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# Trust in Governance Networks: Its Impacts on Outcomes

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## Abstract

Governance networks are characterized by complex interaction and decision making, and much uncertainty. Surprisingly, there is very little research on the impact of trust in achieving results in governance networks. This article asks two questions: (a) Does trust influence the outcomes of environmental projects? and (b) Does active network management improve the level of trust in networks? The study is based on a Web-based survey of respondents involved in environmental projects. The results indicate that trust does matter for perceived outcomes and that network management strategies enhance the level of trust.

## Keywords

trust, governance networks, management, network outcomes

## Introduction: The Relevance of Trust in Governance Networks

Nowadays, governance is everywhere (cf. Frederickson, 2005). There are an increasing number of situations in public administration where public actors make policies, deliver services, or implement policies within networks of actors (Rhodes, 1997; Sorensen & Torfing, 2007). In these governance

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networks,<sup>1</sup> the relationships between public actors and other actors (private, nonprofit organizations, as well as societal stakeholders) are characterized by a high degree of interdependency and complex decision-making processes.

### *Trust as a Research Topic: A Neglected Issue in Research on Governance Networks*

There has been much attention in the literature on governance and governance networks on the structure and form of these networks (see, e.g., Laumann & Knoke, 1987; Marin & Mayntz, 1991; Rhodes, 1988, 1997) and their management (Gage & Mandell, 1990; Kickert, Klijn, & Koppenjan, 1997; Meier & O'Toole, 2001, 2007). Remarkably, there have only been a few studies on the role of trust in networks from a public administration perspective. That is surprising because trust is supposed to be important in situations of high uncertainty. These include situations where it is difficult to rely solely on contracts, bonds and penalties, which are the types of situations actors face when they are part of governance networks.

A wide variety of literature on trust can be found in the field of business administration but also in interorganizational theory on the impact of trust on alliances and interorganizational cooperation (Huxham & Vangen, 2005; Lane & Bachmann, 1998). Many authors argue that trust has a beneficial effect on cooperation in alliances and that actors in alliances cannot rely only on contracts. This focus on trust fits the notion that attention should be paid to the process of allying, not just the formal form of an alliance (Bachmann & Zaheer, 2006; Deakin & Michie, 1997; Graeber, 1993; Lane & Bachmann, 1998; Oerlemans & Kenis, 2007).

### *This Article: An Inquiry on the Relevance of Trust on Outcomes in Complex Decision-Making*

This study examines environmental projects in the Netherlands to assess the influence of trust on outcomes in governance networks. The interaction and decision making that takes place in these projects are good examples of decision-making processes in governance networks (Koppenjan & Klijn, 2004; Sorensen & Torfing, 2007). The literature on governance networks mentions the following characteristics of these networks:

Many actors are involved (public actors, private actors such as building companies, and societal groups). They are connected to each other because of their dependence on the resources or commitments of other actors to realize their aims and/or solve societal problems (Agranoff & McGuire, 2001; Gage & Mandell, 1990; Koppenjan & Klijn, 2004).

They have a relatively stable character. That is, they exist for a long period and are characterized by intensive, or at least regular, interactions between the actors (Agranoff & McGuire, 2003; Kickert et al., 1997; Marin & Mayntz, 1991; Meier & O'Toole, 2001, 2007).

They are dominated by "wicked" problems. In other words, the solutions proposed for problems and challenges are contested because the different actors have divergent perceptions of the problem (and solutions) (Hajer & Wagenaar, 2003; Koppenjan & Klijn, 2004).

This article uses the results of a Web-based survey (see later) to investigate the relationship between the level of trust in these environmental projects and the outcomes. We also look at the influence of managerial strategies, called network management strategies, on the level of trust. Our research questions are as follows:

- Does trust have a significant impact on the (perceived) outcomes of decision-making processes in governance networks?
- Can trust be managed, that is, can it be influenced by network management strategies?

In the next section, we present some of the theoretical arguments on trust, performance and network management and formulate some hypotheses. Then we deal with the methodological issues of the research. Following that, we provide the empirical evidence. We finish with some conclusions and reflections in the last section.

## **Why Trust: Some Expectations About the Influence of Trust on Outcomes**

In this section, we present a brief review of the ideas on trust to be found in the literature and connect it to the literature on governance networks (for a more extensive overview, see Edelenbos & Klijn, 2007).

### *What Is Trust?*

Trust can be described in many ways. The literature lists some characteristics that are generally agreed on: vulnerability, risk, and expectations. Trusting another actor means that one is willing to assume an open and vulnerable position. One expects the other actor to refrain from opportunistic behavior even if the opportunity for it arises without having any guarantee that the other party will indeed act as expected (Deakin & Michie, 1997; Deakin &

Wilkinson, 1998). Thus, the actor believes and expects that the other actor will take both actors' interests into account in the interaction (Nooteboom, 2002; Rousseau, Sitkin, Burt, & Camerer, 1998).

This is especially important when actors are dealing with unpredictable and risky situations. In those situations, actors do not know what to expect and how other actors will behave. In this respect, the business administration literature pays special attention to the importance of trust in developing innovative products (Parker & Vaidya, 2001). In innovative processes, such as research and development alliances, actors are searching for new products or innovative processes but cannot foresee what the outcome will be. From a "normal," rational perspective, actors would never invest in such a process, because the risks are large (e.g., the other actor may misuse the information or opt for cherry-picking) and the benefits (the innovation being developed) are unsure and difficult to estimate beforehand. Because the actors do not know what to expect in these processes, agreements are difficult to pin down in contracts (Nooteboom, 2002; Parker & Vaidya, 2001).

