

# Organizing in an Age of Complexity: Reflections on When and How (Not) to Use Organizational Networks



Inaugural address, delivered by  
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## Reflections on When and How (Not) to Use Organizational Networks

Prof. dr. Jörg Raab

### **Inaugural lecture**

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Organizational Networks



Oh, Superman, where are you now?  
When every thing's gone wrong somehow?  
Men of steel, these men of power  
I'm losing control by the hour

This is the time, this is the place  
So we look for the future  
But there's not much love to go around  
Tell me why this is the land of confusion

This is the world we live in  
And these are the hands we're given  
Use them and let's start trying  
To make it a place worth living in

*From the song "Land of Confusion" by Genesis (1986)*

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# I. Introduction



*Dear Rector Magnificus,*

*Dear colleagues, friends, and family,*

In this inaugural address, I would like to reflect on the question in what way organizational networks can be a response to the increasing levels of complexity in our modern society. I will argue that even though organizational networks have the potential to deal with complexity, we face a paradox: Responding to complex circumstances by forming organizational networks, organizations are likely to inadvertently but steadily make the situation even more complex. I will highlight ten points on how we might be able to cope with this paradox.

Our societies have become highly differentiated and interconnected systems that have given us wealth and opportunities that were unimaginable not even two centuries ago. Differentiation and specialization imply that more, and more different types of organizations (which do different things) are involved in the production of goods and services valued by society. The German sociologist Renate Mayntz (1993:6) calls this functional differentiation “the generally accepted hallmark of ‘modern’ societies in structural terms“. It is therefore no surprise, that division of labor and social differentiation have represented an important realm of research in the social sciences since the first scholars began describing and analyzing the development of modern societies, among others Adam Smith, Karl Marx, Herbert Spencer, Emile Durkheim and Max Weber. However, highly differentiated systems need to be re-integrated in order to realize the production of goods and services and achieve desired outcomes. Such re-integration makes it necessary for organizations to be interconnected frequently and in multiple ways. Differentiation and frequent interconnection lead to highly complex societal structures and processes that also manifest themselves in our organizations and our daily lives. Moreover, strong and growing functional differentiation makes it increasingly difficult to organize in a way that enables us to realize the re-integration and continue to reap the benefits of specialization and differentiation and at the same time limit the unintended effects and externalized costs. The following two examples explicate this point:

More than 200 companies around the world manufacture and supply the components to produce Apple iPhones. These component manufacturers create

the memory chips, glass screen interfaces, casings, cameras, and everything in between. The countries where these manufacturers are located are spread across the globe. Components come from companies in South Korea, China, Taiwan, Germany, Japan, India, the United States and many others. There are 94 production lines at the Foxconn Zhengzhou manufacturing site in China (the world's biggest production site for iPhones), where the phones are assembled. It takes about 400 steps to assemble them, including polishing, soldering, drilling, and fitting screws. The facility can produce 500,000 iPhones a day, or roughly 350 a minute! The functional differentiation and re-integration of that production system makes it possible to produce this technologically advanced product at comparatively low cost. One might say, that the iPhone is an exception and an example for one of the most global products manufactured by one of the most global companies, but even much simpler products like jeans are nowadays produced in multiple countries by a variety of companies in a long global value chain (Barboza 2016; Global Electronic Services Inc. 2017).

The second example is about Daniella van Bergen, who lived in Groningen and was mentally handicapped. She was killed by her stepfather in 2013 who was sentenced to 18 years in prison for this crime. The multiple problems in the family were well-known to the respective authorities and organizations. In fact, the family had received care for years. In total, 27 organizations were involved from the domains of health, education, family and youth care, safety and housing: General practitioners and hospitals, schools, care in the neighborhood, police, child protection council, and the probation board to name but a few. Despite all the efforts for years, this tragedy was not avoided. The report of the respective Dutch inspectorates assessing this failure concluded that the joint care did not sufficiently fit the situation, that the connected problems with regard to care, family, housing, work and income, finance, safety, and education were not jointly tackled effectively due to a lack of collaboration and coordination between these different organizations. They had mainly looked at the situation from their organizational perspective and did not report information and signals to the other organizations involved in the care of Daniella and her family at all or not in time (Ministerie van Volksgezondheid, Welzijn en Sport 2015).

These two examples vastly different in sector, context, geography, and scale have much in common and lead to the following six observations about the organization of today's society. *First*, the differentiation, specialization, and

rationalization of society as described by Max Weber at the beginning of the 20<sup>th</sup> century is still progressing. This materializes itself among other things in a large variety of organizational forms (see Mintzberg 2023:3).

*Second*, the observation by Charles Perrow in 1991 that we live in a society of organizations is still highly valid. One can even argue that the level of organizational coverage of human activity, i.e. the percentage of human activity that happens in and is influenced by formal organizations has even increased since the 1990s. There are very few things left in life that do not take place in and through formal organizations or are at least enabled (or constrained) by them.

*Third*, this high level of organizational coverage (one could even call this permeation) and the variety of organizational forms is hereby both a consequence but also a cause of the increasing complexity of our societies. This development can be observed very well in the recent childcare benefits scandal (kinderopvang-toeslagenaffaire) in the Netherlands. What was once an informal activity by family, neighbors, and friends, taking care of each other's young children, is now a highly organized and regulated activity with several different organizations and complex administrative and financial structures and processes behind it. This complexity contributed to the fact, that a large number of parents made unintentional mistakes in filling out their reimbursement forms. If a mistake was discovered a whole organizational apparatus was activated even to the point that children were taken from their parents by child services and placed in foster homes. This might be an extreme case, but it certainly shows some of the basic problems this development creates.

*Fourth*, it is likely that societal differentiation will further continue because our societies become more diverse with regard to occupations, cultural backgrounds, and identity but especially also because the incentives to further use the efficiency gains of specialization driven by technological developments in the production of goods and services are just very strong. First described by Adam Smith in his famous example of the division of labor in the pin factory in his book *Wealth of Nations* in 1776, specialization has become not only a hallmark of organizations but of our entire society and even the global economy in the quest to realize increasing returns to scale (or using the comparative cost advantage) and capital seeking the highest returns. The more specialized we organize human activity, the larger the amount of activities of a specific type each function carries, which

increases the skills and knowledge in a specific function. This in turn leads to productivity and efficiency gains. Of course, there are limits to that in terms of alienation and other drawbacks which have been amply described in the literature and eternalized already by Charlie Chaplin in his film “Modern Times” but the general tendency is clear. This development has also reached our universities. That there is now a chair for inter-organizational networks in a School of Social and Behavioral Sciences in 2024 (instead of just one for Sociology or even broader for “Nationalökonomie” as Max Weber’s chair was called) would probably have even surprised Weber himself.

*Fifth*, this strong tendency towards division of labor and specialization creates increasing interdependencies between countries, regions, organizations, teams, and people that need to be managed in a way that differentiated social entities are re-integrated and coordinated to achieve the desired outcomes. It therefore does not come as a surprise that we have seen an increase in international organizations on the supra-national level with the EU as the most prominent example for us here in Europe which has greatly deepened its integration in the last three decades. On the national level, we see attempts to find adequate institutional and organizational solutions to respond to new problem structures that exceed sub-national boundaries of polities. On the level of organizations, the number of joint ventures, alliances, and other forms of inter-organizational collaboration has steadily increased since the 1980s, which led to a blurring of organizational boundaries (Mintzberg 2023). Managing these interdependencies and re-integrate highly specialized activities on and across all these level, however, is a highly complex task. This is an important difference in the two cases described above. While this re-integration of highly specialized activities and organizations takes place in the iPhone example via a mix of the market mechanism, hierarchy and inter-organizational relations, it failed in Daniella’s case even though the multi-problem situation of the family urgently would have required such integration.

