] Of course, centrality is not only measured by the number of contacts, their structure also matters—and this also applies to center-periphery structures. Basic centrality measures are: degree centrality, where it actually depends on the number of contacts; closeness centrality, where centrality is defined by the fact that the other nodes are on average not far from any other node; betweenness centrality, where as many shortest paths as possible in a network run over a node (Freeman 1978).

It is therefore a property that does not belong to a person, but that results from the structure of the entire network. Just two examples to make it clearer what is meant. Social psychologist Muzafer Sherif (1956) conducted experiments, among others, in a holiday camp for young people. It was first asked who were best friends. The team of supervisors separated those who named someone else in the group as their best friend and assigned the two to different groups. After the groups had some tasks to complete until the groups had formed, they were to compete against each other in sports competitions. Not much was left of the originally best friends. The young people were so integrated into their respective groups that brought relationships no longer played a role. One can say that with the change of context, the relationships and thus the centralities of the participants also changed. Perhaps even more clearly is the research by Trier and Bobrik (2010). These two examined the email data that had to be published after the bankruptcy of the Enron corporation. One result was that the central people before the bankruptcy played no role after the event and instead other people came into a central role. Here too, the central position was no longer after the change in context. Chanterelle is worth more. This should make it clear how problematic it is to consider a measure, which was determined in a total network, as a characteristic of a person. In both examples, it is changes in the structure that significantly limit the actors in their possibilities.

Central people are often very popular. This leads to quite a lot of people wanting to be friends with such people. Although we also repeatedly find an unequal distribution of contacts empirically, for example, regarding different sexual contacts (Liljeros et al. 2001) or on the internet (Stegbauer 2012a), mutual relationships always involve maintenance effort. This applies less to follower relationships; these can be one-sided and only need to be maintained to a lesser extent individually. Those who, due to the many friends, cannot establish contact with the particularly popular ones, settle for relationships with less central people. Here again, it is capacity problems that limit people's chances of establishing any relations and thus lead to the formation of relationship patterns. Since group sizes (see basic assumption three on numbers and structures) are subject to capacity restrictions, a structure forms by itself. A group larger than five or six people therefore breaks down into smaller units. This applies completely when we are dealing with typical sizes, such as school classes or seminars at universities.

So one can say that depending on where you are in a network, very different resources are available. This applies, for example, to whether you hear something and who you are in a relationship with. Both depend on who you know, who in turn can establish connections to other areas of the network.

Assumption 7: Our Own Relationship Arrangement Is Determined by Others

This assumption also deals with something that is not obvious: Others determine something that is quite intimate. It's about things that we negotiate with our respective partner. It's about how our relationship arrangement is made up. So if you argue with your wife or girlfriend about who takes out the trash, who clears the dishes, or who negotiates with the car repair shop, no other people are present at that moment. We argue and we love each other first and foremost as a couple. So how can it be that others also have a say? That is the question at this point and it should also be answered immediately.

The answer can be found, for example, in a study by the ethnologist Elizabeth Bott, who, originating from Canada, dealt with families in London. Her study became a classic not only of network research, but especially in family sociology. It shows us how it works that our own relationship arrangement is determined by others (Bott 1957). Although you actually negotiate the individual components of domestic division of labor with your partner, the result is not independent of the structure of relationships with friends and the families of both partners.

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Who Decides Who Has to Clean at Home?

For example, if the two partners met in a close circle of friends, i.e. they mainly had common friends, this had consequences, at least according to Elizabeth Bott. The negotiation of the division of labor was very much along the norms valid at the time, according to which the spheres of activities of the two partners in the household were strongly separated from each other. The group of friends therefore determined who had to do what.

If the spouses did not find each other among friends, but in different contexts, friends played a significantly smaller role in negotiating the division of labor. One consequence was that the gender clichés valid in the 1950s played a much lesser role in the couple relationship. The norms had less power because the entire circle of friends did not stand behind them. In these couples, the division of labor in the household was significantly less.

In my opinion, we can draw different lessons from the research of the ethnologist Bott. First of all, we can say that even where we argue with our friends or partners, we do not do it alone. It may be that at the moment when you have a beef with each other, none of the friends, parents or children are present; nevertheless, they play a big role in the argument. It probably even applies to romantic love, which we say can just fall anywhere, that societal rules apply. We know that romantic love is something that has not been around for long in partner finding. It is a phenomenon of modernity, which seems to be enforced more by narratives on the one hand, but significantly more by media such as films. The media show what love looks like, how to celebrate weddings romantically and make it the best day of your life. In the past, people said that "love passes, but acres persist". The saying certainly comes from a time when more people were dealing with income from agricultural earnings. Today, one could compare the amount of land with the level of income or the value of the stock portfolio. Professional prestige and standing in public, be it as a semi-silk rock star or as a political star, also play a role in partner choice. Even if the bond for eternity does not always play a role. Apart from romantic love, there are numerous other factors that determine who is attracted to each other.

Wedding Celebrations

One could argue beyond what has been written so far, that such views, indeed behavioral norms, materialize in couple relationships. The groom-to-be gets down on one knee for a marriage proposal or what story do you know about it, dear readers? No wedding without a bachelor*ette party. The best way to celebrate is in a castle or at least in a very good hotel restaurant. There are always rules of behavior involved, even if we cannot directly perceive them because they seem completely normal and natural to us. All of this is decided by the couple. But the decision also depends on what the couple experiences in their network. Are you often invited to farewells from the still unmarried state? At whose weddings are you a guest? How do the others in the social circle, in the village, the small town or the big city celebrate? What expectations do parents and future in-laws have about how a wedding should be celebrated? I have collected these questions at this point in the book to illustrate with another example than the division of household work, how much the expectations of others influence our decisions. Even more important is how one imagines what others expect. So it's about the expectation of expectations, which also guide you at least. Satisfying these expectation expectations in the case of marriage is not just a matter of the couple, the parents, the in-laws but certainly also the siblings and friends are involved in negotiating how best to deal with it. Some time ago I wrote something about an observation of a golden wedding in a village (Stegbauer 2012c). When I was asked at the time what I was working on, quite a few people told me about the problems at their own wedding. These arose, for example, because the woman came from a different region in Germany than the man. The ideas of the parents and in-laws were hardly reconcilable. They argued and negotiated how the wedding should proceed. The stories that were told to me at the time left me with the impression that it was much less the couple's celebration than that of the families. These often also have to pay for the celebration, which we know for sure is usually not cheap.

Even Together We Are Not Alone

Another lesson from Bott's study is that we need to be careful when analyzing isolated parts of a larger whole. We see that it is not enough to just look at an isolated relationship, just as with the individual, the embedding of relationships must also be taken into account in the considerations. Here too, social reality is established behind our backs, even if we can understand the explanation for the analysis, this is hardly the case at the moment when we argue, and this also applies to the occasions when we arrange ourselves in consensus. This happens in negotiations with each other. Usually, it is not the relationship context and the individual or the context and the couple that are present, but the two partners are alone with each other. Only they experience the situation and only they can provide information afterwards. Asking them about the conditions of the context would make little sense. They would only say things about the respective partner. And yet the embedding in the respective circles with their views is always (co-)present and thus also decisive for how the negotiation proceeds and what the result looks like.

Even if it has not been completely successful in all subsequent studies,[1] to confirm Bott's study through further research, her research does point the way to an expanded network thinking. It must be known that Bott worked qualitatively and therefore could only take into account relatively few cases in her study. We thus learn from her research that there are practically no isolated relationships. So if we argue, as I do here in the third basic assumption about micro-constellations with two, three or more people, then this consideration is actually too short-sighted. Actually, such research must always be done taking into account an extended context (even if, for example, an extension of the field of study is not possible for reasons of research economy). Others intervene more directly in relationships if they get the impression that something is going wrong. This can be the case if the impression emerges that one person is

[1] Here, the transformations of norms regarding the division of labor within relationships may play a role. The classic division of household tasks today rather causes observers to It causes alienation and is more likely to be found among older people. Certainly, the change and how this change became constant, also the friends are of importance, who can still interfere in the relationships as they did a few generations ago.

exploiting the other and thus violating the social rule of reciprocity (Stegbauer 2010).

In the previous basic assumption, we already thought about marriage prohibitions or commands. For those who do not marry: Such unspoken rules apply not only to marriage or to the wedding, the celebration of marriage. It is not much different, of course, with non-marital partnerships and it does not matter with which sexual orientation the partners find each other. Relationship prohibitions (or let's perhaps better call them relationship reservations) also occur, for example, when the parents do not like the partner. It can then be argued that this person does not suit the son or daughter. It is probably meant more that the person does not suit the parents. The explosive potential that lies in such conflicts actually threatens the partnership. It can happen that the relationship between parents and children suffers as a result. When the children themselves have offspring, they are often dependent on the grandparents. As society is organized, these are important to support their adult children in caring for their own offspring. Quite apart from the influence Outsiders engaging in the couple's internal arrangement, it becomes apparent at this point that the survival duration of such relationships, which are not approved by others and cannot be embedded in a further relationship ecology, is greatly endangered.

Assumption 8: What One Knows About the Network Is Crucial for Behavior: Cognitive Social Structure

The cognitive social structure (Cognitive Social Structure) (Stegbauer 2012b), as research calls it, arises from what people observe about relationships around them, how they interpret this observation and what they know from the stories of the people around them about the relationships. So it's not about the direct relationships or the part that we have in mind. That's not it yet alone, this also includes knowledge about the relationships of others, so the relationships of our relationships. Even more, we also include the relations of people to whom we have no direct or at most super weak relationships, so those of strangers, but we can observe them. This means that only those relationships that we can perceive influence our conscious behavior. With the term "conscious" behavior I distinguish myself in this assumption from the relationship effects that take place behind our backs and therefore cannot "consciously" influence our behavior.