On the basis of the available literature, trust can be defined as a stable positive expectation that actor A has (or predicts he has) of the intentions and motives of actor B in refraining from opportunistic behavior, even if the opportunity arises (Edelenbos & Klijn, 2007). Trust is based on the expectation that actor A will take the interests of actor B into account.

Trust thus facilitates making risky choices (Gambetta, 1988; Lane & Bachmann, 1998). A conscious choice is made to take a risk, because of the belief that the other party can be trusted. The assumption in most of the literature on trust is that actors will refrain from action (and cooperation) if trust is absent. Because uncertainty and complexity in governance networks is high, trust seems a promising concept to examine in such networks. Trust becomes more important when complexity, resulting from dynamics, uncertainty, and risk, is higher in governance networks. This argument leads to our first hypothesis:

*Hypothesis 1:* Trust is more important if the issue at stake in governance networks is more complex.

### *Why Trust Is Useful in Governance Networks*

Trust, then, would seem to be an important factor in establishing desired interactions and outcomes in governance networks. Against this background, the literature, although mostly not from the fields of governance, governance networks, or public administration, provides various reasons why trust is

important. The most important reasons for this are discussed below. Subsequently, several hypotheses are formulated to guide the research.

The first argument concerns the reduction of transaction costs. Fukuyama (1995) argues: "Property rights, contracts, and commercial law are all indispensable institutions for creating a modern market-oriented economic system, but it is possible to economize substantially on transaction costs if such institutions are supplemented by social capital and trust" (p. 336). On one hand, trust reduces the risk inherent in transactions and cooperative relations because it creates greater predictability (Kramer & Tyler, 1996). In a situation where one actor assumes good intentions on the part of the other, the likelihood of unexpected interactions as a consequence of opportunistic behavior are smaller. Given the complexity of decision making and interactions in governance networks, this could be a significant advantage. On the other hand, trust can also serve to reduce costs that are connected with contracts because contracts need fewer details and specifications when trust is present (Hindmoor, 1998; Nooteboom, 1998; Ring & van der Ven, 1992; Sako, 1998). This could also be an advantage in governance networks, given the costs of complex cooperation processes (Agranoff & McGuire, 2003).

A second argument is that trust increases the probability that actors will invest their resources, such as money, knowledge, and so on, in cooperation, thus creating stability in the relationship and providing them with a stronger basis for cooperation (Nooteboom, 1998; Nooteboom, Berger, & Noorderhaven, 1996; Parker & Vaidya, 2001; Ring & van der Ven, 1992; Sako, 1998). Although this argument is made for private cooperative relationships between firms, it is likely that it applies to cooperation within governance networks. The complexity of decision making and the multiplicity of actors require investments in forming and maintaining relations (Agranoff & McGuire, 2003). Trust can stimulate that investment and the effort actors put in those relations.

A third argument in the literature is that trust stimulates learning and the exchange of information and knowledge. Knowledge is partly tacit and only available, for instance, in the form of human capital (Nooteboom, 1998). This type of knowledge can be acquired only by exchange and intensive cooperation. This is often mentioned as an argument in favor of governance networks: The involvement of societal stakeholders and private actors generates more information and knowledge, which can be used to develop better-tailored solutions (Edelenbos & Klijn, 2006; Sorensen & Torfing, 2007).

A similar observation can be made on the importance of learning (Lundvall, 1993). Learning and discovering new things requires knowledge exchange and intensive interaction. Trust plays an important role in these types of interaction. Nooteboom (1998) mentions the example of small companies that

maintain a network of contacts with other organizations, which enables them to acquire the necessary specific knowledge they do not possess. These types of knowledge exchange require a minimum amount of trust, because drawing up a contract in such a network is far too costly, especially given the limited means of such companies (cf. Graeber, 1993; Miles & Snow, 1986; Parker & Vaidya, 2001). Most of the literature on governance and governance networks also emphasizes the importance of learning processes in which actors not only exchange information but also learn from each other the particular new solutions that satisfy their interests (Hajer & Wagenaar, 2003; Rein & Schön, 1992).

A fourth argument is that trust has the ability to stimulate innovation. From a transaction cost perspective, vertical integration is quickly chosen in order to achieve innovation (Williamson, 1996); however, this has its disadvantages. An important disadvantage regarding innovations is that these emerge by confronting different ideas and expertise: vertical integration tends to minimize these differences, which has a negative impact on future innovation. Trust can facilitate innovation by reducing uncertainty about opportunistic behavior and making vertical integration less necessary (Alter & Hage, 1993; Lundvall, 1993; Miles & Snow, 1986; Parker & Vaidya, 2001). This argument is interesting for governance networks, because empirical research shows that vertical integration is hardly an option in these networks (Koppenjan & Klijn, 2004; Marcussen & Torfing, 2007). That means that trust as a horizontal coordinating mechanism is one of the few options left for innovation.

The above arguments lead us to believe that trust leads to more information and knowledge exchange, which results in an enhanced problem-solving capacity, new insights, innovative power, and better outcomes. This reasoning leads to the following hypothesis:

*Hypothesis 2:* A higher level of trust in governance networks will lead to outcomes that actors in these networks perceive to be of higher quality.

