Management in Networks

second edition

Hans de Bruijn and Ernst ten Heuvelhof

ROUTLEDGE

"In an increasingly interactive world knowledge of how networks operate and evolve, and how they can be managed effectively, is increasingly important to students and practitioners of public administration, public management and public policy. In the first edition of this excellent book, the authors developed the idea of "process management" – contrasting it with other forms of such as "project-based" management – highlighting the advantages of using a process lens as a guide to producing better public sector outcomes. In this thoroughly revised and expanded new edition, the authors continue this pursuit, adding detail and nuance to their analyses of the best (and not-so-good) strategies that can be used to enhance collaboration between public, civil society and other actors in the pursuit of public value and the public good."

Michael Howlett, *Burnaby Mountain Chair, Department of Political Science, Simon Fraser University and Professor, Lee Kuan Yew School of Public Policy, National University of Singapore*

"*Management in Networks* (second edition) is a fundamental guide for policy makers and managers who wants to consciously decide and act in today's uncertain and complex world, where all decisions involve many actors, with different values and targets."

Giovanni Azzone, *Professor of Management and Rector Emeritus, Politecnico di Milano, Italy*

"Theories of management and decision-making abound, but how do we put these into practice? The new edition of this classic book reveals all the nuts and bolts to both practitioners and scientists."

Lasse Gerrits, *Professor for the Governance of Complex and Innovative Technological Systems, Otto-Friedrich University Bamberg, Germany*

"Hans de Bruijn and Ernst ten Heuvelhof show how management can deal with uncertainty. Their incredibly valuable 'rules of the game' for networked decision-making allow for the outcome of the process to emerge and for actors to subsequently ascribe coherence."

Arthur Petersen, *Professor of Science, Technology and Public Policy, University College London*

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Management in Networks

Getting what you want – even if you are the boss – isn't always easy. Almost every organisation, big or small, works among a network of competing interests. Whether these are governments pushing through policies, companies trying to increase profits, or even families deciding where to move house, rarely can decisions be made in isolation from competing interests both within the organisation and outside it.

In this accessible and straightforward account, Hans de Bruijn and Ernst ten Heuvelhof cast light on multi-stakeholder decision-making. Using plain language, they reveal the nuts and bolts of decision-making within the numerous dilemmas and tensions at work. Drawing on a diverse range of illustrative examples throughout, their perceptive analysis examines how different interests can either support or block change, and the strategies available for managing a variety of stakeholders.

The second edition of *Management in Networks* incorporates a wider spread of international cases, a new chapter giving an overview of different network types, and a new chapter looking at digital governance and the impact of big data on networks.

This insightful text is invaluable reading for students of management and organisational studies, plus practitioners – or actors – operating in a range of contexts.

Hans de Bruijn is Professor of Organisation and Management at Delft University of Technology, the Netherlands. His research is on networked, multi-actor governance, both between and within organisations.

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Preface

This book is about decision-making and change processes in our interconnected world.

In an interconnected world with many players, often with wicked problems and with plenty of dynamism, decision-making or change is often nonlinear and erratic. Sometimes decision-making even seems like a chaotic process, where no single pattern can be recognised.

In this book we unravel decision-making and show that there are patterns in this seemingly messy process. We describe the strategies of the players involved in decision-making. We show to what results the sum of these strategies lead – how they impact processes of decision-making and change. We not only describe and analyse these strategies and processes, but we also answer the question concerning what effective strategies there are for making decisions and creating change in an interconnected world. Many of these insights are contraintuitive for those who believe in linear, project-based decision-making.

This book is intended for anyone interested in decision-making and change, particularly for those who are subject experts in a specific area – whether that is infrastructure or the environment, safety or innovation – and who are surprised every time by the chaotic process of decision-making.

Hans de Bruijn
Ernst ten Heuvelhof

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1 Our interconnected world and what it means for decision and policy making

An interconnected world

We live in an interconnected world (Castells, 2011). The internet and the globalisation of the economy mean everything is connected to everything else. That sometimes has unforeseen and dramatic consequences. Take, for example, the economic crisis at the beginning of the twenty-first century. The fact that Europe is a system of interconnected economies is why problems in the small Greek economy could throw the entire euro zone into crisis. The housing bubble in America caused a global economic crisis. Cybercrime is an international game played out in a web of technology and actors in which the villains are thousands of kilometres away from their victims.