*Sixth* and that is a very recent development, countries, organizations, and people are becoming increasingly wary of this complexity, of their decreasing autonomy or even of losing their sovereignty and grip over their actions and fate (WRR 2023). On the country level, the rhetoric calling for more independence in production has gotten louder and we have seen the introduction of trade barriers between China, the U.S., and Europe. For many organizations, the

amount of collaborations seems to have reached a level that is seen as problematic in their current form. For example, recently taking stock, the Tilburg City Administration counted 236 collaborations in which it is currently involved. While these collaborations often support its tasks, they also form a complex web of organizational interdependencies, which require a lot of time, resources, and attention and pose a formidable managerial challenge.

In the following, I will first discuss what societal and organizational complexity entails, and then explore what the organizational responses to this complexity have been. I will subsequently zoom in on so-called purpose oriented networks as one possible organizational response and discuss the advantages and disadvantages of this response for society and organizations. Purpose oriented networks are hereby understood as groups of three or more legally autonomous organizations that participate in a joint effort based on a common purpose and consciously affiliate with that group (Carboni et al. 2019, Nowell and Milward 2022). From that, I will develop ten points of attention about how (not) to use them and formulate a research agenda in that regard. I deliberately did not use “Organizing in the age of complexity,” because we certainly had and will further have complex structures and situations. However, it is useful in my view to think about what societal and organizational complexity entails and how it materializes itself at this point.

## 2. Societal and Organizational Complexity

## How can we understand societal and organizational complexity and what are its causes?

Complexity is an often-used concept both in daily life conversations and in academic discourse. There is complexity theory and even complexity science and a whole literature on complex systems and systems theory. Complexity theory, originally developed in the bio-physical sciences, focuses on the multiple interconnections, feedback loops, and surprising side-effects be it in an ecosystem, an organization, or an entire society. In this context, “the term ‘complex’ is intended to signal the organic and interactive aspects of systems, rather than the mechanical aggregation of elements or components” (see also Head 2022:63).

However, complexity is a multi-dimensional [Xia, W., & Lee, G. (2005), Wang, Q., & von Tunzelmann, N. (2000)], even fuzzy concept with many different connotations and applications. Wood (1982) and Campbell (1988) see task complexity as the number of components of a task and their coordination as well as the multiplicity of paths and outcomes and the conflicting interdependencies among the paths. Looking at project complexity, Oerlemans and Meeus (2009) observe that complexity is often related to project size in terms of the number of technologies, components, or functions involved in the projects. Dimensions we can generally find in the literature, that are connected to complexity are the number of elements of problem or sub-problems, the extent of interdependence between these elements, the multiplicity of paths, outcomes, and conflicting interdependencies of paths, the level of newness of (sub)problems, the level or diversity of knowledge needed as well as causal ambiguity between different factors. The idea then is that the higher the number of elements or sub-problems, the more interdependent they are and might interact in unpredictable ways, the more complex a system is. An organizational project with high complexity for example is characterized by a schedule with many dependencies, untested technology, techniques, or processes, extensive cross-organizational impacts with staffing from many organizational units, and extensive consultancy activity (Oerlemans and Meeus 2009: 233). We can therefore observe that people often talk about complexity if a problem situation is new and a diversity of knowledge is needed to understand it. In addition, if causes and effects are ambiguous, people often perceive that as a complex situation. Therefore, there is some conceptual overlap between complexity and uncertainty which is not surprising, since human beings often experience complexity as an uncertain

situation. In his Wicked Problems framework, Head (2008) distinguishes between complexity and uncertainty (together with value fragmentation) as two independent dimensions, though. In his understanding, complexity is about the interdependencies of elements and sub-problems while uncertainty is more about the lack of understanding about the consequences of action, the risks of (non-) intervention, and unpredictable changing patterns.

Already in 1948, Weaver made an interesting observation about complexity: As long as there are no interacting elements, things are relatively simple. If there are a myriad of interacting elements, it becomes a higher order problem of probability which we can mathematically estimate (he calls that disorganized complexity). It is in the middle ground of many interactions that poses the biggest problem for our capacity to understand what is happening or likely to happen and how to react to that (Weaver calls that organized complexity). It is exactly in this middle ground, where organizations are and where management and policymaking has to take place.

For this inaugural address, I would like to keep it as simple as possible and define social systems (societies, organizations, teams) as systems with many diverse elements that are interdependent and interact in multiple and non-simple ways. Increasing complexity is then defined as a process in which at least two of these elements change “upward”, i.e. a system becomes more complex for example, if the number and diversity of elements or the number of interactions and their interdependencies increase or intensify. From the perspective of the individual organization, we can then further distinguish between environmental, task, and organizational complexity. Environmental complexity refers to the structure of the environment of an organization, for example, how many different organizational forms are in the organizational field, in which an organization finds itself. Task complexity refers to the structure of a task an organization want to tackle for example how many different subtasks need to be done and how they are connected to each other. Organizational complexity is then the number and diversity of organizational entities and the interaction and coordination needed to fulfill the tasks.

We can understand societal complexity on three different levels of analysis. *First*, on the societal level, we can observe an increasing complexity in terms of the diversity of people in societies and organizations and their interactions.



For example, in previous times people who migrated had to mostly sever their ties with their countries of origin or communities. Now, they can stay in touch constantly almost for free 24/7, and through diverse technology-enabled channels events that happen at one end of the world instantly can reverberate around the globe. In knowledge intensive industries like semi-conductors, a global brain circulation can be observed where people frequently move between countries (Saxenian 2006). In addition, the number and frequency of new “technological waves” that introduce new technologies into our societies has increased with Artificial Intelligence and synthetic biology as the most recent ones following only a few decades after the invention of the computer (Suleyman 2023). These technologies build and are interconnected with each other. Artificial Intelligence is not possible without computers, which are not possible without electricity for example and these technologies are developed, implemented, deployed, bought, and sold by organizations. *Second*, on the level of societal subsystems, i.e. the political, economic, legal, technological, etc. subsystem. That these systems are highly interconnected and interact in unpredictable ways becomes clear when we look at climate change or migration for example. *Third*, as we have seen in the iPhone example, organizations are also interconnected or tightly coupled in many ways, or as in Daniella’s case it is highly desirable that they are not only interconnected in terms of the task but interact to effectively deal with such a problem. Also for organizations internally, we can talk about organizational complexity, since most larger organizations nowadays are composed of highly differentiated, specialized units that interact in multiple ways even though not necessarily in the ways that organizational leaders would like them to (Perrow 1986). The most recent addition to the array of organizational departments is the IT department due to the development and importance of computer hard- and software for all organizational processes. The governmental organization for example has a lot more specialized ministries than 100 years ago and inter-ministerial coordination remains an enormous challenge (Scharpf 1994).

Changes in population demographics such as urbanization, migration, and aging populations, have introduced new challenges and complexities to social systems, including healthcare, infrastructure, and social services. Environmental pressures have increased. Climate change and other environmental issues have added layers of complexity to societal systems, requiring responses at local, national, and global levels. Connected to these developments, political and economic dynamics have increased such as a shift in political ideologies,

economic systems, and geopolitical relationships. Social and cultural changes such as changing social norms, values, and cultural dynamics have led to shifts in how individuals and groups interact and organize themselves within society, often leading to increased complexity in social structures. While some of these developments do not have a clear cause, we can assume that the push towards globalization since the 1990s and an increasing interconnectedness of economies, cultures, and societies, which was enabled by conscious political decisions such as the liberalization of global financial markets has enabled and strengthened them.

The concept of “policy growth” in political science signals the increasing complexity of today’s societies (and the states’ response to it) (Hinterleitner, Knill, Steinbach 2023). There are definitely other drivers for policy growth than the increasing interdependencies between and within societies (such as political supply, institutions, and bureaucratic processes) but the following indicators certainly also show the efforts to respond to increasing complexities and the attempt to “maintain control”. First, the overall breadth and depth of state activity have increased substantially as measured in the increase of non-defense spending as a share of GDP. For the U.S. this share grew from about 6% for both federal and state and local levels in 1960 to about 17% for state and local and 10% for the federal level (Hinterleitner, Knill, Steinbach 2023:4). The second indicator focuses on the formal features of laws such as their length (in words and structural elements) and cross-references. For the EU for example, we see that the number of structural elements tripled from 1990 to 2020 and the number of words in legal texts more than doubled in the same period (Hurka et al. 2022 in Hinterleitner, Knill, Steinbach 2023:5). As a third indicator, we can look at the development of the policy space as a combination of policy targets and instruments. Here we can observe an increase as well, i.e. more instruments used for more targets (Hinterleitner, Knill, Steinbach 2023:5). While all these indicators might be influenced by other drivers as well and also present some measurement issues, they all point in the same direction of increasing societal complexities and the attempt to control them, i.e. increasing societal demands (Hinterleitner, Knill, Steinbach 2023:7).