### *Is Trust Manageable?: The Importance of Network Management*

Much of the literature on governance networks emphasizes that the interactions in networks need to be deliberately facilitated to achieve results. This purposeful attempt to govern processes in governance networks is called network management (Gage & Mandell, 1990; Kickert et al., 1997; Meier & O'Toole, 2001). Network management initiates and facilitates interaction

processes between actors (Friend et al., 1974), creates and changes network arrangements for better coordination (Rogers & Whetten, 1982; Scharpf, 1978), creates new content (e.g., by exploring new ideas; Koppenjan & Klijn, 2004), and guides interactions (Kickert et al., 1997; Mandell, 1990). This facilitation of interaction leads to more frequent interaction between actors (both formal and informal) and in return further develops and strengthens trust. This leads us to two hypotheses:

*Hypothesis 3:* The level of trust in governance networks will be higher when managerial efforts to facilitate interaction in the network are higher.

*Hypothesis 4:* The level of trust in governance networks will be higher when more network management strategies are used.

### ***Conclusion: Searching for the Impact of Trust***

Thus, we are looking for some specific relationships in this article. Our dependent variable is the outcome of complex governance networks. We are first interested in whether trust, as an independent variable, influences these outcomes. We are also interested in the factors that influence trust. Two main factors are our focus in this article: the complexity of the issue dealt with in governance networks and the managerial strategies used. We assume that (a) when the issue is more complex, trust is more important, and (b) when network management is more intensive and more strategies are used in a governance network, the level of trust is higher.

The research questions ask for a research design that specifies outcomes in governance networks, which can be related to different levels of trust in these networks. We also need indicators to measure the complexity of the issue and the number and intensity of the network management strategies used. This research design is discussed in the next section.

### **Research Design: Survey on Trust, Outcomes, and Management Strategies**

The analysis in this article uses data that were collected from a Web-based survey between late 2006 and early 2007. The respondents were involved in environmental/spatial projects in the Netherlands. A major challenge with such a survey is that a combined list of all environmental projects does not exist, let alone a list of all individuals involved in such projects. To acquire the e-mail addresses of the people involved in



relevant projects, we relied on the database of Habiforum. Habiforum is a knowledge network based in the Netherlands made up of professionals from the spatial domains. It was established in 1999 and incorporates practitioners (from the government, NGOs, water boards, project developers, builders, etc), scientists, and consultants (most of whom are involved in environmental projects).<sup>2</sup> More information on the sample and its characteristics can be found in the appendix. In this section, we discuss whether these projects can be regarded as governance networks, and how the main variables are measured.

### *The Nature of the Projects: Are They Governance Networks?*

The first question to be answered has to do with the nature of the projects the respondents were involved in. Based on the three characteristics of networks mentioned in the introduction, we can conclude that these projects match the criteria:

*Many actors involved and frequent contact between them:* The average number of actors whom respondents have contact with is 12. The standard deviation is 4.8, which is high. This is mainly due to the fact that there are some respondents with only a few contacts. However, 90% of the respondents do have regular contact with at least six or more actors and 70% with at least nine or more actors. The frequency of contact is also fairly high.

*Existence and stability over time:* On average, each project takes more than 10 years to be completed (see Table 1). Most respondents gave projections for this figure, however, and it is widely known that projects often take longer to complete than estimated. This indicates that these networks endure.

*Complex issues:* Most of the projects involve various environmental functions (see Table 1), which make the decision-making process complex.

Thus, it can be concluded that the environmental projects included in the survey can be seen as governance networks.

### *Measuring the Variables*

Table 2 gives a short overview of the measurement of our main variables. Although most of these are elaborated after the table, the details of some of the variables are found in the appendix.

**Table 1.** Characteristics of the Projects of the Sample (n = 337)

Project includes		
Building houses	60.8%	
Building business terrain	30.3%	
Mean number of different activities (maximum 6)	2.98	Includes houses, business terrain, water development, environmental development, and commercial development
Median pass-through time period of the project (time it takes for a project from development to implementation)	10 years	
Average number of contacts of a respondent	11.78	All other organizations with whom respondents have contact in the project

### *Conceptualizing and Measuring Outcomes: Process and Content Outcomes*

Not surprisingly, there has been much discussion on the measurement of outcomes (Agranoff & McGuire 2003; Kickert et al., 1997; Mandell, 2001; Meier & O'Toole, 2007). Measuring outcomes in networks is difficult for several reasons:

Using an ex ante formulated goal is difficult because specific goals are not usually formulated (especially in cases of complex decision-making processes) or are only vaguely formulated.

Many of the actors involved have their own goals, making it difficult to decide in a network context whose goals should be taken as a yardstick.

Because these projects take a long time, actors' goals often change in that period. This is termed goal displacement, if seen as a negative occurrence, or learning, if seen as a positive event (see Koppenjan & Klijn, 2004).

Measuring objective outcomes is difficult, especially in surveys, where one can only use the judgment of the respondent as a proxy of these objective outcomes.

In our analysis, we have, based on our earlier work (Klijn, Edelenbos, Kort, & van Twist, 2006, 2008), chosen to measure the perceived outcomes with a variety of items that measure both content and process

**Table 2.** Short Description of Measurement of Main Variables

Variable	Nature	Conceptualization and measurement
Trust	Independent variable (and dependent variable in Hypotheses 3 and 4)	Five items, frequently used in literature on trust. Items were summed and divided by 5.
Perceived outcomes (divided into content and process outcomes)	Dependent variable	Six items that were summed and divided by 6 to construct two scales (see appendix).
Project complexity	Independent variable	Number of different activities (housing, road development, etc.), ranging from 0 to 6
Network management strategies (number of strategies used in the project)	Independent variable	16 items measuring managerial activities divided into four subcategories (arranging, process agreements, connecting, and exploring content). The 16 items were summed to develop a measure of the number of strategies.
Management intensity (nature of the effort)	Independent variable	Four items relating to how actively the process is managed
Phase of project	Control variable	Several types of activities that are performed in the project (see appendix)
Parent organization of respondent	Control variable	Organizational background of respondent (see appendix)
Position in project (managerial position)	Control variable	The position of the respondent in the parent organization's hierarchy (see appendix)
Years of experience	Control variable	Number of years respondent has experience in environmental projects (see appendix)

outcomes. Content outcomes focus on what has been achieved in the process (the substance), whereas process outcomes focus on the quality of the process itself. Thus, different concepts from the literature on governance

networks are used to evaluate outcomes in governance networks (see Koppenjan & Klijn, 2004).