In the assumption considered here about cognitive structures, it is for example about who you tell what or who you deal with. So you don't usually associate with friends of people you can't stand (which can also be explained by the theory of structural balancing). Such a decision is not only made by oneself, but one is dependent on the judgments and

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prejudices of others who also make such judgments based on their assumptions about the relationships of us. For example, if you are assigned to a certain circle of friends or colleagues, then it is not in the hand of oneself whether one makes a friendship beyond this circle or not. You are assigned to a camp and thus possibly excluded from the sympathies of those in another grouping. This happens simply because the others think that you yourself are in a certain way with those of these disliked people in connection.

How Do We Know Who Is in a Relationship with Whom?

But how do we know who is in a relationship with whom? On the one hand we observe this. These two always hang out together and those form a clique that always meets at a certain place (Freeman and Webster 1994). In the example of Freeman and Webster, it is about the observation of surfer groups on a beach in California. Those who were seen together again and again on a section of the beach were considered by the observers as belonging together.

On the other hand, we learn something about the relationships of the people around us when we talk to friends and acquaintances. Then there is gossip and particularly about the misdeeds of the common acquaintances exchanged. A particularly popular topic of conversation is the violation of norms, so when others have not behaved within the range of expectations. Also affairs or assumptions about them are often subjects of stories that are told to each other. Conversations of this kind are important because they help us to locate our social environment and ourselves within it can. They are also significant because in them the permissibility or the violations of accepted behavior are negotiated. In the here treated context, however, it is about learning something about the relationships of others through such stories.

However, we also know about the friends of my friends. We are told what the friends and acquaintances of my friends do. The rule of transitive closure should now lead to that I also get to know the friends of my friends at some point and so to also make contact with these. However, this is not always the case, at least not when the friends of my friends move in other contexts, so they belong to other social circles. Under these circumstances, we may never personally come into contact with each other, but we know about each other and that possibly also their relationships.

How Can We Remember the Many Relationships?

With an increasing number of people in the network, the possibility to enter into relationships with each other grows quadratically. Being embedded in a sociality also means knowing something about these non-own relationships. One already has problems remembering all individual people, having the relationships between such individual people at hand, exceeds human cognitive capacity (Dunbar 1993, see also the basic assumption three about the rules of structuring with increasing size of sociality).

Fortunately, when orienting within the social space, it helps us to can orient ourselves to certain patterns. This makes it possible to keep a multitude of relationships in memory: Who hangs out with whom or belongs to the same clique, is important information. It is a simplification of perception. The memory is relieved when we assume positive mutual relationships for all members of an observed group. Within the already mentioned theory of structural balancing, this is referred to as: The friend of your friend is your friend. This simplification is helpful to manage the social structure around one cognitively, but it also leads to typical errors (Stegbauer and Rausch 2006; Stegbauer 2012b). These errors include the imagining of relationships that do not exist in the observed constellation, or the overlooking of relationships where they do not fit into such typical group observations. On the whole, however, the advantages of such mnemonic rules should outweigh the disadvantages of incorrect relationship assignments. The effort to remember all the relations of all individuals separately would simply be too great. One can theoretically derive why the group members should all be positively connected to each other. The rules for this are transitivity and structural balancing. What both basic rules mean has already been mentioned above.

In addition, groups also have emergent properties compared to individual relationships. An example of this could be derived from structural equivalence, which plays a role in the network analytical method of block model analysis. There, those participants who maintain the same (or similar) relationships with each other and with the other people in the network are considered structurally equivalent. This procedure, which groups people into clusters (the blocks) based on these similarities, assumes that the participants are interchangeable due to the assumption of equivalence. This means that everyone who is in a block after the analysis is considered the same, at least in terms of their relationship pattern. This procedure works very similarly to the assumptions we make in everyday life about groups we observe when they gather at a certain meeting point. Not only do all in a block have the same relationship to all others in the block, but the relationship of all members of a block to other blocks is also the same, at least according to the assumption in the model. Assuming that the model has something to do with reality, it also explains why a person is equated with all others if one does not like some of those assigned to a block. Why this can be problematic, I described a few paragraphs earlier.

Where Does the Social Horizon End?

Another question is how far a person can actually see over the relationships of their relationships, etc. (Friedkin 1983). How far means how many links in a chain of relationships we can look at. So we know something about the relationships of those with whom we ourselves are in a relationship. We learn this when they talk about what they have experienced with whom. Sometimes these relationships are also directly the topic of conversations. Beyond this, visibility decreases and is limited to knowledge of a few prominent contacts. However, this does not mean that information cannot flow through such multi-stage relationship channels, although the individual is not able to perceive the entirety of the information channels. A nice example of this is the Kula Ring observed by Malinowski (1984, first 1922) on the Trobriand Islands. Malinowski describes that in an archipelago near Papua New Guinea, the men maintained friendships with people from neighboring islands. The friendships were established and strengthened through exchange rituals. There were fixed rules for what could be exchanged. For example, if you traveled north, you gave your friend a bracelet made of shells. Later, you received a piece of jewelry, a shell necklace, from the same person in return. Since the jewelry was considered valuable, it was possible to recognize the pieces by their special features. The inhabitants of the islands could not explain how the necklaces and bracelets they had traded northwards reappeared from another direction after many years. The ethnologist Malinowski, on the other hand, claimed to have clarified this exchange circle between the islands. He thus knew something about the more far-reaching relationships of the islanders, which they themselves could not overlook. According to Malinowski, for the inhabitants of the archipelago, this was an incomprehensible and therefore mystically charged fact.[1]

The World Is so Small

These considerations lead to the ideas of the small-world phenomenon, which I do not want to dedicate a separate chapter to here, although it is widely discussed in network research. In fact, these are very important ideas in this context. The thoughts named under the keyword of the small world tie in, among other things, with the experiments started by Milgram (1967) on this topic. It should be noted: These are not his experiments on obedience to authorities,[2] which have perhaps become even more famous in another context. Initially, the small-world experiment was about people from the Midwest trying to reach another person through acquaintances. These people should be known at least on a first-name

[1] See also Stegbauer (2012b).

[2] Milgram is best known for his experiment on obedience to authorities (Milgram 1963, 1983), in addition to the topic discussed here.

basis and their address had to be known, of course. By each person who received the letter or folder passing it on to another person, the idea was to get closer and closer to the target person. In fact, the target person was reached. At least some of the test participants succeeded. Overall, however, the success was quite meager. The few letters that arrived at the first experiment were passed on through about six different steps. This led to the idea that all people in the world are only six degrees apart. There were problems with this type of experiment. Initially, very few of the letters sent arrived, and it also turned out that if the target person was in a societal group segregated from the starting group, it was difficult to achieve such a person. This applies, for example, in the USA for letters between black and white population groups (Kleinfeld 2002).

The average number of necessary steps seems very small at about six, considering that we already know something about the friends of friends. Thus, we are already familiar with a few relationships over two, sometimes even three steps. More detailed information on research in this field can be found in Kleinfeld (2002) and Schnettler (2009). Models have been developed in this field of research, especially Watts (2003) has stood out. He devised a model that makes it possible to explain the relatively short paths between all people in the world. He combined two different network models: First, he assumed a model that generates random connections (Erdős and Rényi 1959). Such modeling is typical for mathematicians' thinking. If you create random distributions of edges in a network, you can measure empirically found structures against it. Systematic deviations from random distributions then suggest that the connections are subject to regularity. In principle, all statistical tests work in such a way. Now we know that relationships usually do not arise randomly, but that their establishment follows certain rules. The second model introduced by Watts is based on this. Roughly speaking, he applies the rule in it that we all know our neighbors (or at least some of them). This is not always true in this form, especially for cities. Nevertheless, it is an approximation to reality when we think, for example, about the condition of the possibility of coming into contact with each other, i.e., structuration. One could imagine such a model as a neighborhood model.

In the neighborhood model, it would take a very long time to reach people who are far away. You could only ever reach the neighbors and possibly their neighbors. By combining some random connections with the neighborhood model, these long chains can be significantly shortened. This can explain why the paths are so short. But to what extent do random connections have anything to do with reality? Well, Watts experienced this firsthand. He is from Australia and lives in the USA. So he is able to establish connections between America and Down Under. In a similar way, we can imagine this with our colleagues whose grandparents, parents or even they themselves have already immigrated to us. They too are links to their societies of origin. This shortens these potential chains that lead to other countries. Because our society is an immigration society, the rest of the world is thus moving significantly closer to us. The paths mediated by relationships are thus shortened. Interestingly, in many more extensive networks, these are always around a similar small value, namely close to the average of six steps. This suggests that we live in a pretty small world.

At this point, one should also say something about the "randomness" of mathematicians. Some things have already been said about this in the book. The random connections introduced by Erdős and Rényi (1959) are by definition really random. But the example of Watts is definitely not. It may be a coincidence from the perspective of experience when you meet someone abroad with whom you have a mutual acquaintance; however, it is certainly no coincidence that Watts, for example, went to the USA to do research. The same applies to immigration societies like Germany. Those we meet here who have relationships across borders do not have these contacts by chance. They follow the waves of migration that were triggered by various circumstances of world history. People came after the second world war as displaced persons or refugees from Poland or Czechoslovakia, later labor was recruited. Others fled wars or persecution in their home countries. Today there is an exchange through economic relations with other EU countries. The chance of finding a target person is therefore not randomly distributed, but depends on political initiatives or crises in the world. All of this is ignored in the transfer to Watts' general model. This has to happen because including the actual causes of migration would make the model too complex. One would rather have to think about things like inequality. The latter, however, is also a hint that not every person is at the same distance.