To not fall into the fallacy of the drunken man looking for his keys only in the area where the lamp shines its light and fall victim to confirmation bias, we should rightfully ask though, whether our societies, organizations, and our

lives become ever more complex everywhere and all the time. Are there not also areas where things have become less complex, i.e. where diversity and interdependencies have decreased and interactions become more simple and linear? This is not simply an academic question. From evolutionary biology, we know that “biological complexity can be found in the increased specialization of body parts such as the duplication and subsequent differentiation of animal limbs, in the relationships between species, and in networks of ecosystems. Although the degree of specialization seems a reasonable proxy for biological complexity (...) there are many examples in the history of life on earth in which specialization has led to extinction, while simplification has led to adaptive success and survival. Thus, macro-evolution displays trends towards both complexity and simplicity.” (Lineweaver 2013:6):

There are several examples we can think of in this regard. In many economic sectors, we see a market concentration through the reduction of the number of suppliers and concentration of revenues. For example, global price markups have risen by more than 30 percent, on average, across listed firms in advanced economies since 1980. And in the past 20 years, markup increases in the digital sector have been twice as steep as economy-wide increases. The Covid-19 pandemic has even strengthened this overarching trend (Georgieva et al. 2021). Such rise in markups can be seen as a consequence of increasing market concentration. Especially sectors with high entry barriers due to substantial technological investments and network effects are dominated by just a few companies such as the mobile phone market, cloud computing, search engines, and now Artificial Intelligence (Georgieva et al. 2021). Other examples are the media, especially the print sector, the finance sector, and the airline industry where a wave of mergers and acquisitions and the formation of three airline alliances have taken place in the last 25 years. While these tendencies reduce complexity (think for example that regulators have to deal only with a few companies or alliances), they also represent an unwanted concentration of power and resources and pose other types of risks to our economies and societies. The introduction of blockchain technology in principle reduces the number of actors necessary to complete financial transactions by cutting out the banks as intermediaries. However, the number of possible interactions of potentially unregulated actors increases enormously actually adding more complexity to the financial system. A third example are (global) franchise companies that reduce the variety of offers. For example, in the fast food sector, there are only a few companies that compete with each other.

## Consequences of (increasing) complexity at different levels

I would like to highlight two important consequences of this increased and likely still increasing complexity. On the system level, we face increasing vulnerabilities such as shocks, interconnected crises, or even system breakdowns. On the individual level, we can observe that individuals lose control over their lives or at least have a strong feeling of losing their grip.

Concerning the *system level*, the organization sociologist Charles Perrow argued in his famous book “Normal Accidents” on the reactor accident at the nuclear power plant Three Mile Island in 1979 that we have created complex systems that on the one hand bring us “unimagined and probably undeserved bounty” but at the same time “threaten to bring us down” (Perrow 1984:vii). The reason is that systems such as a nuclear power plant are highly differentiated with thousands of components that are often tightly coupled, i.e. what happens in one component directly and immediately affects the functioning of others. In addition, these components interact in complex, i.e. unpredictable ways. In Perrow’s words:

*“We start with a plant, airplane, ship, biology laboratory, or other setting with a lot of components (parts, procedures, operators). Then we need two or more failures among components that interact in some unexpected way. No one dreamed that when X failed, Y would also be out of order and the two failures would interact so as to both start a fire and silence the fire alarm. Furthermore, no one can figure out the interaction at the time and thus knows what to do. The problem is just something that never occurred to the designers. Next time they will put in an extra alarm system and a fire suppressor, but who knows, that might just allow three more unexpected interactions among inevitable failures. This interacting tendency is a characteristic of a system, not of a part or an operator; we will call it the ‘interactive complexity’ of the system. For some systems that have this kind of complexity, such as universities or research and development labs, the accident will not spread and be serious because there is a lot of slack available, and time to spare, and other ways to get things done. But suppose the system is also ‘tightly coupled’, that is, processes happen very fast and can’t be turned off, the failed parts cannot be isolated from other parts, or there is no other way to keep the production going safely” (Perrow 1984:5).*

Luckily, it seems system accidents are uncommon, even rare, but this is not all that reassuring, if they can produce catastrophes (Perrow 1984:5). When

we have interactive systems that are also tightly coupled, it is “normal” for them to produce catastrophic accidents, even though it is infrequent (p.8). In organizational terms, such systems are highly problematic, since we do not have organizational solutions to deal with them. Tight coupling requires a centralized organizational form while complex interaction needs a more decentral form to cope with it. Perrow developed his framework with regard to socio-technical systems, but one could argue that we can now also find these characteristics in socio-economic and socio-ecological systems. The financial system that produced the financial crisis as part of the socio-economic system in 2008 was precisely characterized by tight coupling between financial institutions worldwide and by complex interactions between financial products, assets, and debts that nobody could oversee anymore. While nuclear accidents are characterized by enormous speed of interaction and financial crises are usually still relatively fast-moving events of several hours or days other system failures might be slower but nonetheless difficult to stop. However, if we do not understand their coupling and complex, i.e. often unexpected or even incomprehensible interactions between the components and organizations within them, more time might not help us much to avoid their breakdown.

*On the individual level*, many people experience societal and organizational complexity as a loss of autonomy or grip. The Scientific Council for the Dutch Government (WRR) recently addressed this issue in a report. It defines grip as “environmental control, i.e. the degree to which people are able to effectively influence their environment, and thus achieve their goals” (WRR 2023, summary p.5). People should thus be able to achieve their desired outcomes and avoid undesirable outcomes through their own decisions and actions. It further argues that real environmental control also requires other things, such as adequate financial resources, social resources, and rights, but also a predictable and navigable environment (WRR 2023, summary, p. 6). The report suggests three ways in which the government can help increase the grip of citizens on their lives: Directly improve the grip of citizens (direct control), strengthen the grip via intermediary organizations, which can act on behalf of citizens and increase the grip of society as a whole on its future (WRR 2023, summary, p. 7). Surprisingly, the report does not pay any attention to the role of organizations and organizational differentiation. I would argue that “Grip” also entails the knowledge and skills, on how to navigate a highly differentiated society of organizations and interact with organizations but also how problems

are distributed across different public, private, and non-profit organizations, how they collaborate in addressing these problems for citizens and clients and how they behave towards them (the childcare benefits scandal is a case in point here again). The ability to successfully navigate this society of organizations is related to the level of (academic) education and financial means. It therefore becomes a crucial political question of distribution and inequality, since large and important population groups are unfortunately not able to keep up and cope with this situation. From an organizational perspective, we therefore should think about what kind of social and organizational infrastructure is needed to help people navigate and how especially (semi-) public organizations can stay accessible and provide human contact even in the age of AI. I believe this is an underestimated if not overlooked reason for the current frustration and anger among some groups of society and societal polarization. Both the political right and left react to this complexity and the frustrations with identity politics, which in my view is a desperate but misguided attempt to react to these complexities (even though politically successful). In addition, Friesen et al. (2014) argue that a (perceived) threat to control leads to a stronger preference for hierarchical instead of egalitarian forms of organization because hierarchical forms better fulfill the core motivational needs for order, structure, and predictability relative to less structured forms of social organization.

Despite a few counter-examples where we could argue that complexity is decreasing mainly in the area of market concentration, there is overwhelming evidence at the societal, sub-system and organizational levels, that our lives have indeed become more complex. This is due to the fact that the number and variety of social and organizational entities that we can or have to deal with and the number and variety of interactions between these entities have been increasing. Moreover, this development is likely to continue, since it is driven by strong economic incentives and technological developments. The question then arises as to what the organizational implications and responses have been to the increasing societal complexity and what the interaction is between the increasing complexity and the organizational responses.