Content outcomes are characterized by their (a) innovative character, that is, the innovativeness of the project's results (Nooteboom, 2002); (b) integrative aspect, that is, the way the plan represents different spatial functions (housing, recreation, etc.; De Jong & Edelenbos, 2007); (c) recognizable contribution, that is, the impact of involvement of the stakeholders on decision making (Koppenjan & Klijn, 2004), (d) problem-solving capacity, that is, the extent to which the solutions address the problem (Innes & Booher, 2003; Schön & Rein, 1994), (e) results' robustness over the future (Teisman, Van Buuren, & Gerrits, 2009), and (f) costs and benefits to relationships, with the focus on the costs not being more than the benefits (Mantel, 2005).

Process outcomes include (a) management, that is, the satisfaction over actors' involvement in the project (Meier & O'Toole, 2001); (b) conflict resolution, that is, prohibition and/or solution of conflicts (Süsskind & Cruikshank, 1987); (c) prevention of deadlocks, that is, the extent to which the process stagnates or suffers deadlocks (Van Eeten, 1999); (d) productive use of differences in perspectives, that is, the reconciliation of differences in frames and perspectives (Koppenjan & Klijn, 2004); (e) contact frequency, that is, the frequency of interactions between actors (Meier & O'Toole, 2001); and (f) support, that is, the satisfaction of stakeholders with the results (Koppenjan & Klijn, 2004).

Each of these aspects of content and process outcomes was translated into a 5-point Likert-type scale.<sup>3</sup> The Cronbach's alpha of the six items that measure perceived process outcomes is .80. Thus, they can be considered to form a single scale measuring this construct. The scores on the six items were added up and divided by six. A higher score on the resulting scale indicates a more positive perception of the process outcomes. It has a mean score of 3.39 and a standard deviation of 0.60.

The Cronbach's alpha of the six items measuring perceived content outcomes was .84. Again, the six items were recoded, added up, and divided by six, resulting in a scale with a mean score of 3.90 and a standard deviation of 0.62. In both cases, the scores are above the theoretical mean (3), which indicates that the respondents are, on average, positive about the outcomes. Comparing both means, it appears that they are slightly more positive about the content outcomes compared to the process outcomes.

## *Trust*

Many authors have used trust as a concept in their research, with many of them coming from a background of business or organizational studies, not

public administration. To measure trust within the network, we used five items derived from this literature. One item (benefit of the doubt) is a fairly generic item and refers to the fact that “giving the benefit of the doubt” is an important characteristic of trust (see Rousseau et al., 1998; Sako, 1998). The other four items are frequently mentioned in the literature. This especially holds for these three items: goodwill trust, agreement trust, and absence of opportunistic behavior. Sako’s work (1998) is critical in this respect. She distinguishes between contractual trust (Will the other party carry out its contractual agreements?), competence trust (Is the other party capable of doing what it says it will do?), and goodwill trust (Will the other party make an open-ended commitment?). However, we do not consider competence trust to be a dimension of trust. Instead, we argue that competence can cause trust but is not part of trust itself. We substitute contractual trust with agreement trust, because in many of the governance networks we studied, either few formal contractual arrangements were made or projects were in a preliminary phase where contracts had not been signed. Agreements and the way individuals abide by them is a reasonable “proxy” for contractual trust. According to Sako, goodwill trust is based on the idea on fairness. Goodwill trust and contractual trust can be found as dimensions of trust in the work of many other researchers, although sometimes different terms are used (Deakin & Michie, 1997; Lane & Bachmann, 1998; McEvily & Zaheer, 2006).

Sako also notes that the absence of opportunistic behavior is a requirement for the development of trust. This point has also been made by others. Nooteboom (2002), for instance, calls this trust in loyalty and sees it as a dimension of trust. Other authors argue that trust means that actors do not exploit other actors’ vulnerability (Deakin & Wilkinson, 1998; Nooteboom, 2002; Rousseau et al., 1998). Thus, it seems logical to use the following three dimensions: goodwill, agreement, and an absence of opportunistic behavior.

To these three, we added the notion of reliability, which McEvily and Zaheer (2006) called “the degree of consistency in intended behavior and the expectation that an exchange partner can be relied on to fulfill obligations” (p. 88). Trust may be defined as confidence in the reliability of a person or system, regarding a given set of outcomes or events. Five items were chosen to measure trust, as shown in Table 3.

The Cronbach’s alpha of these five items is .73, indicating that they can be seen to form a single “Trust” scale. The items were recoded, added up, and divided by 5. Thus, a higher score on this scale implies a higher degree of trust. The mean score on the scale is 3.47 ( $SD = 0.56$ ), implying a moderate degree of trust between the partners.

**Table 3.** Measurement of Trust

Measurement	Item
1. Agreement trust	The parties in this project generally live up to the agreements made with each other.
2. Benefit of the doubt	The parties in this project give one another the benefit of the doubt.
3. Reliability	The parties in this project keep in mind the intentions of the other parties.
4. Absence of opportunistic behavior	Parties do not use the contributions of other actors for their own advantage.
5. Goodwill trust	Parties in this project can assume that the intentions of the other parties are good in principle.