Chaos theory uses a well-known metaphor to clarify these processes in an interconnected world: the 'butterfly effect'. A butterfly in Brazil flaps its wings and causes a tornado in Texas months later. The initial movement – the flap of the butterfly's wings – causes only a tiny effect. But that is just the first of a chain of effects that gets bigger and bigger until eventually a tornado develops in Texas. Who imagines in advance that a butterfly, thousands of kilometres away, could cause a tornado? Who had ever thought that the small Greek economy could send the entire euro zone into a crisis? These are phenomena that are inherent to an interconnected world and that in many cases we can only recognise in hindsight rather than predict in advance.

In this book we will discuss the question of what this interconnected world means for change processes, for policy-making and for decision-making. In a nutshell: What does it mean for governance? It will become clear that a linear, systematic approach to governance is impossible in an interconnected world. So, the question is, how can governance be made possible?

Toward this end, in this first chapter we will unravel the essence of an interconnected world. How is this world structured, and what does this structure mean for the progress of decision-making processes in networks? With the help of these insights we can then, in the following chapters of this book, explore how governance can be substantiated in an interconnected world.

The structure of an interconnected world: three characteristics

Table 1.1 shows the three most important characteristics of the interconnected world – at least if we look at them from the perspective of governance.

First characteristic: Interdependencies

The first important characteristic of an interconnected world is that, indeed, it is inhabited by a large number of parties or actors (we will use both these terms alternately throughout this book): governments, companies, not-for-profit organisations, citizens. These actors have differing interests and are dependent on each other. These interdependencies are inherent to a high-tech society with its super-specialisms: the more specialisms, the more dependencies, – including its dependence on the internet. In the web of dependencies thus created nobody can achieve anything without the support of others. These interdependencies result in a multitude of relationships between the actors. Together all these relationships form what we call a network.

The world as a whole has become a network, but nations, regions and local communities are equally a network. When decisions must be taken, for example about roads or airports, we very often see that many local players, with differing interests, are involved. In this context, think of certain organisations, such as municipalities, companies, local action groups and environmentalists. However, the impact of the network concept goes even further. Even the organisations that form the actors in a network are often networks themselves. An organisation such as a hospital, a law firm or an engineering consultancy comprises highly trained professionals, with very different specialisms, who are dependent on each other. The professionals are dependent on the management, but the management is equally dependent on the professionals who possess the expertise and knowledge the managers do not have.

A network can be ideal-typed as the opposite of a hierarchy. A hierarchy is a vertical, pyramid-like structure in which there is a person or group that is in charge and that ultimately makes the decisions. All the other actors are subordinate to this group or person, so there are vertical relationships of superordination and subordination. In a network there is no such thing as a vertical structure. There are many players, nobody can say that he or she is 'in charge', and the relationships are horizontal not vertical.

Table 1.1 Main characteristics of an interconnected world

Characteristic of an interconnected world	*… instead of*
Interdependencies	Hierarchy
Unstructured 'wicked' problems	Structured problems
Dynamics	Stability

To understand the complexity of the network of interdependencies a number of other characteristics of networks are important.

Types of interdependencies

In the first place: interdependencies can take all kinds of forms.

- Bilateral or multilateral dependencies: Dependencies can exist between two parties but also between more than two parties.
- Single or multidimensional dependencies: Dependencies can relate to one dimension (for example, money) but also to several dimensions (money, information, authorities, relationships).
- Synchronous versus asynchronous dependencies: Actors can at one point in time all be mutually dependent on each other, but the dependencies can also be spread out over time. Today the first actor is dependent on the second actor, but a few months later this second actor is dependent on the first actor.
- Static versus dynamic dependencies. A dependency is dynamic if it changes over the course of time. A party can occupy a dominant position in a network, but that dominant position can become stronger or weaker as time goes by. A static dependency is not subject to change.

In many networks of interdependencies the dependencies are multilateral, multidimensional, asynchronous and dynamic. That makes decision-making and changes in these networks extremely complex, but we'll come back to that later.

Different interdependencies per topic

A second important aspect of interdependencies is that they can differ per topic. We can use a regional authority as an example. The regional authority is dependent on municipalities, the central government and private parties – and all these actors are, in turn, dependent on the regional authority. The 'region' focuses on physical infrastructure, which involves many different parties who together form a network of interdependencies. In this network the region has a degree of dominance, but the region also deals with nature and the environment. Once again other parties are also involved – some are the same as for infrastructure, some are different – and in this network the region may not have the same degree of dominance. As a result the decision-making processes in the infrastructure network and the nature and environment network may be very different. It may also be the case that certain parties are involved in both networks and this can also influence the decision-making. Coming off the worst in the decision-making regarding infrastructure can affect a party's attitude when it comes to decisions about nature and the environment. This makes decision-making more complex, not only because the network differs per issue

but also because certain parties will want to link the decision-making related to one issue to the decision-making related to the other issue.