What this means is a question that haunts me: Are the paths really so short? Let's do a thought experiment and oppose this to the considerations of mathematicians. How many people do we know? How many could we reach in case of participating in such an experiment? We must know the people well enough and we must know their address or at least be able to find it out easily. When I ask students in seminars how many people they know, I always get very different numbers. One student says 200, the next 500. After that, no one else dares to name a number that is significantly smaller. It would also be important to subtract the overlapping acquaintances. If we look at close friends, there are many who we know together. With weaker relationships, the proportion of mutual acquaintances is lower. At some point, I came up with the idea of calculating the whole thing. I did this with the number 27. How did I come up with this number? I don't remember exactly, but there was a reason, which I didn't write down. So if we assume that on average everyone only has 27 non-overlapping relationships to each of their relationships, we reach a number of contacts between 6 and 7 steps that exceeds the entire world population. This is something we can imagine as People with our decimal system based on the number of fingers can also hardly imagine it. The chains seem very short to us, especially since, as already mentioned, we sometimes even learn something about the friends of the friends of the friends, so at some points we can overlook three of the six steps. These three steps seem to us as if we already have half in view.

But let's do the math:

1. Step = 27
2. Step 27 * 27 = 729
3. Step 27 * 27 * 27 = 19,683
4. Step 27 * 27 * 27 * 27 = 531,441
5. Step 27 * 27 * 27 * 27 * 27 = 14,348,907
6. Step 27 * 27 * 27 * 27 * 27 *27 = 387,420,489
7. Step 27 * 27 * 27 * 27 * 27 *27 *27 = 10,460,353,203

With seven steps, we would already be able to reach far more people than the entire world population. The increase between the sixth and seventh step is so large that it practically encompasses all calculations. This is also the reason why almost all successful experiments and calculations come to roughly the same result: something with six and some decimal places. Unfortunately, such a statement is very imprecise, as the statement moves between half the population of Europe and more people than live in the entire world. The "small" difference only shows how little we have such calculations cognitively under control.

The underlying problem, however, addresses exactly this: our cognitive limitation. Powers, with which one must calculate here, are difficult to understand with the help of our everyday thinking and not understandable without mathematical abstraction.

If the Organization Knew What the Organization Knows

Why is it actually sensible to connect these considerations about the reach of the knowledge of relationships with those about the small world here in one assumption? Well, the considerations about the small world do something with us, the other people seem much closer to us when we have the impression that we are not far from them. Granovetter (1982) even considered whether this fact helps us to overcome the alienation in modern times.[3] For a while, it was very popular to think about such things (Stegbauer 2008), and indeed it has an appeal (a play was even published on this, which was later also filmed, Guare 2010).

In addition to this popular thinking, one can also imagine really serious applications. The knowledge about the relationships of others does not stand alone. We know a lot about those who are reported to us. We know about their failures, but we also hear when they know prominent personalities. To some extent, we also learn something about their competencies. If you need a doctor or a craftsman, you ask in your circle of acquaintances. Maybe you get a recommendation. In other words, we also learn something about the professional knowledge that others possess.

[3] In fact, he did this in the first draft of the essay on the strength of weak relationships, which was published in 1973. The journal did not want to publish the first draft as it was.

If we transfer this to organizations, it becomes clear that this whole area of cognitive social structure can be enormously important there. Let's imagine a project is initiated. Something new is to be developed, a machine for example or a new form of cooperation in the office. Then you should consult those who are familiar with the organization of such a project. You put together working groups in which you rely on experts in the fields that are necessary for success. If we think about how much knowledge the employees, especially in large companies, have, a large part of the knowledge for the project is actually already there. But what is missing is the knowledge about who can all demonstrate the required expertise. So how do you get to the right people? If this task could be solved by finding out that I reach someone who knows something specific, that would be very useful from the organization's perspective.[4] There are also attempts in companies to solve this problem. So organizations have lists in which members can register their expertise. We have something like this at our university too. But in my impression, it is rather used for press inquiries. Another possibility, which is not applicable in Germany due to data protection regulations, are automatic analyses of stored work, such as emails. If you could find out in this way who knows what, then such databases would be helpful for solving the mentioned problem.

[4] I owe this aspect to personal exchange with Stefan Klingelhöfer, who knows such questions from his previous practice as a manager in a very large company.

Assumption 9: The Structure of Relationships Explains the Behavior and Attitudes of People

This assumption states that one can explain a person's behavior based on the relationships in which they are involved.[1] Studies have become known that deal with behaviors that are physically harmful, such as smoking or the fact that people suffer from obesity. Something else, which also has to do with well-being, was also investigated by the same two researchers. This is about whether people are happy (Christakis and Fowler 2007, 2008). Apparently, this is also contagious. We ourselves have found that this applies to consumption habits and preferences (Stegbauer and Rausch 2014; Stegbauer 2016, 2024) for certain goods, for example: All of this depends on people's relationships.

Licking the Plates in the Restaurant

If this is the case, it suggests that behaviors are passed on through relationships. Of course, the reverse is also true: If someone behaves completely out of line from the perspective of a group or social circle, it would

[1] This is not a deterministic relationship.

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be difficult to build a relationship with this person. In this case, the various everyday cultures diverge, they simply do not fit together. In this case, the relationship and the associated adjustment in behavior can no longer be negotiated individually from person to person. A person who does not adhere to the usual behavioral habits will hardly be accepted by the others in the same circle. An example? Although it is not so easy in very good restaurants to behave in such a way that one is not tolerated, one can still misbehave.[2] So, in a starred restaurant, it is not necessarily a problem to lick the rest of the sauce from the plate with your finger, but you should not take the whole plate in your hands and lick it with your tongue. Perhaps this behavior would even be taken as a compliment with a wink, but it is unusual to do so. When empty plates go back to the kitchen, it is a good sign of the chefs' performance. Worse than dipping by hand is disturbing the other guests by talking too loudly. Even less appreciated is when one does not treat the staff or owners with a certain respect. It is quite possible that one will then be admonished or even politely asked to leave. Incorrect behavior occurs so frequently that there is not enough space to name all of this here (so Moissonnier in the interview).[3] Nevertheless, there are also considerations (Mische and White 1998) that can appreciate misbehavior in particular. At home, as a child, you can get used to licking the plate with your tongue. This will not shock anyone (except the parents the first time perhaps); in public, however, this is considered improper. But if you did it in the restaurant, it would open up a possibility to change the rules. The difference in behavior appropriate for the situation offers a chance to renegotiate what is correct for the type of situation—so Mische and White anyway. One could then also say that the "wrong" behavior at the same time questions the rules of this type of situations.

This questioning then opens a "window of opportunity" for a renegotiation of the rules. Perhaps the case of plate licking,[4] as long as this

[2] Interview with top restaurateur Vincent Moissonnier about Prolls in the restaurant: Frankfurter Allgemeine Sonntagszeitung, October 15, 2023, No. 41, p. 15.

[3] See previous footnote.

[4] The case described is not entirely constructed, because my son, then perhaps 5 years old, actually licked the leftovers from his plate in a restaurant in France, under the observation of the table neighbor. His reaction fluctuated between amusement and urging the parents to better educate their child.

happens at a restaurant table and is observed by few, cannot yet be seen as revolutionary. However, if you imagine a guest getting up, loudly praising the chef, and then bringing a plate with an extremely tasty dish to his mouth, this could also become a behavioral model for some other guests. Perhaps some take the model with them, adapt it to the situation, so that this behavior becomes normal for a certain type of restaurant. In the long run, one could even imagine that as a result, dishware compatible with licking would be developed. At some point, it would be part of good manners for guests to behave in this way. It would then actually be an expression of appreciation for the culinary art cultivated in this house, especially since the empty plates are already a better sign of whether a dish is popular with the guests than the question of whether it was enjoyed. This case is unlikely to occur, as the forces of persistence of culturally ingrained behavioral norms are relatively large. Especially at the beginning of such a upheaval, the protagonists would have to muster a lot of courage and publicly celebrate their rule violation at least at the beginning more often. This would be necessary to penetrate the network of restaurant visitors and encourage them to imitate. My imagination is getting a bit carried away with me, but what needs to be noted at this point is that violations of behavioral rules that are situation-bound can always work in two directions. On the one hand, the norm violations can be sanctioned, i.e., the other people turn away, talk about the strange faux pas, or even express their disapproval; on the other hand, such a violation could find recognition that provokes imitations. While in the first case the known rules are consolidated, the violation in the second case causes the network of those present to question the usual behavioral rules. Such violations should even have effects beyond the circle of those present in this situation, because those who experienced the incident are likely to tell about it in their circle of acquaintances, which would unfold a certain multiplication effect into the personal networks of those present.

However, the example of Moissonnier (chef of a bistro in Cologne with one Michelin star), the use of fingers in sauce uptake, is something that at least led to a change in behavior for us. We were with a couple of friends, after I had read the interview, in one of the best restaurants in Frankfurt. I told them that Moissonnier sees the finger dip as something that no one would condemn, especially since he sees this gesture, when he observes it in his wife, as something very beautiful, downright erotic. Well, said and done: We all had our fingers in the sauce residues on the plate several times during the evening. The example also shows, however, that there are people who have a different reach than we do in our circle of acquaintances. Such persons or their echo through a newspaper can contribute more to such behavioral changes than we as normal guests. We certainly enjoyed the relaxation in manners that evening.