### *Issue Complexity*

The number of environmental aspects present in a project was used as an indicator of issue complexity. Six different aspects were identified, and respondents were asked whether these aspects were part of the project: the building of houses, industrial development, commercial development, environmental development, road development, and water management (compare Table 1). This resulted in a complexity scale ranging from 0 to 6. On average, each project involved 2.98 activities; however, the figure varied significantly as the standard deviation was 1.59.

### *Network Management Strategies: Number of Strategies*

Another important variable in our analysis is network management. Although the literature mentions a wide variety of network management strategies (see Agranoff & McGuire, 2001; Koppenjan & Klijn, 2004), little research on governance networks has studied which types of strategies are used in these networks. Thus, a typology is needed. Using our earlier work (Klijn, 2005), we distinguished several types of managerial strategies, such as activating actors, exploring content, connecting, and setting process rules, that are often mentioned in the literature (see Agranoff & McGuire, 2001; Mandell, 2001; O'Toole, 1988; Scharpf, 1978). The appendix has the exact wording of the items.

We measured the number of strategies used. We first dichotomized the responses to the 16 items that represent the different strategies used<sup>4</sup> and then

counted the number of strategies that were actually used in the project. The resulting variable ranges from 0 (3.6% of the respondents) to 16 (6.3%), with a mean number of 9.11 strategies used ( $SD = 4.18$ ).

### *Management Intensity*

Besides the number of strategies used, we hypothesized that the effort expended, which we term *management intensity* in the previous section, influences the level of trust. To measure this construct, we used a scale composed of four Likert-type scale items.<sup>5</sup> These items formed a scale with a Cronbach's alpha of 0.84. The items were recoded, added up, and divided by 4 so that a high score indicates a high level of management intensity. The mean score on this scale was 4.02 ( $SD = 0.45$ ), indicating a high degree of management intensity.

## **Trust and Outcomes in Governance Networks**

In this study on the relation between managerial strategies, trust, and outcomes, we first examine how trust influences perceived outcomes.

### *Trust, Complexity, and Outcomes*

Hypothesis 1 relates trust to the complexity of the network, whereas Hypothesis 2 relates trust to perceived outcomes. A correlation analysis showed that trust is strongly related to process outcomes ( $r = .63$ ) and content outcomes ( $r = .56$ ), but only weakly to complexity ( $r = -.10$ ). The latter (negative) correlation is also not statistically significant.

Although this gives a first indication of the importance of trust, especially with respect to the outcomes, we performed a multivariate regression analysis to test our hypotheses. Tables 4 to 6 present the result of these analyses for the two outcome variables (process and content outcomes). To test Hypothesis 1, an interaction variable of the variables trust and complexity is included.<sup>6</sup> To assess the effect of managerial strategies, the analysis is done in two steps. The control variables, trust, complexity, and the interaction between the latter (to test Hypothesis 1) are included in the first step. Management intensity and network management strategies are included in the second step. In this way, we can see whether the variables added in the second step have an additional effect on the outcomes.

We first examine the results of the first step in the analysis. This analysis clearly shows that trust has a strong effect on the perceived process outcomes (beta = .594), which supports Hypothesis 2. The interaction effect of trust and

**Table 4.** Results of Ordinary Least Squares Regression Analysis With Process Outcomes as the Dependent Variable (*n* = 209)

Model 1	Step 1			Step 2		
	B	Beta	<i>p</i>	B	Beta	<i>p</i>
(Constant)	3.416		.000**	3.466		.000
Trust	.360	.594	.000**	.275	.454	.000**
Complexity	.003	.004	.937	-.026	-.040	.449
Trust × Complexity (interaction)	-.005	-.008	.892	.001	.002	.966
Parent organization of respondent (national civil servants = reference category)						
Local civil servants	-.171	-.133	.222	-.157	-.123	.226
Private sector respondents	-.150	-.128	.261	-.126	-.107	.307
Others	-.225	-.127	.151	-.249	-.140	.088
Project phase (preparation phase = reference category)						
Developmental phase	.012	.010	.895	-.036	-.030	.666
Building phase	.057	.038	.586	.036	.024	.714
Managerial phase	.224	.158	.030*	.133	.094	.172
Managerial position	.170	.138	.015*	.076	.061	.257
Experience with project	.037	.058	.316	.013	.021	.700
Management intensity				.104	.171	.009**
Number of strategies				.132	.225	.002**

Note: Step 1: *R* = .639; *R*<sup>2</sup> = .408; adjusted *R*<sup>2</sup> = .375. Step 2: *R* = .705; *R*<sup>2</sup> = .497; adjusted *R*<sup>2</sup> = .464. \**p* < .05. \*\**p* < .01.

complexity is statistically not significant, which refutes Hypothesis 1: Trust is not more important with respect to outcomes in more complex projects (but see Note 7). Among the other variables, only managerial position and the dummy for “managerial phase” are significantly related to the perception of process outcomes. In other words, respondents with a managerial position are more positive about these outcomes, and all respondents are more positive about these outcomes during the managerial phase.