### 3. Organizational Responses to Increasing Complexity



We can observe at least three consequences and broad organizational responses to the increasing societal complexity which from the perspective of individual organizations translates into increasing environmental and task complexity. *First*, the variety of organizational forms has greatly increased (Mintzberg 2023). While at the time of Smith's writing in the 18th century, people knew government ministries, the church, small family businesses, personal enterprises, and the first commercial enterprises such as the British and the Dutch East India companies, today we have, on top of that, international governmental and non-governmental organizations, different types of corporations such as multi-national enterprises, social enterprises, different types of non-profit organizations, political parties, social movements and a great number of inter-organizational collaborative forms such as public-private partnerships (even though I would admit that the above mentioned East India companies were a form of that already), alliances, consortia, joint ventures, and other flexible organizational project forms.

*Second*, organizations responded on the one hand by increasing their internal differentiation to re-establish the organizational fit with a more complex environment as the structural contingency theory predicts (Donaldson 2006). If we look at our university, for example, we now have a very differentiated set of departments with computer and digital sciences as the latest additions. Compare that to the early European universities in the Middle Ages with general philosophy, theology, and math and then law and science with some professors and teachers. The administrative apparatus has also grown and now encompasses a diverse set of units like IT, knowledge transfer offices, grant offices, general research and education support offices, education innovation lab, international office and a differentiated set of academic and student services. On the other hand, organizations attempted to re-integrate the internal differentiation through various (new) forms of organizing (Lawrence and Lorsch 1967; Puranam et al. 2015) such as the project-based organization (Sydow et al. 2004), multi-team systems (Zaccaro et al. 2020) or holocracy (Robertson 2014). We also see this effort at Tilburg University with various thematic research programs, which try to counter the saying: "the world has problems and universities have departments".

Third and this will be the main focus for the remainder of the address, organizations have become increasingly "outward bound" (Mintzberg 2023)

since the 1980s. As a consequence of increasing specialization, organizations have found themselves in more and new (inter)dependency relations (also due to outsourcing non-essential functions), which they seek to control (Pfeffer and Salancik 1978, Hillman et al. 2009). Some of these functions or materials they can still acquire via market exchanges but as the Transaction Cost Theory predicts, there are (economic) exchanges with a medium frequency, asset specificity, and uncertainty levels where longer-term partnerships with other organizations are economically most efficient. In addition, due to enhanced innovation pressures, many organizations seek to recombine their core knowledge and competencies with other organizations' knowledge and expertise to create new or tailor-made products and services (Prahalad and Krishnan, 2008; Granstrand and Holgersson, 2020). Through inter-organizational relations and networks, organizations seek to recombine their resources to serve individualized demand. Since this is usually done for a limited time, high "sunk costs" are avoided. Digital technology now enables people and organizations to set up and maintain decentralized forms of organization, i.e. network forms of organization based on marginal costs of interaction and communication which are close to zero. We see such organizations for example in the form of virtual teams (Lipnack and Stamps 1999) or larger organizational ecosystems (Shipilov and Gawer 2020).

As a further development, we can identify the attempt to tackle problems that individual organizations cannot solve or cope with on their own and to re-integrate highly differentiated organizational systems. If we look at the complex domestic violence case described in the beginning, it becomes clear that only a coordinated response by specialized interconnected organizations creates a chance to successfully deal with such problems. Consequently, inter-organizational relationships and networks have evolved into an important, frequently deployed form of organizing at present with sustained importance for the future (Raab and Kenis 2009, Majchrzak et al. 2015) to an extent that we can talk of a "society of networks" (Cardoso and Castells 2006; Raab and Kenis 2009). It is therefore not a surprise that we hear many calls for integration for inter-organizational collaboration coming from different directions indicating that markets and vertically integrated organizations alone cannot achieve the necessary integration of our highly differentiated society. In his farewell address last year, economist Lans Bovenberg called for the "new economy as collaborationology, with traditional economics working in tandem with other

social sciences like sociology and psychology to resolve collaboration issues.”<sup>1</sup> Then Dutch Minister of Health Ernst Kuipers declared that a future-proof health care system is impossible without a broad collaboration of care providers<sup>2</sup> and Kim Putters (2022) argues that many current problems of citizens demand goal setting across traditional domains and actions that goes across traditional sectors. These statements point to the broader demand to put societal problems and tasks central to organizations’ missions and to search for organizational forms where citizens, clients, and organizations can meet each other more effectively. In principle, this is likely to happen in collaborative arrangements, in which organizations take not only responsibility for achieving their own goals but also for achieving the collective goals of the collaborations they are involved in (Minkman and Merkus 2024).

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<sup>1</sup> “The new economy is collaborationology”, Tilburg University Magazine, <https://www.tilburguniversity.edu/magazine/new-economy-collaborationology>, accessed April 22, 2024.

<sup>2</sup> Interview minister Kuipers: ‘Toekomstbestendige zorg is zonder brede samenwerking onmogelijk’, Nieuwsbericht | 21-12-2022, <https://www.gegevensuitwisselingindezorg.nl/actueel/nieuws/2022/12/21/interview-minister-kuipers-toekomstbestendige-zorg-is-zonder-brede-samenwerking-onmogelijk>, accessed April 22, 2024.

## 4. Organizational Networks

## Forms of organizational networks

In the roughly last 50 years, many organizations have intensified their longer-term and often non-market external relations and as a consequence, a variety of interorganizational collaborative organizational forms emerged that are described in different strands of the academic literature. Even though inter-organizational relationships and networks are not an exclusively new phenomenon, one can observe in many fields such as public management, economics, education science, political science, sociology, health sciences, economic geography, innovation, and sustainability studies that the attention as a reaction to the increasing empirical prevalence and importance of inter-organizational networks in and across different societal sectors has steadily grown. We find inter-organizational networks described in the literature as purpose or goal-oriented networks, collaborative governance, governance networks, socio-ecological networks, cross-sector partnerships or collaborations, temporary organizations, alliances, chains, consortia, meta-organizations, or multi-party joint ventures.

With all these different labels, it is important to understand though that there is a fundamental difference between the collaboration of two, and three or more organizations. As Simmel (1908) already laid out more than 100 years ago, the decisive step in social structure and processes is from two (the dyad) to three social entities (the triad) or more. By introducing a third entity, the social processes become much more complicated including potential conflict and (delayed) reciprocity constellations which require more agreements and coordination mechanisms or governance. From three parties onwards “generalized exchange” becomes possible, which “is multilateral rather than bilateral, that (...) can be indirect rather than direct, and above all (...) involve the trading of a large variety of resources, including support in particular, which have no market price and hence call for bargaining” (Mayntz 1993:10).

One of the difficulties in the literature is that the term “network” is used for different but related constructs to describe groups of three or more organizations. In a recent book, Nowell and Milward (2022) distinguish three taxonomic classes of organizational networks: “Structural oriented networks”, “system oriented networks” and “purpose oriented networks”. They define “structural oriented networks” as “(...) representations of social structure with arbitrary analyst-imposed boundaries; these networks are delineated from the other classes in that the collection of actors and their ties are not presumed to represent any higher-

order entity” (Nowell and Milward 2022:8). In this understanding, the network is not an organizational form but a tool to describe and analyze the social structure of groups of organizations with network analytical methods. “System-oriented networks” are networks for which the network and its boundaries are a reflection of analyst-imposed decision rules presumed to delineate the relevant population of actors, and their relations, associated with some system of interest”(Nowell and Milward 2022:9). Systems of interest may refer to issues of public interest or concern such as domestic violence, health care, public safety or sustainability issues. But we can also include eco-systems, supply chains or learning networks in that class. These systems are cognitively constructed by academics, analysts or policy makers, but “do not have an agreed-upon identity outside of the imaginings”(Nowell and Milward 2022:9) of the person(s) constructing it. The organizations in system-oriented networks forge, maintain and end ties with other organizations but do not see that system as an overarching organizational form. However, that does not mean that indirect ties and actors at a greater path length in this type of network cannot influence processes or performance of other organizations in the system.