What We Like Is Determined by the Network

The behavior and the transmission of behavior around food (also applies to smoking) was, as already shown above in this chapter, also empirically investigated (Christakis and Fowler 2007, 2008). The alignment of behavior in networks is explained by the fact that within relationships, behaviors regarding eating or smoking also spread. Interestingly, this apparently works not only in close relationships, but also over several chain links. So here, more than just the private report of an incident in a restaurant is likely to be effective. In any case, Christakis and Fowler were able to show that behaviors in networks are also effective beyond the relationship range that can be overseen by the individual members of a network. The similarity in behavior extended far beyond the direct relationships and a few more chain links. According to the researchers mentioned, relationships of relationships and their relationships still influence one's own behavior with a given probability. How this great range can be explained is not quite clear. But one could assume that behavior spreads by copying in networks.

We measured among students who ate together in a group in cafeterias that their brand preferences were sometimes very similar (Stegbauer and Rausch 2014). We asked at the time about preferences for brands of watches, cell phones, MP3 players (smartphones were not yet widespread at the time (2009)), jeans, sneakers, and cars. The agreement was above chance for all product groups and could not be explained by the differences in characteristics of the students. In other words, neither gender, age, nor the course of study had the same explanatory power as the network found at the tables. At the time, we knew nothing about the strength of the relationships and nothing about how the meal rounds came about—unfortunately, we did not ask about this in our first study of this kind. Some of these cafeteria groups form spontaneously, others are based on long-standing friendships between the students, and it is also possible that they are work colleagues who are employed at the university in some way. The first study took place in 2009, but we have asked the same questions in modified study designs several times and always came to similar results (Stegbauer 2016). This is very interesting insofar as students and employees of a university already represent too fine a subdivision in normal marketing considerations. Classic quantitative studies that do not capture relations, but do capture characteristics of respondents, are by no means able to show the differences we have found, let alone explain them. The gradation alone would by no means be sufficient for this, and the characteristics captured in such studies do not explain the differences that we have measured in real networks between the preferred brands (Stegbauer and Rausch 2014). The characteristics of the people who were found together at the tables, which can be measured in classic surveys, do not differ in a way that could have been clarified with this method. Nevertheless, the differences in preferences between the groups were quite large. This can only be explained by the relationships.

One can say that more than one process is at work here: On the one hand, we mainly get to know people who are similar to us. This mechanism has already been mentioned several times: It is structuration. In the seminar at the university, only highly educated people sit together. This cannot be changed, because a high school diploma or a comparable school education is a prerequisite for being present at all. Those who are present in the lecture also resemble each other in another respect, as they are (almost) all young people. At least that is usually the case. However, there are now also courses of study where younger and older people come together—at least that's what I was told about events in philosophy. The conditions for being present thus already explain part of the similarities. Such similarities between people who become friends are called homophily in network research (McPherson et al. 2001; Lazarsfeld and Merton 1954).

When those who are outwardly similar actually come together, another process begins, which I have also already described here. The development of a microculture begins immediately (see also the following assumption 10 about the emergence of culture in networks), in which those who are in contact with each other are involved. This development also has the additional effect that the approximation of the persons involved increases even further. McPherson et al. (2001) call this part of homophily, which comes on top: Inbreeding Homophily. This means that one becomes even more similar in relationships and also develops similarities in terms of taste and preferences for certain Brand products developed.

Why Do We Become Similar to Each Other Without Noticing It?

But how do relationships explain anything at all or what is behind an explanation through relationships? As already mentioned, the differences could not be explained by the characteristic of the course of study, although the subject affiliation also plays a role for preferences regarding clothing styles (as shown in Stegbauer 2024). So how does the convergence of favorite brands within the food groups come about? It's possible that preferences are discussed, but it's more likely that a kind of common style is formed. The development of such common styles is part of the formation of cultures. If these differ from table to table, we speak of microcultures (Stegbauer 2016). This means that in the situation at the table, you look at how the others dress, and you perceive what the others like etc. This is how the others then engage with themselves and the style of the others, who surround them, is transferred into the realm of the possible or even to the universe of possibilities, to be appropriately dressed. However, such microcultures are always also embedded in a broader sociocultural world. Although we could not find any differences according to subject areas in this study, we were able to do so in a later study. In this study, we photographed members of different subject areas and asked other students which subjects they would assign these students to. This also revealed differences between the clothing styles of the subject areas (Stegbauer 2024). This means that the styles found at the tables, which are developed in very small networks, must still be compatible with the larger networks in subject areas. Otherwise, we would not have been able to measure the similarities on both levels of consideration.

What applies to clothing may also be true for eating habits or whether one considers smoking to be okay, while this behavior is ostracized elsewhere. There are also indications that smokers tend to find each other. This may also be due to homophily (McPherson et al. 2001; Lazarsfeld and Merton 1954), but more likely because smoking is no longer desired in offices and pubs. Those who can't or won't quit find themselves outside the doors of the buildings and there is a certain probability that they will come into contact with each other. There is much to suggest that this leads to the formation of their own smoking networks. It is not far-fetched to assume that such relationships between those who always have to go outside, cross the usual relations. This means, they are likely to also include cross-departmental contacts, which would not have been established without the vice. In this respect, such relationships contribute to the spread of certain behaviors beyond the departments. Thus, they are part of the emergence of an organizational culture that transcends individual areas.

The convergence of behaviors is not all: Typically, variations would also emerge within the rule of behavior alignment. This can be explained by competition (called Pecking Order by White 1992 or Distinction by Bourdieu 1984). Exact copying is considered imitation, but orienting oneself to others and varying something, meets two things: the recognition among others, who are similar, and it is not considered pure plagiarism in competition.

Assumption 10: Our Culture Is Created in Networks

Those who are in a relationship with each other develop elements of their own culture in their interaction. We speak here of microculture. For this, only three arguments should be mentioned: (1) Through structuration, people are separated from each other. Only those who are at the same place at the same time have the chance to come into contact with each other or not. (2) By interacting with each other, microcultures are created, which are negotiated within the relationship. These microcultures are nevertheless sorted according to different types of situations. Each type of situation offers different possibilities for the application of negotiated cultural elements. That is, only cultural elements that fit the genre of the situation are permissible. (3) Even if one does not maintain a regular relationship, one is connected with those present at the same place at the same time through super weak relationships.

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Why We Always Only Meet Certain People

But let's look at the individual points one after the other: The phenomenon of structuration is partly responsible for the separation of people. Structuration, as I understand it (in reference and in my understanding of Giddens 1984), is the process that leads to us only being able to meet certain people. This is because we are at a certain place at a certain time. A certain regularity arises from the fact that most of us follow certain daily rhythms and are therefore usually at the same place at the same time. The daily rhythm is of course broken by the weekly division into workdays and weekends and to some extent also by events such as vacations or holidays in the course of the year. Due to this rhythm, public spaces are frequented by different groups of the population depending on the time of day: The early birds are those people whose working hours are divided into shifts. Then come the workers and craftsmen, who usually also start their work early. They are followed by students, who are finally replaced by employees. Many companies have introduced flextime. However, this does not fundamentally change the described scheme. Most people roughly stick to it when they plan their day. Even the newer trend of many people spending some days of the week working from home does not change much about the collective movement profiles. Anyone who has been on the subway around noon and has encountered many young people who have just come from school knows what I am writing about here. The mentioned groups almost never come into contact with each other in public spaces or in local transport. So not even when they use the same lines. It applies: When one group arrives, the other is already gone.

Culture Always Arises When People Come Together

Here follows the second argument, which refers to the assumption of the emergence of culture in networks. When people come together, they collectively form microcultures (Fine 1979). Culture does not mean high culture, but everything that happens in everyday life between people. In everyday life, we need knowledge about how to behave in certain situations. This knowledge includes this, but also values, norms, and interpretation possibilities of what is being discussed in the situation in which way. This can be called symbol understanding. All of this is collected in a cognitively ordered toolbox for cultural tools, (toolbox for cultural tools). According to this understanding, we carry the tools to deal with culture, so all of us in our own head with around. This is how the cultural sociologist Ann Swidler (1986) described. These tools are partly general, partly for certain types of situations specifically. They are used by the present and this application can be considered a kind of negotiation. Because how people interact continues in subsequent meetings with the same people often. The behavior from previous situations is usually recognized in subsequent situations, but sometimes it is also changed. Such microcultures are not set in stone, but can be (depending on the degree of their institutionalization) also change again. While the structuration is responsible for the possibility of coming into contact with each other, and thus also for a demarcation of one microculture from the other, the microculture that has formed, simultaneously affects the structuration again. Through the interplay of structuration and local microculture development—let's take regular meetings at a certain place as an example—those are already formally excluded, who cannot be present there.

What is meant by "types of situations"? Goffman (1974) speaks of frames as types of situations. Mische and White (1998) write about Network Domains. With some variation, these terms mean something similar. I myself also sometimes speak of different situational genres. It's about the fact that we associate certain types of situations with certain behaviors. When we go to a jazz concert, we behave differently than at the opera. To buy a car or just to look at such, we go to a car dealership. This situation there differs from that at the weekly market. A party at home with a fellow student is something different than something that bears the same name, but takes place publicly in a club with a bouncer. If we just look at the example mentioned situations, it is clear to us that these are each significantly different. Each situation, so the idea here, bundles a whole series of behavioral expectations and expectation expectations, some of which are of a general nature and others parts specifically belong to the types of situations. Most of it is so clear to us that we can adjust to the changing genres ad hoc. This is also called alignment, the adaptation to the others not only applies to language, but also includes further behavior. When we get to know a new type of situation learn, so are still naive, we are initially still rather insecure. This uncertainty gives way when we have similar situations have learned, so know a genre. The fact, that there are such types of situations, makes dealing with each other easier, because we can always fall back on the same genre-specific cultural tools. Since the others do the same, something like a common expectation horizon is created. This makes events that correspond to a certain type of situation mutually. But since the adjustment never happens completely automatically and there is always competition and distinction comes, local variations arise. Such variations can we certainly call microcultures. However, microcultures develop not only in the context of situations, every relationship develops its own components of such a very small culture.