In the second step of the analysis, these last two effects are not significant anymore. Now, management (i.e., management intensity and number of network management strategies used) significantly affects the perception of process outcomes. The total explained variance also rises considerably. The effect of trust on the perception of process outcomes remains high (beta = .454),



**Table 5.** Results of Ordinary Least Squares Regression Analysis With Content Outcomes as Dependent Variable ( $n = 211$ )

Model 1	Step 1			Step 2		
	B	Beta	$p$	B	Beta	$p$
(Constant)	3.839		.000**	3.868		.000**
Trust	.326	.534	.000**	.263	.431	.000**
Complexity	.072	.111	.058	.061	.094	.099
Trust $\times$ Complexity (interaction)	-.065	-.100	.098	-.060	-.093	.114
Parent organization of respondent (national civil servants = reference category)						
Local civil servants	-.097	-.075	.511	-.093	-.072	.515
Private sector respondents	-.008	-.007	.953	.006	.005	.966
Others	-.134	-.076	.411	-.144	-.082	.363
Project phase (preparation phase = reference category)						
Developmental phase	.039	.033	.663	.032	.027	.723
Building phase	-.084	-.055	.440	-.075	-.049	.482
Managerial phase	.166	.114	.123	.125	.086	.237
Managerial position	.232	.187	.002**	.170	.137	.021*
Experience with project	.050	.079	.188	.032	.051	.388
Management intensity				.036	.058	.399
Number of strategies				.121	.203	.008**

Note: Step 1:  $R = .595$ ;  $R^2 = .354$ ; adjusted  $R^2 = .319$ . Step 2:  $R = .629$ ;  $R^2 = .395$ ; adjusted  $R^2 = .355$ .  
\* $p < .05$ . \*\* $p < .01$ .

suggesting that managerial strategies are related to the level of trust. This issue is dealt with in the next section. However, it is clear that the perception of process outcomes is affected both by the level of trust and by managerial strategies (e.g., their intensity and the number of strategies used).

We now turn to the results of the regression analysis with content outcomes as a dependent variable (Table 5).

The results here differ somewhat from the first set, although the explained variance is again relatively high. In the first step, the outcomes are roughly similar. There is a strong effect of trust (beta = .534), which fits Hypothesis 2. At the same time, the interaction of trust and complexity is not significant, which refutes Hypothesis 1.<sup>7</sup> Finally, managerial position has an impact: Respondents with such a position are more positive about the content outcomes.

In the second step, the results again differ from the previous analysis. The effect of managerial position remains significant, suggesting that those with

**Table 6.** Results of Ordinary Least Squares Regression Analysis With Trust as Dependent Variable ( $n = 217$ )

Model I	B	Beta	p
(Constant)	3.328		.000**
Complexity	-.068	-.113	.067
management intensity	.016	.029	.701
Number of strategies	.238	.438	.000**
Parent organization of respondent (national civil servants = reference category)			
Local civil servants	.294	.247	.036*
Private sector respondents	.184	.171	.165
Others	.220	.134	.161
Project phase (preparation phase = reference category)			
Developmental phase	.049	.045	.586
Building phase	.012	.009	.908
Managerial phase	-.110	-.084	.291
Managerial position	-.105	-.093	.145
Experience with project	.049	.084	.193

Note:  $R = .50$ ;  $R^2 = .25$ ; adjusted  $R^2 = .21$ .

\* $p < .05$ . \*\* $p < .01$ .

a management position are more positive about the outcomes. Trust also has a significant effect, but its effect decreases, similar to the preceding analysis. The main difference between the analysis for content and process outcomes is that managerial intensity does not affect the perception of the outcomes, whereas the number of strategies used does have an effect.

In other words, higher trust and a more extended use of network management strategies leads to a more positive perception of the content outcomes. This is in line with Hypothesis 2. However, Hypothesis 1 is refuted.

## The Impact of Network Management Strategies on Trust

The preceding section has shown that managerial strategies are related to both process as well as content outcomes. The analysis provides some indirect support for our fourth hypothesis, which stated that the effect of trust on both outcome variables decreased after the inclusion of the managerial strategies. We will now turn to the relation between these strategies and trust in more detail.

We ran an OLS regression analysis with trust as the dependent variable. Except for the interaction between complexity and trust and the outcome variables, the variables included in this analysis are the same as before. The results are presented in Table 6.

The first conclusion we can draw is that a considerable part of the variance in the level of trust can be explained by this model (adjusted  $R^2 = .21$ ). The beta coefficients indicate that the background of the respondents has a small but significant impact: Compared to national civil servants and others, local civil servants have much higher trust in project partners. Because most of these projects are initiated and mostly managed by local public actors, although central public actors are also involved, this may not be a surprising finding.

Next, management intensity is not related to trust, but the number of strategies used is: The greater the number of strategies used, the higher the level of trust. Although Hypothesis 3 is refuted, Hypothesis 4 is supported by the data.

## **Conclusions and Discussion: The Importance of Trust for Governance Networks**

Our first conclusion is that trust in governance networks is important for achieving better (perceived) outcomes. This holds for both process and content outcomes. Thus, Hypothesis 2, which states that trust has a positive impact on outcomes in governance networks, is supported. In the field of public administration, there is not much material on this relationship. This empirical result has contributed to nascent research on this topic done in other fields (cf. Lane & Bachmann, 1998). We think that the results provided in this article will be important for the future governance network research agenda. One of the things that could be explored more, for instance, is the relation between characteristics of networks or types of networks and trust. Because we based our research on respondents rather than on specific networks, we were not able to make statements on this relation, which is certainly a limitation. But we want to explore this more in the future.

Interestingly, the relationship between trust and perceived outcomes weakens when the number of network management strategies is included as a variable, although it is still statistically significant. This indicates that network management strategies (especially the number of strategies) and trust independently affect perceived outcomes. However, there is no significant relationship between management intensity and content outcomes. These results confirm earlier studies (cf. Meier

& O'Toole, 2001, 2007) that emphasized the importance of network management. They also provide an additional explanation for the importance of managerial strategies. We found that managerial strategies have a positive effect on (process and content) outcomes. Moreover, we can conclude from our research that trust can be developed and sustained through network management strategies. We believe that these interesting findings will add value to the existing literature on trust, on one hand, and the management of governance networks, on the other hand.