“Purpose-oriented” networks are networks “that have selfactualized as entities by meeting the criteria of being bounded, self-referencing collectives comprised of actors who consciously affiliate to the collective around some shared purpose” (Nowell and Milward 2022:10). Moreover, purpose-oriented networks are “sociologically real to its members” (ibid). By this, Nowell and Milward (2022) mean that “they have established a shared identity, and members both endorse their affiliation with this shared identity and have a means by which they can reliably identify other members and distinguish them from nonmembers” (p.10). Based on that definition, cross-sector partnerships or collaborations, alliances, consortia, meta-organizations, multi-party joint ventures or shared service centers can be included in that class. However, they strive for sometimes very different organizational and collective outcomes. These can be for example reducing domestic violence, organizing affordable health care, advancing sustainability goals, making cities more liveable, managing natural disasters and man-made crises but also innovating to (jointly) produce and sell new goods and services in a variety of sectors and markets or seek to increase efficiency like shared service centers.

Many of these issues currently belong to our societies' most intractable problems. Innovating in how we organize and tackle these issues is therefore crucial to managing the transition to a more sustainable society. Hence, it is not surprising that organizational networks often transcend classical distinctions such as public, non-profit, or for-profit organizations given the fact that to tackle these issues, all three types of organizations need to be present. Examples can therefore be found in the fields of sustainability (e.g. Gray and Purdy 2018), health (lowering neonatal mortality rates, e.g. Shiffman 2017, Lemaire et al. 2017; integrated care, e.g., Minkman 2012), public safety (Raab, Mannak, and Cambre 2015), crisis management (fighting natural disasters, e.g. Kapucu and Demiroz 2017), education (student satisfaction levels: Akkerman et al. 2012), entrepreneurship (e.g. Sydow et al. 2016) or technological innovation (patents: Dhanaraj and Parkhe 2006). Not surprisingly, this organizational form also has a very prominent place within the U.N. sustainability goals where it achieved goal status as SDG 17 "Partnerships for the Goals".

As will be discussed in more detail below, the necessary composition and governance for each class has to vary dependent on a set of contingencies in order to achieve the desired outcomes. In addition, even for purpose-oriented networks, there are important implications for composition and governance depending on the type of outcome a group of organizations seeks to achieve. What complicates things even more both analytically and managerially is the fact that in empirical reality the three classes might intersect. For example, it regularly occurs that a purpose oriented network is formed within a system oriented network or implemented as an intervention to more consciously work on the achievement of certain goals. Think for example about setting up a network with an explicit governance structure to reduce poverty and install an early warning system for people who might get into financial problems in a municipality out of the system of organizations in that area which have worked together in smaller groups or bilaterally probably already for a long time. A network might at first only consist of dyadic interactions between organizations and then organizations voluntarily team up to form a purpose oriented network that later might even be mandated by a government entity or its formation stimulated through strong financial incentives by a philanthropic organization or a government body.

Another example is the conscious coordination of a part of a supply chain by one or a few larger end producers where what once were bilateral relations

now becomes a multi-lateral system with a collective governance structure and conscious membership. Within the class of purpose-oriented networks, efficiency goals for the individual organizations might overlap with collective outcomes goals. In the European University Alliance Engage, in which Tilburg University participates, it is tried to create unique educational offers, strengthen European experiences and education of students and increase the innovative capacity of research but one can also think in terms of increasing the economies of scales of small or midsized universities by jointly developing and using online teaching platforms and material for example.

Even though the optimism in the literature about organizational networks has waned to some extent since the 1980s and 1990s, the mainstream view in the field still is that they are better able to deal with complexities and are seen as more flexible than vertically integrated organizations (Powell 1990). For example, they are able to divide tasks to tackle a complex problems and then pool their different resources, capacities and knowledge. They make it possible for organizations to share risks, if a task is too large for a single organizations or highly uncertain. They enable organizations to jointly analyze complex problems from different perspectives and can create overall synergies between them (Pralhad and Krishnan, 2008; Granstrand and Holgersson, 2020).

### **Analyzing organizational differentiation, complexity and network integration: a research example**

What do organizational differentiation, complexity and network integration look like in practice? In 2015, Patrick Kenis and myself were contacted by Aura Timen and her team, then the country coordinator for infectious disease control at the RIVM (the Dutch CDC). After several infectious disease outbreaks such as SARS 1 in 2002, MERS-CoV since 2012, Mexican flu in 2009, Ebola in West Africa in 2014, ongoing West Nile Virus outbreaks and Measles in the Netherlands in 2013 the question had become more pressing how a response to a major outbreak would look like in a highly differentiated society as the Netherlands and how that response could be coordinated. In 2016, Patrick Kenis, Marleen Kraaij-Dirkzwager, Aura Timen and I conducted a study to analyze the task and organizational complexity as well as the potential coordination efforts (network integration) in case of an outbreak of a virus from an organizational network perspective (Raab et al. 2021). We designed two realistic but fictitious scenarios (at the time): the outbreak of a “New Asian Corona Virus” (NAC) and



of the West Nile Virus (WNV) in the Netherlands and surveyed the organizations which would potentially be involved in the response to such outbreaks.

Applying the classes of organizational networks discussed above, one could qualify the network we identified as a mix of a system oriented network and a purpose-oriented network. Some actors consciously join, are connected by a common identity as infectious control organizations and realize their activities in a wider context. Others are involved more through bilateral or multi-lateral contacts based on their tasks, which are indirectly linked to the purpose. Even though they do not consciously affiliate, they might nonetheless be essential actors for an effective response.

These two viruses were selected since they represented different ways of transmission, the NAC from human to human via respiratory droplets and the WNV via mosquitoes and horses. These differences would then potentially lead to different task requirements and task allocations and the activation of different organizations in the response. We identified a highly differentiated system with 61 actors and 28 control measures or tasks for the NAC and 92 actors and 34 tasks in the WNV scenario with a substantial number of organizations outside the classical public health architecture having a task in responding to the infectious disease threat. Mapping the actors and the tasks shows a system with high task and high organizational complexity with a lot of different actors from various sectors, many interconnections but very few clear structures. Results further demonstrated that different organizations would be involved in multiple tasks and many tasks would be done by several organizations which creates high organizational complexity and strong coordination needs. With regard to the network integration, results showed that the information provision structure appears to be relatively centralized, with the National Coordination Agency in the most central position. Although a lot more actors are involved in the WNV scenario, the structures in the two scenarios very much resemble each other, with the Ministry of Health and the Municipal Health Agencies (actors with formally described roles in the Public Health Act) in the following ranks with some distance to the NCA. The centralization of the communication structure around the NCA implies a lead organization type network in terms of governance, because the NCA is operationally involved and clearly by far the most central actor. However, there are also many linkages between the other actors. Through this analysis, we could provide an ex-ante insight into a

potential network response (instead of an ex-post analysis) and an approach to assess the preparedness of infectious disease control from a network governance perspective. We based this approach, on the one hand, on the observation that infectious disease threats by definition provoke an organizational network-response with a highly differentiated actor set and, on the other hand, the fact that this response can fruitfully be analyzed using social network analysis to understand the differentiation, task complexity and network integration. Unfortunately, in March 2020, the NAC scenario came true faster than we could have imagined. The actual Corona virus outbreak (Covid-19) made us aware that our study had been based on the implicit assumption that the outbreak of a Corona virus would remain a local outbreak that could be contained. Therefore, we think that the results are applicable only for the first two weeks in March 2020 for the actual outbreak when the system was still in a containment phase. Once the outbreak came into a situation of community spread and was recognized as such, the whole governance system changed significantly. The Dutch government reacted after some time mainly by centralizing the coordination of essential tasks such as getting protective material, distribution of ICU beds or testing and tracing. What the actual outbreak also confirmed, though, was the difficult position, in which the National Coordination Authority found itself in, because it fulfilled several different roles such as knowledge hub, coordination center, public information organization and the public authority that issues rules and guidelines.