There are various proofs of the emergence of microcultures (Fine 1979). When thinking about microcultures and fundamentally considering, what a relationship actually is, this leads to the realization that situations are particularly significant. This has already been argued in the book several times. However, situations do not occur in traditional network research. Relations, as they are measured in network research, are usually information about one's own relationships, which were determined based on questions (in questionnaires or qualitatively). If you are friends with someone, this is a feeling, but behind it is the fact that you have usually met several times, exchanged ideas, etc. Since situations are related to each other in a temporal sequence,[1] one can speak of chains of situations (Collins 2005). Culture arises through the transmission of aspects of culture from one situation to another. It not only arises in this way, it is also passed on in the same way, at least when it comes to everyday culture. In the chaining of situations, the prerequisite is that a part of those present in the links of the chain remains identical. Since culture, behavioral norms, interpretations, etc. are not exactly prescribed, arrangements are

[1] See for example the classic study of the Southern Women (Davis et al. 2009, initially 1941; Homans 1951), which can be considered as temporally successive situations (i.e., chains) (Stegbauer 2016).

made as needed in "negotiations" with the others involved in a situation. In such situations, cultural tools are used (Swidler 1986), which help in dealing with each other, to communicate. Since the arrangement in a situation stabilizes over time in chains of situations due to the mix of the tools of the participants, microcultures emerge (Stegbauer 2016). Thus, cultural development never stands still, it is always continued. However, in this continuation, culture always also refers to what has gone before. This is always part of the negotiations, even if something new is tried out more often on a small scale.

This cultural development in chains of situations is only one side of the duality (Breiger 1974), which Breiger describes as an interplay of groups and sociality. One could also say that such chains of situations describe how relationships between people arise. When you enter a closer relationship with someone, make friends or start a partnership, this is based on having met several times. The meetings also form a chain, starting with seeing each other for the first time, tentative attempts to find similarities, proving oneself in reciprocal exchange, to the emergence of a close relationship. So when we measure relationships with a network generator in network research, there is only one value. Behind this, for example, is a friendship that has arisen in such chains of situations. So one can say that relationships between people arise in sequences of situations in which people are present together (Stegbauer 2016).

However, not all of culture is negotiated in situations with other people. There is always also a share of "common sense" culture that flows into the situations. Some situations allow more of the self-negotiated tools, others less. The more formal a situation is, let's imagine a ritual as it is performed at weddings, or the behavior of thousands of fans in a soccer stadium, the less influence the cultural elements that are negotiated in pairs or in small groups have on the overall event. Here, the general cultural rules, those in which one is involved in the negotiation on a small scale, predominate by far. However, it also applies here that the general rules are often not set in stone. This means that they allow leeway, which can then be reshaped on a small scale. In this way, culture changes, although it is relatively stable. We look at how we behave, however, not only in situations with our closer relationships, but this also happens when many people are present whom we do not know directly. Then even relationships that are not personalized are enough. Super weak relationships are then sufficient to tell us something about behavioral possibilities in such situations. This is the only way choreographies in stadiums can work. You are informed about it when a La-Ola wave is coming, you see what the others are doing, and you just let yourself be carried away. However, there are always triggers for such behavior. In stadiums, as in many other situations, there are masters of ceremonies, individual people or groups, who have agreed in advance what should be performed. Others are infected by what is shown in behavior in this circle of initiates. People who know how to design rites are crucial for the stability of culture in numerous situations. The spectrum of those who can be described in this way ranges from assembly leaders at schools, for example at school conferences, to referees at soccer games. I believe that these, especially when the people present show a certain behavioral uncertainty, play a special role. The master of ceremonies then dictates what to do at the respective time.

However, the interventions are also of different kinds. When organizing a party, for example, it is event management that helps arrange the reception of the invited guests and the communal meal and decorate the premises. Even if it looks like this species is catering to the wishes of the client, the range within which such festivities move is not particularly wide—and it is very much shaped by traditions (Stegbauer 2012c). Another type of master of ceremonies is found in the form of pastors, whose job it is in particular to design transition rituals. These include baptisms, the transition from childhood to adolescence or adulthood, weddings, the design of various anniversaries, to funerals. Apart from that, they have extensive experience in designing get-togethers, as they are usually responsible for at least one church service a week. They then also transfer many elements that are familiar to them to other events, for which they dictate what to do at the moment. Of course, such masters are also behaviorally uncertain. They are helped by the liturgy, which prescribes what churchgoers should do when during a church service. Security is also given to them, for example, by the fact that the church organization even makes suggestions for sermons. This then has the certainly intended side effect that the organization, in addition to the forms, also influences the most important part of the content of church services.

The relationships that have arisen are then the material of network analyses, for example when asking who a person is friends with or meets more often. However, if one were to directly investigate participation in situations using network analysis, the modeling of bimodal networks would be most likely. These are dealt with in the following assumption.

Even When We Don't Know the Others, They Influence Us

The third main argument for the assumption that culture arises in networks can be related to the effect of super weak relationships (see also assumption four about the effect of different relationship strengths). Super weak relationships are based on the continuation of the behavior of people that can be perceived. Something similar was previously described using the example of the master of ceremonies. They demonstrate a certain behavior, which is then imitated by others, or they give instructions for a certain behavior. Masters of ceremonies are of prominent status and therefore very influential. The other participants are not to the same extent, which does not mean that they are not also involved in the transmission of behavior. Here too, copying works particularly well in situations characterized by uncertainty. One could say that people with an emerging routine and thus greater security increasingly develop into behavioral role models. However, the adoption of behavior does not work completely seamlessly. A few prerequisites must already be given: At least one should not harbor any aversion to those one observes. A second prerequisite is that one is in a similar position. Only people who are in structurally similar positions orient themselves to each other. In this way, for example, tourists can be distinguished from locals.

If part of culture is a situation-dependent behavior adjustment that is valid collectively, then the mode of behavior transmission through observation plays a major role. In quite a lot of types of situations, behavior is similar, especially in public. Large parts of how one behaves are simply adopted, even if the underlying rituals are not understood in terms of their meaning. Understanding is not necessary for transmission. The search for orientation is likely to be one of the essential mechanisms of action that brings about behavioral adjustment. Without such copying, we probably could not speak of a certain uniformity in the behavior of people in a certain circle, in which the cultural peculiarities are valid. Even in a society like ours, which is characterized by cultural diversity, there are regularities in the behavior of all people who are present in such situations on certain occasions. It can therefore be said that it would be difficult to establish such relative similarity if the mechanism of copying did not exist.

Assumption 11: Bimodal Networks—What You Can Know About Relationships Without Asking the Participants

The networks considered under this assumption differ greatly from the other networks that are usually examined. Relationships are usually recorded through self-disclosure using so-called network generators. Such network generators ask, for example, about best friends or who has attended a seminar together. The second form of network collection considered in this booklet takes place in the context of recording the cognitive social structure. The people examined do not provide self-disclosure, but are asked about their observations or their knowledge of relationships between other people in the network to be examined. At this point, a third possibility of recording networks is now presented. The trick is that you can make statements about the structure of relationships between people without directly obtaining information about their relations. The relationships are therefore recorded indirectly. Information about who was where and when is sufficient for this. Such knowledge is often accessible through documents. For example, there are often protocols with participants in meetings or affiliations to committees or associations. In the classic study of the so-called Southern Women, which were recorded in the community study by Davis et al. (2009, first 1941), newspaper

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reports were evaluated. In the newspaper reports, the study authors found indications of which of the ladies were involved in certain events together.

The Duality of People and Groups

The data from the study by Davis and others, in which the relationships of the Southern Women were also recorded, has become a classic in network research over time. The place where the surveys were conducted is the wonderful small southern town of Natchez, Mississippi. However, the charm and historical prosperity of the city also have a blemish. Both, charm and historical prosperity, are largely based on the exploitation of slaves and later field workers, predominantly of black skin color. In the original study, the Southern Women, who later became so important for the history of network research, are given relatively little space. It is a few pages in the research report and a table that shows which of the women attended the events reported by the local newspaper. The table itself is only a small part of the more comprehensive community study published by Davis and others in 1941. This study probably became famous mainly because Homans (1951) included it in his considerations on the theory of social groups. What the ladies did with each other was also published in the local newspaper. The activities ranged from playing cards together to charity bazaars. The network includes 14 chronologically ordered events and 18 women. This type of analysis is called bimodal because it involves two different modes (two-mode-analysis). In this example, the first mode consists of the women, the second, the events.

The first projection analyzed which women were involved in which event at the same time. This resulted in two cliques of women. Some of the events were particularly well attended. These events, in which participants from both cliques were involved, connect the two different groups of ladies in society. In network research, this study became famous because Ron Breiger (1974) used it to demonstrate the duality of individuals and groups (see previous assumption). The essay can be referred to as the birth of bimodal analysis. This bimodal evaluation then became one of the most important tools for network analysis.

In most cases, it is therefore about reconstructing relationships based on the information (which was taken from the local newspaper in the example just reported). The underlying idea is that the participants must have come into contact with each other at the event. If several events are frequented by the same people, the relationship is likely to be closer. In this way, relationships can be reconstructed. This is the most commonly used case in network research.

An additional clever aspect is that the bimodal data also make a second perspective possible: The events are also related to each other. This relationship can be constructed by projecting in the other direction. The events are then in contact with each other because they are attended or organized by the same people.