There may be a mutually reinforcing cycle here, where a greater number of network management strategies lead to more trust, which in turn facilitates the use of more network management strategies. This would fit the assumptions in the literature (which were discussed in the second section), which emphasize that trust increases and sustains cooperative relations and stability in relations. This is another area where interesting research questions have to be explored, such as which types of strategies are good for enhancing trust, what is the role of the network manager, but also how do trust and network management enforce each other.

We are a bit surprised that we did not find a relationship between complexity and trust on one hand and outcomes on the other. This needs further investigation. A possible explanation that should be examined is that as governance networks and their issues become more complex, actors in the field find it difficult to develop and sustain trust, and to rely on it, because of the occurrence of many unexpected events. Another explanation may have to do with our conceptualization of complexity. We examined content complexity (the number of different topics dealt with). Another complexity that might be pertinent to process dynamics is the number of actors involved. Perhaps this dimension of complexity is related to trust in the way we initially expected.

In this article, our aim was to explore the relation between trust and outcomes in general. We should continue exploring to find out how this relation actually works. Which is more important: trust's ability to sustain relationships and facilitate network management or its promotion of knowledge transfer and the development of innovative ideas and solutions? What seems to us to be most likely is that these two effects mutually reinforce each other. Greater network management promotes knowledge transfer, which in its turn facilitates the use of more network management. This study is a first step to increasing our understanding of the role of trust in complex governance networks, but more remains to be done.

## Appendix

### *Conceptualizing and Measuring the Main Variables*

This appendix deals in more detail with the variables that are not discussed in the main text.

#### *Population and Survey*

Table A1 describes the population we have used for the survey and the number of respondents who returned a usable questionnaire.

**Table A1.** Population and Survey

Number of people on the Habiforum list (after deleting names of researchers)	1,592
Returned questionnaires	547
Analyzed questionnaires	337

Because we were only interested in practitioners, we deleted the names of university researchers, shortening the list to 1,592 names. The questionnaire was sent by e-mail in November 2006 for the first time to these addresses, and sent again with a reminder in January 2007, although we knew beforehand that this list included many people with only a broad interest in spatial projects who were not actually involved in such projects.

The respondents were asked to fill in the questionnaire with respect to a project they were involved in. In this way, we were able to select respondents who had actual experience in this type of projects. In total, we received 547 questionnaires. Many of these however were incomplete.<sup>8</sup> In fact, 188 people quit the survey before the section that had the questions about spatial projects. Many of them indicated in an open question that they were not involved in such projects. We deleted these respondents from the data set. We also had to delete the names of 22 other respondents, because their answers were missing on most of the variables. This left us with 337 respondents who answered most of the questions in the questionnaire and indicated that they were involved in spatial projects. Relative to the number of questionnaires sent out, the response rate is 21%. However, relative to populations of individuals involved in spatial projects, the response rate is substantially larger.<sup>9</sup>

The above points indicate that we should interpret our data carefully, as (a) the actual population of people involved in spatial projects is unknown (and there is no list of these people in the Netherlands) and (b) therefore it is impossible to find out whether our response is representative of this population.

We however have reasons to believe that this sample gives a reasonable overview of all spatial projects in the Netherlands (see Note 2)

### *Project and Respondent Characteristics*

The respondents were asked about trust, project characteristics, management strategies, (perceived) outcomes, and about the involvement of stakeholders and political parties in decision making. They were also asked questions about their contacts with a wide range of organizations. Each of the respondents was asked to answer the questions with a specific spatial project in mind (which they had to mention explicitly in the survey).

The respondents were predominantly male (83.4%), middle-aged (a mean of 48 years), and highly educated (80.7% had a university degree). They had on average 12.24 years of experience with environmental and spatial projects. Their involvement in projects could be clustered into four categories:

1. 12% followed the project “from a distance”
2. 23% were “thinking along with the project”
3. 35.7% “actively participated within the project”
4. 28.8% were managing the project.

Finally, the background of the respondents (e.g., the parent organization) is important. There were four different backgrounds: (a) national civil servants (11%), (b) local civil servants (including civil servants from counties; 29%), (c) private sector respondents (48%), and (d) others (13%). The last group included respondents from stakeholder organizations such as environmental groups.

### *Items for Network Management Strategies*

Four items were used to measure each of the network management strategies we distinguished. Table A2 presents the items that were used.

## **Project and Respondent Characteristics as Control Variables**

### *Phase of the Project*

The projects the respondents responded on were not all in the same phase. This obviously influenced the perceived outcomes. The phase of the project

**Table A2.** Items for Management Strategies

- 
1. The relevant public groups are involved via the organized forms of negotiation and discussion platforms.(a)
  2. The relevant private groups are involved via the organized forms of negotiation and discussion platforms.(a)
  3. The relevant civil action groups are involved via the organized forms of negotiation and discussion platforms.(a)
  4. In every new phase of the project, new parties are sought out and, in this way, new connections are developed.(a)
  5. In this project, it has been attempted as much as possible to make different opinions visible and included within the decision making.(e)
  6. In this project, there has been satisfactory attention on the exchange between different standpoints.(e)
  7. In the collection of information, the emphasis in this project has been on the development and establishment of common points of departure and information needs.(e)
  8. There is satisfactory attention in this project on involving external parties who can bring new ideas and solutions.(e)
  9. There is satisfactory time devoted to the communication between the different parties.(c)
  10. The project leaders consult those implementing the project and include them in their decisions. It can be said that decision making occurs collectively.(c)
  11. The project leaders in this project consider the relationships between parties and persons, what they are based on, and how they have developed and are developing.(c)
  12. By deadlocks and problems in the project, the management seeks to bring the opposing interests closer together.(c)
  13. In the project, explicit agreements are made about the organizational form of cooperation (project groups, steering groups etc.). (p)
  14. In the agreements on the project, attention is devoted to (the rules for) managing conflict.(p)
  15. In the agreements on this project, room has been consciously built in for deviating from the plan, if this is of advantage.(p)
  16. The withdrawal of parties from the project has been made possible to protect their interests if necessary.(p)
- 