5. How Should  
Organizational Networks  
(Not) Be Used?

As discussed above, organizations have become a lot more “outward bound” (Mintzberg 2023) due to increasing environmental and task complexity driven by growing specialization. However, as Mintzberg rightfully observes “outward bound” has a double meaning. While it signals opening up or going somewhere it also means “being restricted to or by a place or situation” (Mintzberg 2023:201). This points to a fundamental paradox: by responding to increased environmental and task complexity with new organizational forms, increased internal differentiation and specialization and increased collaboration with other organizations, task and internal organizational complexity are also further increased. It is therefore not a surprise that organizational collaborations seem to fail more often than they succeed. Hughes and Weiss for example reported in 2007 that the number of corporate alliances increases by some 25% a year and that those alliances account for nearly a third of many companies’ revenue despite a high failure rate between 60% and 70%. Reeves et al. (2019) analyzed the performance of 57 ecosystems in 11 sectors and found that fewer than 15% of the ecosystems studied were sustainable in the long run. Unfortunately, we do not have broader figures for networks in the public sector but from the research and anecdotal evidence, we see that many purpose-oriented networks have problems achieving their goals. Inter-organizational collaborations therefore turn out to be a complex organizational form even though we might be able to improve the performance over time once we understand better, when (not) to use them, how they work, and how to manage them.

By constructing organizational networks in various forms, we add another organizational layer to our society of organizations and some scholars even already talk about “networks of networks” as yet another level (Nowell et al. 2019). Since the majority of organizations goes through this process of increasing internal differentiation and growing external relational involvement, we find ourselves in a positive feedback loop of increasing complexity, since increasing organizational complexity feeds back into the overall societal complexity.

One might therefore legitimately ask, where this will end or whether we are caught in a spiral of steadily increasing complexity. How is it possible to re-integrate differentiated organizational systems to come to fitting and sustainable solutions without further increasing complexity? To what extent is it possible to reduce complexity and still reap the advantages of specialization? These are difficult but important questions to ask at a moment in which demand for inter-

organizational collaboration is sky-high to tackle our most pressing challenges and deliver innovative products and services but in which people, organizations, and states become wary of giving up more or even want to regain their autonomy and sovereignty and in which organizations increasingly wonder, how they can effectively manage all these collaborations.

In his book “Unavailability” (Unverfügbarkeit) (2018)<sup>3</sup>, German Sociologist Hartmut Rosa argues that attempts to make the world more and more available, predictable and controllable lead to the paradoxical outcome inherent in modernity that it will become ever more unavailable and uncontrollable. In his view, availability has four dimensions: *Making visible*, i.e. extending the knowledge about what is; *making something accessible* for example putting a man on the moon, diving into the deep sea but also the smallest cells in our bodies; *making the world manageable and control it* and last but not least *making something usable* (Rosa 2022:31-32). The Western societal and political institutions and processes are geared towards achieving the goals connected to these four dimensions which was already described by Max Weber (1922) as the continuous rationalization process that, however, also leads to alienation. Technology and organization are the primary instruments in making the world “available” to human beings. In the perspective and terminology I used above that means that by trying to make the world available and control it ever more tightly, we make it ever more complex and it will evade that control. In addition, we shrink the space for real innovation, creativity and joy in life, which as Rosa emphasizes lies not in the complete predictability of experiences but in the unexpected and uncontrollable ones (think about the joy you might get from a spontaneous and surprising meeting with an old friend you might have at the reception after this address compared to a process where you both had to go through great lengths in finding a time and place to meet). Another example for people who, like me, like snow is the joy of a sunny winter morning after unexpected snowfall if compared with the artificial bands of snow in otherwise brown mountains. Compared to the former where we also might not have snow, we are guaranteed snow, but it is less joyful. Rosa (2022) calls this resonance, i.e. to interact with the world but not to

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<sup>3</sup> in English translation the “Uncontrollability of the World” (2020) and in Dutch “Onbeschikbaarheid (2022), page numbers relate to the Dutch translation. I thank my colleague Bertruke Wein in the EISON project for giving me the book as a gift.

control it and to be able to respond to the reaction again. As a consequence, things that we can make completely available as human beings in all four dimensions mentioned above, lose their ability for resonance. Resonance thus implies semi-availability (Rosa 2022:61). How can we cope with this paradox, which in my view, also holds some answers to the question with regard to the complexity I formulated above? Rosa (2022) sees the “solution” in a re-analysis of human desires and a change of attitude. We should conceptualize the world no longer as something we want to make available, use, and control but as something we approach from an attitude of “mutual responsive accessibility” (p. 132). This entails that we accept that we cannot and should not seek to control everything and adjust our behavior and way of organizing accordingly.

I am aware that organizational networks are part of a general organizational rationalist paradigm but I think that they also hold some potential to develop resonance or at least the capacity to not fall into the trap of ever-increasing complexity through the attempt to control the world ever more tightly. In his seminal book “Administrative Behavior”, Herbert Simon (1947) argued that formal organizations are a response to the bounded rationality of human beings by introducing specific positions, roles, information-gathering, decision-making processes and structures, i.e. a different rationality than the human one that can compensate for the limited cognitive capacity of individuals. From this perspective, organizational networks could be regarded as a response to the inadequate rationality of individual organizations to deal with complex problems. However, for an organizational network to be a successful response to the limitations of individual organizations, a rationality different from that of individual organizations has to evolve. If the same rationality, based on control is applied, that response is likely not going to be successful. The question then becomes, how such a different rationality might look.

Early studies described organizational networks as being lighter on their feet and more flexible in reacting to new problems and demands than traditional vertically integrated organizations (Powell 1990). However, research since then has shown that organizational networks also need stability and that we face a tension between the two (Provan and Kenis 2008). The main call therefore is not to renounce using organizational networks or to renounce to consciously govern them but to use, design, and manage organizational networks in a way that avoids unnecessary complexity and makes resonance possible. Concretely, this especially entails:

1. Use purpose-oriented networks only, if it is necessary, i.e. if a problem cannot be solved or a good or service not be created through market exchanges, individual organizations or parallel (dyadic) interactions between two organizations. Purpose-oriented networks require substantially more attention, energy and effort than markets, hierarchies or dyadic exchanges. For societal problems that means that they should only be used for truly complex issues and tasks. For other issues exceeding the boundaries of individual organizations, there has to be a substantial added value that cannot be achieved through individual organizations or dyadic interactions. Also important in this regard is the expectation management towards the public. There are complex problems that are very hard to solve, but we can make a start in dealing with them and minimize negative external effects. At the same token, we have to be prepared to be patient, since organizational networks need time to become fully functional. For policymakers this also means not to continuously start new initiatives. As Nowell and Albrecht (2023) recently showed, the carrying capacity of organizational fields and the involved organizations (“network domains”) is limited and there is the danger that with any new initiatives existing networks are crowded out since organizations will devote their attention and resources to the new subsidy opportunities.
2. As with all organizational forms, the functioning and effectiveness of inter-organizational networks is situational. Be aware of which class of networks we are dealing with, want to establish, or need to manage and what important contingencies like size are. Be aware of what the purpose of an inter-organizational network is. Different classes of networks require different forms of facilitation and governance. A system-oriented network can be facilitated but not really governed, since the overall outcome does not follow a purpose consciously shared by the participants but by the individual interactions of the involved parties.
3. For purpose oriented networks, different purposes require different composition and governance. A shared service construction that is focused on efficiency can work with less differentiation and more standardization while a network tasked to tackle a complex societal problem needs to mirror the task complexity with the necessary organizational differentiation, i.e. an adequate representation of capabilities and resources. The governance needs



to stay flexible to be able to constantly react and adjust to new insights and participants, i.e. keep resonance as high as possible.