One problem with many of the analyses (a meta-analysis including about 100 publications can be found in Freeman 2003) that were carried out with this data set is that the temporal dimension was not taken into account in most of these studies. I have given this some thought (see Stegbauer 2016: 50–73). Not only do the relationships from event to event develop, but the events themselves are also in contact with each other through the participants who had attended several of the social gatherings. While the women, unless they moved away, remained constant, the events are by definition always fleeting. They are “fleeting” because an event in the actual wording only lasts one day or one evening. After that, it is completed; a new event can only follow, but not the same one. This means that only a past event can influence a new one. There is only one direction in which the influence can take place. Past events can therefore only influence the way in which the respective upcoming events are carried out; this cannot be done in reverse order. Such events are usually composed of different components. Depending on the event, planning is done first; then a room is set up for the event. When the guests arrive, greetings follow; finally, the actual purpose of the event is reached. The sequence includes other parts, such as the farewell and the cleaning up afterwards and, depending on the size of the event, possibly an additional date when a party is held for the helpers. Admittedly, the list sounds somewhat schematic and is not equally valid for all events. But my point here is to show that when we talk about events, it does not mean that they are all completely uniform. Each individual event can be broken down into parts. Some of these parts, or their form, prove themselves. This can be measured by the fact that afterwards everyone (or at least most) speak positively about these parts of the event. It may be said that this or that element fits well into the sequence. When this happens, this component will most likely be repeated in the following event.

To illustrate this with an example: We have been organizing conferences in Darmstadt in cooperation with the Schader Foundation as part of the German Society for Network Research for several years. When planning one of the first conferences in this cooperation, the idea came up that a one-panel conference should be held in the large hall. We had selected significantly more than 40 lectures from the submissions. But how can so many lectures be accommodated in a 2-day congress? Especially when the schedule is supposed to be designed so that everyone has the chance to hear every lecture? The solution we found was that the lectures should be held in an unusually ultra-short manner. We therefore decided to allow only 10 min of lecture time for each speaker and only one collective discussion at the end of each session. Someone from the foundation had the idea to set up a large egg timer for this. This timepiece had to be turned by the moderating person after 5 min. Because you could always see how much was still available by the trickling sand, the short lectures worked excellently and it hardly took any effort to persuade the speakers to conclude. Of course, there were also some participants who criticized the format. Such a format is unusual, as the speaking times at conferences are usually much longer. Some funding for travel to the conference location is tied to the lecture lasting at least 15 min, which we only learned during the planning of the first event of this kind. Another consideration was that we were dealing with an interdisciplinary event. So the usual subject-specific justification apparatus should be dispensed with and the content should be presented in such a way that it is also understandable for non-specialists. Some lectures do not convince of their quality 100%, others are then a bit too special for the audience. I learned more during the first event in this format than at most other conferences I attended. The entire concept was very well received by most participants, at least according to the overwhelming feedback.

The concept consisted of two form components (the 10 min of lecture time and the egg timer). This format was chosen to fit many speakers into the relatively short conference time. As a result, we have repeated what was initially an innovation several times. This was followed by a short collective discussion that referred to all speakers in a time slot. So it could be that the discussion focused on a few of the presentations and sometimes no question was asked about a presentation at all. The initial skepticism had faded over time.[1] Even though we have moved away from this concept in the meantime, it is still available in our organizational repertoire. That is, if necessary, we or the foundation can return to this conference format at any time in a different context.

If you ask who participated in an event with whom at the same time, you can reconstruct the relationships between the participants and thus the structure of relationships. This type of network research is also gaining momentum in view of the increase in documents available through digitization. With the construction of bimodal networks, we can learn something about the relationship structure without contact and inquiry with the persons concerned. The term event can be translated, for example, with event, meeting, or another form of participation. But this does not fully capture it. It can be events, think of something like a small birthday party or even large festivals (Stegbauer 2024). But an event can also be seen as a situation or a collection of situations where people meet and apply their cultural tools. In doing so, cultural patterns are carried on and at the same time, usually quite involuntarily, a microculture of its own is developed, which in addition to the "common sense" culture also contains its own cultural elements. The ideas for bimodal analysis can thus be interpreted or applied quite diversely.

[1] Meanwhile, the conferences have grown a bit more. This means that we now have to rely on several panels organizationally. We recently extended the presentation slots including discussion to 20 min.

The Problem of Many People

The data of such bimodal surveys are arranged as so-called person-event matrix, in contrast to total networks (person-person matrix or ego networks with ego in the center) (fundamental: Breiger 1974; Rausch 2010). Only by multiplying this matrix by its transposed matrix does the person-person network emerge. The procedure is purely formal, but has substantive consequences: Events differ in their character. The character of events changes simply by the number of participants varying. Thus, a small gathering of up to about 6–8 people is usually structured in such a way that each person interacts with each other (i.e., a relationship is established). If the events are larger in terms of their number of participants, the relationship effect decreases (or takes place in niches of the overall event between a few people). However, the number of relationships generated increases enormously (squared with the number of participants). The bimodal analysis of large events gives the impression of relationships that could not have come about in this way. How to deal with this in network research is a matter of interpretation: Of course, one does not know who actually met whom (cf. Stegbauer 2014). This dilemma can be somewhat mitigated by defining thresholds in the specific study. Thus, in research, relationships in larger bimodal networks could be defined in such a way that the persons must have attended the same event several times (e.g., three times). However, there is usually a lack of substantive determination from what size and from how many participants the bimodal analysis is no longer meaningful. Threshold values are not necessarily useful for very large events either.

However, if one interprets participation in a different way, it becomes meaningful for network research again: Everyone who participates in an event learns something about the microculture of the event. More precisely, one learns how to behave and how to interpret certain things etc. In other words, even without having to consider the underlying relationships, the cultural tools of the participants are likely to align after participation. This applies, for example, if their interpretation is similar: Such similarities are in turn a result of the agreement of already existing cultural tools. The more the tools match, the more the persons are likely to be embedded in similar cultural contexts. I would then interpret this adjustment as the effect of super weak relationships. But this also shows that super weak relationships also unfold a cultural meaning in the context of events, even if there was no direct interaction between all participants (Stegbauer 2024). It is then enough that they observe each other and each of the persons present orientates their own behavior on that of the others.

If we understand participation in events in such a way as an appropriation of culture, then the second projection of such data just described may have an even greater significance: It becomes clear to what extent the events are connected through common participants. This means that those who have participated in several events together may not have gotten to know each other personally, but they are then able to carry on the specific culture of this type of event. What was said for chains of situations in assumption ten also applies here. After all, we can also interpret events as building on each other. They are also nothing more than an agglomeration of situations.

What such transfers of culture mean will be taken up again in a different way in the next proposition. But there it is not about the chaining of events, but I consider how it comes about that in different organizations some routines, but also many behaviors, can be observed in a similar way over and over again. It is claimed, just like in this assumption about bimodality, that events are connected with each other through people. are connected. However, if we replace the term “event” with “organization” and understand membership in different organizations as chains of events, then this assumption becomes understandable again in a different context.

Assumption 12: Organizations Are Related to Each Other Through Common Memberships

At this point, we look at another type of application of bimodal networks. This is followed by a consideration that asks how practices for dealing with problems can actually be transferred from one organization to another organization. Bimodal networks can be projected in the other direction with the same transformation as already described in the previous basic assumption and thus construct relationships between events through involved persons. In this way, statements about relationships between organizations and between events can be made.

However, a distinction must be made here. Organizations can be interpreted as specific social circles that consist of chains of situations. They are designed for a longer existence due to their formal constitution,[1] while the individual event only lasts a short time. Due to this durability, one can say that typical situations in which the organization members come together are more formalized. The encounter of people in organizations is regulated by operational processes and hierarchies, for example. Organizations are divided into departments where employees work

[1] This also applies to the relationships between social circles (an organization can analytically be seen as a social circle here).

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together. The departments are connected to each other through the type of division of labor that was determined during the planning of the process. Regular meetings, the division of organizations into departments and working groups ensure that the same people always meet again in a certain constellation. So here too, chains of situations with the same people are created. This is one of the prerequisites for relationship and microculture development.

How Organizations Can Learn from Each Other

Organizations manage membership and thus also establish the boundaries of networks. Membership in organizations includes certain situations in which people meet. Network research captures the relationship between people at this point, without the situations (from which relationships have been built) even being discussed. Organizational cultures are created through the overlap of people who are involved in chains of situations. This refers to peculiarities of organizations that, after a certain time, when their oddities are seen as normal, no longer stand out to the members. The term operational blindness has been developed to describe the inability to perceive these peculiarities. This occurs when the usual organizational routines have become a normality for the new employee. Then these correspond to the "common sense" in the small area of the organization—if one can speak of a common sense at all in terms of the limited reach of the shared culture. In any case, the cultural peculiarities are hardly ever questioned.

Within the cultures, certain ways of dealing and procedures are applied and developed. These are actually shielded from the outside through membership: Only members of organizations know this special culture, in which certain ways of dealing with problems and their possible solutions are handled. However, these solutions developed within an organization can also be helpful for other organizations. A mutual influence can occur, for example, when organization members are also members of other organizations. Under these circumstances, it is possible to transfer solution strategies for problems from one organization to the next. Such effects of organizations on each other have occasionally been studied in network research, albeit with a significantly different question. For example, in terms of the overlap of common memberships by Vedres and Stark (2010). However, it was not about more or less "normal" employees, but about the overlap at the management level. The members of such bodies are likely to have even more influence on the processes than an employee a few management levels below.