Note: a = arranging; e = exploring; c = connecting; p = process rules.

also influenced the relationship between trust and outcomes. For instance, almost by definition, there would be fewer outcomes in the first phases of a spatial project. Based on the answers of the respondent, we could discern four different phases: (a) preparation phase (21%), (b) developmental phase (41%), (c) building phase (17%), and (d) maintenance phase (21%).<sup>10</sup> In the analysis, three dummy variables were included, with the preparation phase serving as the reference category.

## *Parent Organization of the Respondents*

The respondents have different backgrounds. As it is possible that their background influenced their perception of democratic anchorage and/or outcomes, it was controlled for in the analysis for this background. Four different backgrounds can be discerned: (a) national civil servants (11%), (b) local civil servants (including counties and water board; 29%), (c) private sector respondents (48%), and (d) others (13%). The last group mostly involved respondents from stakeholder organizations, for example, environmental groups. To incorporate this variable in the analysis, three dummies were included. National civil servants serve as the reference category.

## *Position in Project*

The perception of outcomes can depend on the position of the respondent within the project. Given our interest in the effect of managerial strategies, a dummy variable was included in the analysis to distinguish those with a managerial position (28.8%).

## *Years of Experience*

Years of experience is the final control variable, as we will look at the importance of experience for managers on the perception of outcomes. The mean experience for managers is 13.01 years, with a standard deviation of 8.57.

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## **Notes**

1. We use the term *governance network* to describe public policy making and implementation through a web of relationships between government, business, and civil society actors. Governance networks are associated with new systems for public policy deliberation, decision, and implementation (Koppenjan & Klijn, 2004; Pierre & Peters, 2000). They are based on interdependencies, which may not necessarily be equitable, between public, private, and civil society actors.



2. Habiforum has established itself as a fairly important network organization with many members. If we examine the projects that are mentioned by the respondents, then almost all of the well-known environmental projects in the Netherlands are represented (and of course a number that are less well known), which gives confidence that this is a fairly reasonable sample of the available projects in the Netherlands.
3. For instance, innovative character was measured by the item "Do you think that innovative ideas are developed during the projects?" cost and benefits by the item "Do you think that—in general—the benefits exceed the costs in this project?" and contact frequency by "Do you think that the actors involved had frequent contact with each other?"
4. An argument in favor of this is that a reliability analysis on the sixteen 5-point Likert-type items showed a very high reliability (Cronbach's alpha = .90). This strongly suggests that one scale underlies these 16 items. To measure the number of strategies used, however, a dichotomization of the scores is called for. The scores 1 and 2 indicated that the strategy was (certainly) used were scored as 1, the other three categories were scored as 0.
5. The intensity of the management was measured by the following questions (each could be answered using a 5-point scale from *absolutely certain*, *certain*, *neutral*, *not certain*, *absolutely not certain*): We now have a number of questions on the steering of the project. Can you respond to the following propositions:
  - The project is/was actively managed (this includes that there is somebody who brings the parties together, tries to set the agenda, coordinates the parties, tries to steer the content of the project, etc.)
  - There is/are (one) project managers/process managers appointed in the project and he or she is also visible to the involved parties.
  - There are many people involved in the steering of the project.
  - The relations with the top of the involved organizations in this project is well taken care of.
6. All nondichotomous items were standardized before they were included in the analysis.
7. One must be careful in interpreting interaction models though. Brambor, Clark, and Golder (2006) have pointed out that in many scientific articles the interpretation of interaction effects is often flawed. Multicollinearity is an important reason for this. A test proved that in Tables 4 and 5 there is indeed multicollinearity between trust, complexity, and the interaction term Trust × Complexity. Following the suggestion of Brambor et al. (2005, p. 73), we looked at how the marginal effect of trust changes on an increase in complexity. The results showed that

these effects were contrary to the current study's Hypothesis 1: Trust becomes less important for outcomes with increasing complexity. This supports the initial finding that Hypothesis 1 should be refuted.

8. That is a common situation with Internet surveys, because some respondents will only "glance" through the questionnaire, as they would have done if it was a paper version, and then decide that the survey is not relevant to them, or decide that they do not want to answer it. In this case, the fact that they had to answer the questionnaire for a specific project probably increased the number of people that filled in a very limited number of questions.
9. If the number of 188 incomplete questionnaires is an indication of the actual population, the actual response can be estimated thus: Of the 547 returned questionnaires, 188 (34%) are missing. If this same proportion holds for the total population, 1056 ( $0.66 \times 1,600$ ) people are involved in spatial projects. If this assumption is true, the actual size of the response is about 33% ( $347/1,056$ ). It could be higher though, as individuals not involved in spatial projects will probably not have bothered to take part in the survey.
10. Note that we did not ask respondents which phase the project was in, because that might be confusing. We listed a number of activities (from initiating ideas until implementation of actual maintenance activities) and deduced the phase from the type of activities that respondents indicated they were involved in with the project.

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