Interdependencies don't always reveal themselves

The interdependencies have already created a very complex picture: There are many kinds of dependencies, they can differ per topic, and some people link these topics together. We can add a third factor into the mix: Not all the actors in a network always know what the reciprocal dependencies are. For example, a region may think a municipality holds a weak position in a network whereas, in fact, it holds a very strong position. A region may not know, or may not know with sufficient precision, an actor's views of and interests in a network. Certainly when it comes to more complex networks (many actors, many kinds of dependencies and many links to other networks), it is virtually impossible for a single actor to oversee the entire network. If actors are unsure of the position of other actors in a network – position not only in terms of dominance but also in terms of views and interests – it goes without saying that an actor's perception of the positions of others may be mistaken. A party could be more dominant than expected and a wrong assessment of a party's power can make the decision-making far more complicated. Different actors can, therefore, also have different perceptions regarding the positions in a network. That, too, does not render decision-making simpler.

Networks of interdependencies are already complex, but they become even more complex when the actors involved can have very different perceptions of the same network.

Second characteristic: Unstructured, wicked problems

A second characteristic of an interconnected world concerns the content of the problems that must be solved in such a world. These problems are often 'unstructured' or 'wicked' (Rittel & Webber, 1973). Unstructured problems can be ideal-typed as the opposite of structured problems, which are problems for which there is only one right, or the right, solution. An example of a structured problem is the question, "What does 1+1 make?" The answer is 2 – and that answer is independent of political preferences, interests or dominance. Unstructured problems do not have a single right answer. Why are so many problems unstructured?

To explain this we will use a simple example. A dairy company wants to know which type of packaging for milk is the most environmentally responsible: a cardboard carton, a glass bottle with a deposit or a polycarbonate bottle with a deposit. The dairy company wants to know how each of the three types of packaging scores for what are called the 'environmental components': energy usage, water usage, toxicity and waste.

To answer this question, several factors must be inventoried, including the production process of these three types of packaging: Which raw materials are

used, and how they are transformed into a packaging? Take the cardboard carton. This requires that a tree be cut down somewhere and then transported to a factory where it is turned into cardboard. The cardboard then goes to a factory where it is made into a carton, and other materials, such as a plastic (polyethylene) coating, are added. The polyethylene has also undergone its own production process, which began with cracking naphtha, so that must also be inventoried.

Let's suppose the tree is cut down in Sweden, transported to Hamburg to be made into cardboard and then the cardboard goes to a factory in Switzerland where it is made into cartons, and other components, such as the polyethylene coating, are added. To determine the real environmental impact, we must make at least three decisions.

- What data are we going to use? We need, for example, data regarding the number of trees that must be cut down to produce a specified number of cartons. We need data regarding the transportation of the trees: How much energy did it cost?
- Which system boundaries will we apply? Or, to put it another way: How do we demarcate the investigation? The trees are transported by ship. We want to know how much energy that costs. But because maybe there wouldn't be a ship without trees,, must we now also include the building of the ship when determining the environmental cost of the packaging?
- How do we allocate environmental impact to the packaging? The ship also transports cars and washing machines, so what portion of the necessary energy should be allocated to the washing machines and cars and what portion to the trees?

There are many other questions that could be asked, but in this context what it comes down to is that there isn't an objective answer to many of the questions. One party opts for one data set, the other party prefers other data set. One party opts for system boundaries that the other party considers too narrow or too wide. The allocation could also be calculated using various different methods.

Let's now suppose that, when deciding on the packaging, our dairy company has to deal with all kinds of other parties, such as an environmental organisation, a governmental authority and several consumer organisations, and that all these parties have different interests and different opinions about the three decisions to be made. The result can be a major conflict regarding the question of the right data, system boundaries and allocation methods – making an objective answer often impossible. When that is the case, many parties will have a tendency to make choices that suit their own interests or preferences.

But, let's suppose these parties agree about the data, system boundaries and methods, so they know how the three packaging options score for the environmental components energy usage, water usage, toxicity and waste.

Then we come to the next question: how to weigh the four factors against each other. Is a packaging with a bad score for water and waste, but a good