Recently, our Society for Network Research (DGNet) received a cease and desist letter from a law firm due to a copyright violation. Someone had uploaded a document with a map excerpt, which was supposed to show the way to a meeting, on our website. The claim against our society was quite high; especially since our income only comes from membership fees. So we consulted on the board about how we should deal with the problem. One board member reported that he himself once received a cease and desist letter and how he reacted and how he was advised at the time. Another told of his contact with a lawyer who had competently represented him in another complicated case. Almost all board members sought information from people from whom they wanted to get ideas and clarity about the further procedure. Most knew lawyers or some were able to informally consult with the lawyers of the legal department of their own university. Some of the consultations also took place indirectly, namely, that someone else sought legal advice for our association from a lawyer known to the contact of the board. In this way, information and knowledge, which was generated in other organizational contexts, was transferred to our society. Through this and through our own reading of court decisions, we finally found a way, how we could handle the accidentally committed copyright infringement as legally secure as possible.

Problem Solutions Come from Outside

At least we have pursued the potentials of transferring such knowledge or practices of dealing with problems in our own research in a different context. It was a community study of the Protestant Church. There we researched, among other things, the connection between organizations (Stegbauer et al. 2015) and found that, for example, people who were involved in the church council could also be significantly involved in the church choir, in the sports club, and in the municipal administration. In our analysis, we imagined exactly what we saw in the Society for Network Research. If a problem is now being dealt with in the church council, suggestions for its solution can be based on the experiences in the other social circles with which this person has come into contact. In this way, the otherwise mutually exclusive organizations come into contact with each other and can learn from each other. In this process, the different organizations approach each other to a certain extent. However, due to the different tasks (here using the example of churches), they must remain separated from each other at the same time. This is necessary so that they do not lose their character. For example, rituals that play a role in the worship service are only very limitedly applicable as a solution to problems in a work organization.

Sometimes one wonders why organizations resemble each other so much in their behavior. There was a time when companies tried to integrate more and more business areas. This has advantages, for example, when it comes to offsetting losses in one area with profits from another area. However, in recent years the trend has reversed. Companies are now striving to become "leaner" because the individual parts are worth more than the conglomerate. In such times, the value argument outweighs the one that previously emphasized stability. Even when looking at management styles, such cycles can be found (Stegbauer 1995), which most companies cannot escape. However, in addition to those who volunteer in different organizations, there are also those whose profession it is to be in different companies and to analyze them. I am referring to consultants who, with their consulting firms, visit a whole range of different companies and make suggestions for the further development or improvement of their organization. Naturally, some of the suggestions will be similar, so that similarities may also arise in this way. These consultants are external and not direct members of the companies they advise, but they are likely to have a significant influence. Their suggestions also serve as decision-making aids or as legitimizing instances for organizational reforms. These consultants owe part of their authority to their experience, which was explicitly gained in other companies.

Relationships between institutions or events are therefore also important initially for solving matters that they might not be able to handle on their own. Especially smaller organizations or clubs, if they are based on voluntary work, would not be able to manage without the input of expertise that comes from other contexts such as companies. Many of the questions that arise in the everyday life of small organization would hardly be answerable with the available resources. In the voluntary sector, people who have already gained relevant experience elsewhere are then particularly used for certain functions. In this way, they try to ensure that they benefit from the expertise gathered in other organizations.

For some time now, numerous companies have been emphasizing their commitment to more diversity among employees.[2] Diversity policy is not only a necessity to manage the increased diversity in our society as conflict-free as possible. It is certainly also about attracting the best people. Diversity characteristics such as their age, their gender or their gender identity should not play a role. The same applies to their origin and regardless of whether they are disabled, which religion they belong to and which sexual orientation they have. But I'm talking about something else here: Diversity also stands for the fact that people bring different experiences that come from other contexts, possibly also from other organizations. In addition to these experiences, a diverse workforce also has more diverse networks. Through these networks, an organization can draw on a much larger pool of knowledge and ideas. This can be a great advantage, especially for innovative companies. However, it should not be concealed that diversity certainly also brings problems. It is said that understanding and negotiation processes are more complex than with homogeneous staff.

Apart from such very concrete problems, the transfer between organizations is significant for another reason. This was already hinted at in the previous paragraph. It is about the cohesion of a society and specifically about the creation of a common culture. This culture has elements that span organizations and are reflected in administrative routines. You can also observe such elements in the way decisions are prepared, meetings are held and votes are conducted there. Rules of procedure, as known from public administration, are adapted for this. This also introduces a

[2] For example, the Commerzbank https://www.commerzbank.de/nachhaltigkeit/mitarbeitende-gesellschaft/mitarbeitende/diversity-inclusion/ (December 15, 2023). But this is not only true for the mentioned bank. McKinsey regularly publishes reports showing that companies with more diverse management levels have better business success (Hunt et al. 2020).

certain administrative culture or elements of such procedures are transferred and adapted to the needs in the other area. With this transfer, which is not 100% accurate can occur and thus varies a bit everywhere, there is still a kind of mutual adaptation, so that one can speak of culture. The behavior in some clubs may sometimes seem so bureaucratic that they offer themselves as objects of caricature.

To describe the underlying process, a comparison with the considerations on the overlap of social circles is suitable: Let's assume that it is true that there are relationships between the different social circles. These relationships are ensured by people moving in different circles. Through this overlap, these people can also bring their cultural tools, i.e., their culture. Culture then includes values, norms, behaviors, and understanding of symbols, as one can read in Ann Swidler (1986), as well as more complex components, e.g., through routines or the structure of organizations.[3] So one can say that when personnel overlap, the cultures, which are always developed individually in the different social circles, do not diverge too far. The different cultures remain connected to each other through common memberships. Nevertheless, cultural pluralism is increasingly emerging in modern times because the circles in which people move are constantly expanding.

[3] I do not want to conceal that these negotiations and transfers are not based solely on routines negotiated and transferred on site, which could be called microcultures. Rather, administrative regulations and statutes require certain formal adjustments because they are prescribed by law. Nevertheless, the leeway to deal with such requirements should be enormous. The observed proximity in terms of cultures can hardly be explained solely and not even significantly by the regulations of the legislation.

Conclusion

The 12 basic assumptions are so significant from my point of view that I wanted to describe them here all at once and in brief. Many of the considerations presented here can also be found in my other publications (Stegbauer 2016, 2018, 2024, but also much earlier, for example, 2001). The idea of the book was to compactly present the most important basic assumptions of network research. These come from my experiences in this field of science and they reflect the way in which people try to think sociologically there. So it is an invitation to also deal with network research. The idea of this book was to capture the basic thoughts of this research field in relatively short basic assumptions. I hope it has succeeded in presenting these in a readable way.

The Connection of the Basic Assumptions

I think it might be helpful to say a word here about how the basic considerations listed here are related. However, I have already pointed out connections at numerous points, sometimes these were only hinted at when dealing with the different assumptions. So let's go through some of

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the statements of this book together again briefly and also pay special attention to the points where there are relationships between the basic statements.

First of all, these are statements about the field of network research itself and/or social basic principles that have something to do with this field of research. All assumptions serve to justify the necessity or at least to demonstrate the importance of a relational-network research approach. This is what the first assumption deals with. This focuses on the relationship and the necessity of considering structure. Thus, it also served to fundamentally justify network research and to demonstrate the differences between network research and conventional social research.

How network research proceeds and what thoughts people make in the process is certainly not only evident in the first, but also, for example, in the eighth assumption on cognitive social structure. The eleventh assumption also particularly addresses another method that is also frequently used in network research. The very basic assumption (one) states that it is not about the individual, but about relationships or, in larger contexts, about the structure of relationships. The eighth assumption reports on the effect that knowledge about the relationships of others has on sociality. Knowledge about this is often more important than the explication of the direct relationships one has. From the knowledge about the relationships between the others who surround us, as well as from the first assumption (the focus on the structure of relationships), a certain research approach can be derived. This applies to the researchers, for everyone else the difference in importance between the structure of individual relationships on the one hand. The recording of individual relationships is usually based on self-reports. This is what you usually get shown when relationships are presented to you in visualized form. On the other hand, there is what you believe or know, who all in a network are related to each other. You rarely get to see this information, but for the way we behave, it is more important than the first type of network. The first type of network is only seen by the researchers and those to whom this research is presented. For individual people and their connections, however, the knowledge about the relationships of others is of much greater importance. Although both are types of network surveys, only one is important in our everyday life beyond research.

From the perspective of network research, something similar applies to the eleventh assumption. This is another way of proceeding in the investigation of networks (here the third).[1] In the simplest (1.) form of survey, the question is asked who a person is connected with, and these individual relationships are then accumulated to form an entire network. The second form (of data collection) deals with what one knows about the connections of others in a network or what ideas the people in the network have about it. Here one can ask which people know particularly much about the relationships of others or from which position certain relationships are perceived. But even with cognitive social structure, one can accumulate the emerging views of the networks to find out which relationships are particularly visible. The third version (the 3rd form) of research is based on what the researchers know about participation in events. For this, it is not necessary to survey those who have participated in such events. The information is usually based on documents that can be found somewhere. The information about the connections of the people with each other or the events with each other can then be extracted from these lists. This is the most indirect way of capturing network structures. However, one of the disadvantages of this form of network construction is that we can only infer relationships. We usually do not have confirmation of the relationships from the people involved. An advantage, however, compared to the other ways of conducting network research, is that we are not necessarily dependent on the memory, the perceptual ability, or the accuracy of the people surveyed. Such networks can even be reconstructed from historical records.