4. Organizing is prone to routinization and standardization and in many instances that has clear advantages since it creates stability and unburdens human beings of a lot of decision-making. However, for purpose-oriented networks, the challenge is to keep a balance between stability and flexibility. This means allowing for the maximum possible ingredients and input and to continuously emphasizing the joint purpose as the central means of integration. In that way, resonance can be created. For example in one of the networks involving issues around social housing, we observed, that the supervisors of different organizations took their bikes and cycled around the neighborhood thus being open also for non-standardized input and unplanned encounters.
5. Keep in mind, that even though purpose oriented networks form a response to complex problems they often add complexity themselves. Therefore, if one decides to establish an organizational network, do it right. That first involves sufficient resources for the network but also within the participating organizations. Second, there should be professional management of the network but also in the network. The latter refers to the management activities of people within the participating organizations with regard to the contributions and activities of the organization in the network (Milward and Provan 2006). We still see very often that organizations sign up to participate but then their employees do not get the necessary time and resources, tasks are not included in the job description and there is no good handover of network-related activities and relations if personnel changes. In addition, organizations should think well about their motives and expected rewards before they join and evaluate their commitment from time to time and also stop the participation, if the evaluation is negative. Otherwise, involvement in collaborations will keep piling up, which leads to the draining of resources. Private sector organizations which have been working in alliances and joint ventures have known this for some time but it has not dissipated into public and non-profit organizations yet. Now that the stakes become higher and collaborations become long term, management in networks becomes ever more important (see for alliances Hughes and Weiss 2007).

6. If organizations decide to jointly produce outcomes, make a conscious choice about governance but keep it as simple as possible. That means first, choosing a fitting governance mode based on the purpose and several key contingencies like size, trust density or goal consensus (Provan and Kenis 2008; v.d. Oord et al. 2023). Second, review the governance from time to time and revise if necessary. Separate strategic from operational decisions and manage the efficiency-inclusiveness tension. Operational decisions do not have to be taken by all participants jointly while strategic decisions usually have to be taken by all participants together. Operational decisions can therefore be made in a simpler way with regard to the governance of the network.
7. A substantial amount of resources are devoted to organizational networks and new risks are evolving for organizations by being bound in and by multi-lateral relationships. However, the solution cannot be simply by adding another layer of control, i.e. establishing elaborated monitoring and control mechanisms for the network level. This would yet add another layer of complexity and diminish resonance. We are only beginning to address that problem and there are no ready-made solutions (yet). For the time being, the advice would be to allow for resonance to develop between the involved people and not focus primarily on control but on intrinsic motivation, social capital and trust.
8. Be aware that mandated networks function differently from voluntary ones, but to make mandated networks successful, it might be helpful to nonetheless try and create energy and commitment from the bottom up. No matter what the mode of inception, it is often difficult to sustain the initial enthusiasm and commitment. This requires conscious engagement to infuse new energy from time to time, keep emphasizing the purpose, and share success stories.
9. Costs, benefits and rewards are often unclear and lagged. This makes it difficult to demonstrate their effectiveness with detrimental consequences for their legitimacy and requires attention to the management of legitimacy both on the network level and within the participating organizations (Milward and Provan 2006).

10. Power, interests, and conflicts do not disappear in organizational networks, but can actually become more pronounced, and need to be acknowledged and managed (Beemer et al. 2018). Due to the complexity, decision-making can easily become intransparent. For networks that seek to tackle complex social issues, that means that they potentially create a systemic conflict with decision-making in representative democracies that is not easily solved (Kenis and Raab 2020). This makes it even more pressing in the public domain not to see organizational networks as a technocratic exercise and an organizational response to increasing societal complexity that removes decision-making and implementation from citizens. Rather, we should search for (new) ways of citizen involvement also in this organizational form.

6. When and How (Not)  
to Use Organizational  
Networks: A Research  
Agenda

In my future research, I will mainly focus on purpose-oriented networks as an organizational form and plan to concentrate on the following research areas in order to contribute to the development of an organizational network theory:

1. Further validation and refinement of the theoretical model of network effectiveness using the configurational approach and set-theoretic as well as network analytical methods. For that I am heading an international team science group of European and U.S. colleagues together with Michael Siciliano from the University of Illinois Chicago. Our goal is to reconceptualize the governance of purpose oriented networks and build a data base of about 75-100 cases from different countries with a joint research protocol. This will help us to overcome the small N problem, that this type of network research is confronted with and increase analytical power. Equally important and exciting is the chance to include especially institutional context in the analysis. With this development, we move the analysis of purpose-oriented networks from a closed to an open systems perspective. From a theoretical perspective, I would like to contribute to improving our understanding of the complex configurations of factors that play a role in causing the effectiveness of organizational networks and how they change during their life cycle. To realize this theoretical ambition, methodological steps must be taken as well. Most network research has a strong bias toward structural, formal, and quantitative linear additive approaches. However, outcomes are best understood not as linear additive, but as a configuration of factors, in which factors simultaneously and jointly bring about an outcome. Such a configurational approach also considers that similar outcomes can be caused by different configurations of factors (equifinality, Fiss et al., 2013). Therefore, configurational thinking and methods need to be (further) developed and applied to the field of organizational network studies.
2. Linking governance, structural characteristics and (management) processes including accountability and supervisory issues in the study of organizational networks. The research project on External and Internal Supervision methods and modalities for Organizational Networks addressing complex societal issues [EISON, together with Patrick Kenis, Mirella Minkmann (TiU), Cor van Montfort and Melanie Ehren (VU), Bertruke Wein and Rob Willems, PhD researchers Roman Pankow and Sina-Aline Mueller and other colleagues], which is funded by the Dutch Research Council and

will run until 2027, is the organizational framework for that endeavor. Classical hierarchical accountability concepts are challenged in the context of organizational networks and the question is what other accountability concepts and arrangements are possible to support the effectiveness of collaborative organizational forms. Existing accountability systems often only hold the single organization accountable for their individual performance and as such might even function counterproductive in producing value at the collective level of the collaboration. Supervisory boards are therefore in a catch-22 situation. If they want to exclude risks emerging from collaborating with other organizations they might endanger the successful resolution of problems and also the mission of their organization. However, not monitoring the risks of such activities could endanger the functioning or even the financial sustainability of their organizations but also the functioning and effectiveness of the collaboration. Consequently, in an increasingly connected society supervisory mechanisms are required which are not only grounded in the past world of 'stand-alone' organizations. However, in the academic literature, these are rarely discussed to date. In the literature on collaborations and networks, questions of accountability and control are not often discussed and even somehow seen as an oxymoron. For the literature on supervision, inter-organizational collaborations are somewhat mysterious organizational forms that do not fit the dominant supervision and accounting paradigm. Yet, if we want to enable organizations to tackle collective problems and achieve collective outcomes and keep fulfilling their missions in a complex networked society, they must get the leeway to do so on the one hand but need to monitor and manage the risks on the other hand as well. In the EISON project, we investigate different supervisory arrangements of eight networks in the health care, social housing, safety and education sectors and will then design and test specific arrangements. As discussed above, the guiding principle for supervision and accountability in and of organizational networks should be, how they can contribute to achieving the purpose of the network and not just upholding a traditional control paradigm by creating the maximum possible space for resonance.

3. Research in this field has strongly focused on the relationships between organizations and has, in my opinion, paid insufficient attention to the people who represent the organizations, who are connected to other people and do

the orchestrational work. Therefore, I am interested in learning even more about how individual members of organizations act in networks on a day-to-day basis, how we can explain the variation of behaviors, what operational problems they face, and how they deal with conflicting identities and loyalties. Combining the literatures on organizational networks and teams and especially multi-team systems offers a very fruitful avenue in my view.

4. I also would like to understand better what consequences network participation has for individual organizations in terms of their strategies, internal structures and processes and how we can improve network effectiveness by improving organizational capacity for network participation. Together with Christoph Kogler from the Social Psychology department at Tilburg University, I have written a grant proposal to investigate the reasons and decision-making processes of organizations on leaving or staying in a purpose-oriented network especially if external funding runs out. PhD researcher Annamaria Waarts investigates this question for the decision of whether an organization will join a network or not. Both projects will contribute to our understanding of which resource and subsidizing models are most conducive to sustainable collaboration. Moreover, PhD researcher Jantine Trommelen (supervised by Patrick Kenis and myself) on the initiative of the Tilburg City Administration is currently working on a valuation framework to enable city administrations to more consciously make decisions on starting, continuing, ending, and contributing to the governance of and internally managing the city's collaborations. This could form a second "Tilburg Model" for the context of the society of networks (the first one in the 1990s being a steering model for local governments within New Public Management). These projects will help us to better understand, when organizations get wary of their interdependencies and how they seek to manage their autonomy and sovereignty.
5. Following the recent book by Federica Angeli, Ashley Metz and myself on Organizing for Sustainable Development, I want to apply cutting-edge knowledge on the governance of inter-organizational networks to the pressing problems of our times as they are formulated in the 17 UN Sustainability goals. It is indicative for the prevalence and importance of this form of organizing that SDG 17 is devoted to that with the label "Partnerships for the goals". In the area of sustainability, there are interesting empirical

applications for example in the area of circular economy, the energy transition and complex social issues in general as they are now investigated and discussed in Tilburg University's Broad Prosperity framework.

### *Engaging with practice*

I see connecting to societal partners and creating societal impact in the area of organizational networks as a very valuable complement that will also move our theory-driven research forward. As laid out above, given the complexity of our society and current societal problems that require a network response, the question of governance and management both *of the network* and *in organizations participating in the network* play a central role (Milward and Provan 2006), as they are very different from the governance mechanisms, management, and leadership styles more familiar to these actors in traditional organizational and market settings. Therefore, I see a considerable need and demand for expertise in this area. This raises an important question: How can scientific knowledge on organizational networks be used to intervene to create (social) impact and change? In the coming years, I would like to work on making this scientific knowledge actionable (also see: Shumate and Cooper, 2022), i.e. develop a theoretical and practical foundation for design and interventions in the context of organizational networks. This raises the question of which design approaches (formulaic, visionary, conversational or evolving, see Mintzberg 2023:214) are most prevalent in networks, which combinations can be regarded as most effective and which approaches lead to the balancing of flexibility/stability and the creation of resonance. This implies working, together with partners in practice, on the (further) development of a set of evidence-based organizational network interventions, for example, related to effective innovative supervisory arrangements for the governance of organizational networks in the EISON project, in which design research is applied in close cooperation with the involved networks, the respective inspectorates and supervisors from organizations in the field. Together with Remco Mannak and Yvette Klomp, I have started a collaborative research project with the city administration of Tilburg, where we will follow and advise the project "Prevention with Authority" (Preventie met Gezag) for the next five years through three rounds of data collection, in which 26 teams/actors in 11 projects seek to reduce the inflow of young people into drug crime in Tilburg Noord. Also in Tilburg Noord and West, together with Remco Mannak, Leon Oerlemans and Patrick Kenis, I will be engaged in applied research in the context of the RegioDeal mapping the organizational



network structure of the poverty policy and contribute to designing interventions to improve the governance of these networks. In the next couple of years, in collaboration with the HAN University of Applied Sciences and tasked by the Dutch Ministry of Education, Culture and Science, PhD researcher Joke Kiewiet will analyze the governance of newly set up education regions in the Netherlands which resemble organizational networks, under the supervision of Patrick Kenis and myself.

## 7. Closing Remarks

In this inaugural address, I argued that we face a fundamental societal and organizational paradox: In our modern societies, more and more interdependencies are created through increasing specialization driven by technological developments and organizational responses to that. These interdependencies cannot be managed by market exchanges or traditional organizations alone. Specialization and organizational integration have contributed to an enormous wealth but have also led to a self-reinforcing cycle of growing environmental, task and organizational complexity. This development increases the risk for “normal accidents” (Perrow 1984), since we encounter more and more systems that are characterized by tight coupling and complex interactions. In addition, people experience this growing complexity as a loss of grip on their lives with detrimental effects on well-being and our democratic system, since modern societies are built on the premise of stability and control and are therefore in principle quite risk averse. In many areas and on many different levels, we hear calls and see attempts to integrate and aggregate differentiated activities of organizations or larger social groups in the form of organizational networks: at the municipal level in the Netherlands to deal with poverty and recidivism, on the provincial level to deal with organized crime, public safety, the energy transition and labor market issues, on the national level to set up educational regions to find solutions for the teacher shortage, on the European level we just founded European universities as alliances of universities from 8-12 countries and European regulatory networks play a big role. On the global level, almost all international governmental and non-profit organizations consist of country chapters forming networks in the day-to-day operational activities. In business, R&D consortia, joint ventures, alliances, and more recently ecosystems have become a standard organizational response to organize activities across and above individual organizations, sometimes even to an extent that not only companies but alliances compete with each other as for example in the airline industry.

Organizational and more specifically purpose oriented networks can be seen as a response to deal with task and environmental complexity. However, they almost always add additional organizational complexity to the situation, and as I discussed above, come with a specific set of preconditions to function well. The question therefore arises, how we can cope with that complexity in and through organizational networks and to what extent it might be possible to reduce it. The above discussion showed that it seems very difficult to reduce

complexity substantially, since we should expect organizational and functional specialization and the necessary re-integration to further progress. Moreover, to successfully deal with societal issues for example, research suggests that organizational complexity has to match environmental and task complexity. If we cannot substantially reduce complexity, we should therefore at least think about how we can avoid further increasing it through our organizational response. This includes using networks only in situations where it is for example necessary to deal with complex or wicked problems, which requires a differentiated set of organizations or where multi-organizational collaborations add substantial value above and beyond what individual organizations are able to do. Second, designing the appropriate task and governance structure and adjusting it to changing conditions is key to making purpose-oriented networks function and sustainable. We should hereby strive to create the maximum possible room for resonance, i.e. the flexible and (unexpected) engagement and reaction to the problems at hand as well as the other organizations and people. This entails that we have to abstain from the idea that we can completely control the social and natural environment as well as the networks themselves, i.e. not set up networks in a control paradigm. Instead, we should approach networks more as an emergent phenomenon. I laid out in ten points what I have come to see as important in this regard and think we should pay attention to when we use organizational networks. This list is definitely not exhaustive and certainly more details will arise as we gain more experience with this organizational form. To increase our knowledge in this regard, I laid out my research ideas for the coming years to contribute to the development of an organizational network theory. Such a theory should have a multi-level focus: from the level of the individual and inter-organizational teams to aspects of decision-making and management in organizations when it comes to their involvement in networks to the explanation of network effectiveness. In addition, the theory should be a configurational theory given task and environmental complexity and also apply a dynamic perspective, with regard to the life cycle of organizational networks and the adjustment of the governance to changing contingencies. There is no Superman to help us deal with the complex problems we are facing. We have to do it with the hands and tools we are given. It is my hope that if used wisely, organizational networks can be one of those tools and that my future research will contribute to that use.



## 8. Words of Thanks

Receiving this chair at Tilburg University would not have been possible without the help and support of a lot of people whom I unfortunately cannot all mention here by name. The first person that I would like to mention is my PhD supervisor and mentor Wolfgang Seibel who directed me to do research on networks during my studies at the University of Konstanz and then later created the context in multiple ways for me to further develop my research and career. Ulrik Brandes made network research fun and strongly contributed to strengthening the graph theoretical perspective in my research. Together with Volker Schneider, Patrick Kenis and Dorothea Wagner, we took the first steps in the development of the network analytical and visualization software VISIONE and ran a summer school in Network Analysis for 10 years, which I always enjoyed very much. After my PhD, I had the opportunity to spend the majority of my time for two years at the University of Arizona with Keith Provan and Brint Milward. This was an invaluable experience and contribution to my personal and professional development and I cannot thank Brint Milward enough for having made that possible. Once I got to Tilburg in 2004, Leon Oerlemans became “my buddy” and helped me in finding my way in Tilburg and the Netherlands including figuring out how to import our car from Germany. He has given me his support ever since including during the promotion process to Full Professor last year in his role as Head of Department and the feedback on earlier versions of this inaugural address as a colleague. For all his support, I am profoundly grateful.

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