I do not want to conceal the fact that there is also a fourth basic possibility of network research, which I have only touched upon in this book. Perhaps this fourth possibility is even the most frequently used, as it is the least demanding. It is the collection of personal networks. These are also called ego-centered network research. Being less demanding means that such individual networks can be easily collected. I can ask any person about "their" network with the help of a network generator. One can also stimulate the interviewees to give information about their

[1] I hope the many numbers are not too confusing. In this paragraph, I am listing the different approaches of network research.

relationships through a narrative. One of the problems here, however, is that this type of research actually deals with isolated islands of personal relationships. From this, only a star can initially be constructed. In it, the ego is in the center and the relationships that are connected with this center form the rays. To also capture the structure of such personal networks, one can also ask about the connections of the relationship persons with each other. Only here is there a kind of survey-technical transition between the first and the second method of network collection. The direct relationships correspond to the collection of total networks (only that in total networks the direct relationships of all participants are integrated). The question about the relationships between the others in the personal network then corresponds more to the approach we use when we are interested in the cognitive social structure. So two types of surveys are mixed together. At some points this may not be problematic, but another problem arises: The representation of the relationships is always one-sided and this cannot be controlled by the indication of relationships by the other people in the network.

Other of the twelve assumptions mentioned in this booklet help explain the structures that can be uncovered through network research. Such as the third assumption, which shows what types of structures regularly arise or which are even possible. This assumption initially focuses on the number of people involved. I also show what restrictions these relationships are subject to. It's about numbers, like the transition from two to three. This transition is something very basic, because in this way it becomes clear what significance the possibility of forming relationship structures has. Such a consideration helps to fundamentally understand the effect of structural constellations. What is missing in these considerations, however, is the context in which the small numbers of nodes considered in this assumption are located. It is not enough if their embedding is neglected. So a gap opens up here. This gap, if you will, is filled by another assumption, namely assumption nine. In this basic assumption, it is claimed that the relationship context determines what happens in smaller constellations, such as two-person relationships or even those with three. The context is nothing other than the structural embedding of people with their relationships. The structures in which we are embedded, in fact, help determine how we shape our relationships. The other people, as one might also express it, watch over how we deal with the people we are with. Classically, this was about the division of household labor. It was claimed that what the man and the woman in the household take on in terms of work depends on how much the friends and family can intervene. Something similar can also be imagined today, for example when it comes to questions of child-rearing. Others also have a say in such negotiations. This influence is not only direct, by people intervening and correcting the parents if they do something wrong from their point of view; the whole thing actually works much more subtly, by observing in one's own environment how the others deal with their children. If then possibly behind their backs about it is talked, then one can also see such conversations at the same time as negotiations about what is to be understood by correct education.

In a similar direction also pushes the fifth assumption, which deals with structuration, i.e. the restrictions of the possibility of people meeting. One could say that this assumption is about which network one ends up in. Taken to the extreme, this statement implies that it is rather more than less predetermined for us with whom we can come together at all. Only through the considerations of the Structuration can be understood as who has the chance to come into contact with each other. Conversely, this assumption suggests that certain people will hardly ever meet. If this does happen, it often becomes a subject typically found in novels or films. These are such rare encounters that they seem quite interesting to us. The sixth assumption deals with another type of restriction, namely, the limitations imposed on us by the structure of the network we enter. This is not very self-determined, because depending on where you are in the network, you have more or less influence on the design of the relationships. Even a person's desire to connect with others in the network is not enough if, for example, they belong to the wrong clique or are even associated with it. It could also be that one is friends with the wrong people. Thus, one structure leads to the next and we can only have very limited influence on this individually. In addition to design, it is also about whether the information passed on in networks even reaches us. Both basic assumptions, the fifth and the sixth, are thus connected in that they both deal with restrictions. Of course, the restrictions are at different levels—but their effect can be very similar in some places.

One idea in the arrangement of the basic assumptions in this book is that they should build on each other. The next basic assumption should—as far as possible—always take up the idea of the previous one. In a strict sense, however, this could not be completely maintained. Some of the assumptions are too intertwined or at least so many cross-connections can be found that do not clearly subordinate to such a scheme. However, the book is short enough to keep various aspects in mind. I think that I can also leave it to the readers to recognize further references between the basic assumptions themselves or to construct them from the contents. Rules for the emergence or effect of structure do not stand alone, but their principles are intertwined, they are connected and work together.

The Order of the Basic Assumptions in This Volume

Although network research has not yet produced a completely uniform theoretical framework. But in my view, that's not bad at all, because a few basic assumptions and some of the methods of network analysis can find enough agreement. These are not always completely compatible, but they have enough coherence to delineate a reasonably unified field of research. The findings are quite compatible with each other, even if they may be based on different theoretical foundations. Well, you won't notice much of that in this book, because I have tried to present the assumptions as compatible with each other. They are also from my own perspective and experience, which I have gathered in almost thirty years of dealing with the topic. This is meant personally, because it is not to say that all other researchers share exactly the same basic assumptions mentioned here. Despite this objection, I would like to claim that there is a large overlap with the assumptions of the majority of researchers in the field of network research. So there are enough agreements to justify this book as a kind of short introduction to the field.

The large number of assumed agreements of other researchers, however, also helps to communicate across the boundaries of individual disciplines. This is also true when the other disciplines themselves have differing empirical and theoretical foundations. Many of the scientists working in this discipline agree on a certain core of what network research is and what the basic assumptions of this field are. However, details can certainly be argued about. We know that the possibility of dispute presupposes sufficient knowledge. Moreover, it is useful for a paradigm, like that of network research, not to be defined down to the last detail. Tolerating certain ambiguities helps to work together. Although one may then certainly have to discuss the understanding of the terms more precisely from time to time. In addition, a not too precise boundary definition is always helpful when you want to push into the boundaries of the research field or even shift them. But these are basic considerations that are not at the center of this booklet.

The Fascination of Network Research

I see myself as a sociologist and network researcher! However, this volume should find a readership beyond the boundaries of my field. It may be read beyond the scientific disciplines as an invitation to engage with the topic and to get a taste of the thinking. For me, and this is true for many other researchers I know: The field of network research is a very fascinating field. To penetrate and understand the considerations, you have to change your thinking in some places. I also experienced this. It was often not so easy to make this mental switch. In some places, it does something to you. Insights are gained that would not have been possible without penetrating the thought structure of network research. Probably it is such insights that to a certain extent represent a kind of "addiction factor", so interesting does the field appear in which one is entering. It is difficult, once you have found your way into it, to get away from it again. So consider this book with the dozen basic assumptions as an invitation to let yourself be infected as a reader. I hope that delving into the field has been enjoyable for you and it helps to adopt the way of thinking described here, at least for the moment. I wouldn't mind if I had managed to infect you with at least a small viral load. I know that this wording is somewhat burdened after the great pandemic.

What is said in this paragraph doesn't really fit into the science-oriented context, as it is a deeply subjective statement. Nevertheless, I do not want to retract what I have written here. I don't think it's reprehensible to develop a certain passion for one's own field of science. On the contrary, science without a certain degree of passion seems bloodless. Such science will not lure anyone out from behind the stove. Without this, one cannot deal with the ways of thinking for such a long time. A purely instrumental attitude is not sufficient. But beware, the invitation is initially meant to be very friendly. The reading should not be difficult, whether the passion sets in is another matter and is certainly also dependent on other things.

Thinking and researching are both laborious affairs in their own way, but they also offer rewards. However, this reward only sometimes occurs, I believe it can be aptly described with the term "happiness". Happiness has something to do with the eros of knowledge, when insights suddenly come to you in the course of dealing with a topic. In this sense, I would be happy if you too were seized by this form of eroticism and this eros occasionally took possession of you!

What the Book Has Brought You

- By reading the book, you have become familiar with the most important basic assumptions of network research. After reading, you know how people think in this field of science. Many of the ways of thinking you can use not only for science but also to reflect on your own behavior and that of others. It was about the representation of nodes and edges in network research and a definition of networks. This definition mainly refers to a purely formal representation of relationships and their structures.
- You have read how much relationship structures influence our behavior. Even if we don't notice it, this process is mutual: other people have an effect on us, just as we ourselves are involved in this process with others. This not only refers to eating or drinking habits or smoking, it means all behaviors. The special and also fascinating thing about it is that so much happens and influences us, which is not or only very difficult to access our experience. This should actually also be of great relevance for our everyday life; for science, it means that surveys or interviews only have limited use. Much of what people are often asked about in the context of scientific investigations, they cannot know. The

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sought-after answers are hidden behind people's backs. This is also the reason why they cannot provide information about it.

- The book has enlightened you about the significance of different degrees of strength of relationships. You have learned that strong relationships are responsible for social support, weak relationships ensure that we come into contact with new information. Super weak relationships, on the other hand, help to learn something about behavior in various situations. By copying behavior, something like a common culture in the society in which we live together, which goes beyond the closer relationships, is created.
- After reading this book, you have learned something about the relationship between culture and networks. This will enable you to better assess the significant influence that network structures have on cultural development. Of course, this also applies in the opposite direction. Culture also influences the structure, for example by preventing certain relationships from developing due to cultural obstacles. That is, culture also deserves a share in the shaping of networks.
- You have learned something about the Cognitive Social Structure (CSS). It's about why what we know about the relationships between the other people around us is so important. These are certainly more important in everyday life for all of us than the total networks captured by network research. The reason for this is that we can only orient ourselves to this knowledge in everyday life. It ensures that we can move safely in the social environment.
- The book explained how network research can capture relationships using bimodal networks and derive structures from them without having to directly ask people. This works by having information about participation in events or lists of participation in events or similar available. This construction of networks works by linking different modes together. On the one hand, these modes are usually people and on the other hand, for example, certain characteristics, such as attending events.

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