

# **Rational Goal-Setting in Environmental Policy**

*Foundations and Applications*

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## Abstract

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The overall aim of this thesis is to present a model for rational goal-setting and to illustrate how it can be applied in evaluations of public policies, in particular policies concerning sustainable development and environmental quality. The contents of the thesis are divided into two sections: a theoretical section (*Papers I-IV*) and an empirical section (*Papers V-VII*).

*Paper I* identifies a set of rationality criteria for single goals and discusses them in relation to the typical function of goals. It is argued that goals are typically set to enhance goal achievement. A goal that successfully furthers its achievement is “achievement-inducing”. It holds for each of the identified criteria that, *ceteris paribus*, improved satisfaction of a criterion makes a goal better in the achievement-inducing sense.

*Paper II* contains an analysis of the notion of goal system coherence. It is argued that the coherence of a goal system is determined by the relations that hold among the goals in the system, in particular the relations of operationalization, means and ends, support, and conflict.

*Paper III* investigates the rationality of utopian goals. The paper analyzes four arguments that support the normative criterion of attainability: that utopian goals are (1) too imprecise and (2) too far-reaching to guide action effectively, (3) counterproductive, and (4) morally objectionable. A tentative defence of utopian goal-setting is built on counter-arguments that can be put forward to weaken each of the four objections.

*Paper IV* investigates the nature of self-defeating goals. The paper identifies three types of situations in which self-defeating mechanisms obstruct goal achievement: (1) situations in which the goal itself carries the seeds of its own non-fulfilment (*self-defeating goals*), (2) situations in which the activity of goal-setting contributes to goal failure (*self-defeating goal-setting*), and (3) situations in which disclosure of the goal interferes with progress (*self-defeating goal disclosure*).

*Paper V* provides a brief description of the Swedish system of environmental objectives and a preliminary inventory of the management difficulties that attach to this goal system.

*Paper VI* contains an investigation into the rationality of five Swedish environmental objectives through an application of the rationality criteria identified in *Papers I-II*. The paper identifies and discusses some difficulties that are associated with management by objectives and the use of goals in environmental policy.

*Paper VII* analyses the rationality of the Swedish environmental quality objective *A good built environment*. Among the conclusions drawn in the paper are that some of the sub-goals to the objective are formulated in terms that are unnecessarily vague from an action-guiding standpoint and that others are problematic from the viewpoint of evaluability.

**Keywords:** goal-setting, rationality, goal systems, precision, evaluability, attainability, motivity, coherence, operationalization, means and ends, support relations, goal conflicts, utopianism, self-defeating goals, management by objectives (MBO), environmental quality objectives, sustainable development.



## List of Papers

This doctoral thesis consists of an introduction and the following papers:

I. Edvardsson, K. and S. O. Hansson. 2005. "When Is a Goal Rational?", *Social Choice and Welfare* 24(2):343-361.

II. Edvardsson Björnberg, K. 2008. "What Relations Can Hold among Goals, and Why Does It Matter?", submitted manuscript.

III. Edvardsson Björnberg, K. 2008. "Utopian Goals: Four Objections and a Cautious Defence", *Philosophy in the Contemporary World* 15(1):139-154.

IV. Edvardsson Björnberg, K., Cantwell, J. and S. O. Hansson. 2008. "Self-Defeating Goals", submitted manuscript.

V. Edvardsson, K. 2004. "Using Goals in Environmental Management: The Swedish System of Environmental Objectives", *Environmental Management* 34(2):170-180.

VI. Edvardsson, K. 2007. "Setting Rational Environmental Goals: Five Swedish Environmental Quality Objectives", *Journal of Environmental Planning and Management* 50(2):297-316.

VII. Edvardsson Björnberg, K. 2008. "Rational Goals for the Urban Environment: A Swedish Example", forthcoming in *European Planning Studies*.

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All the errors, if any, that remain in the following pages are my responsibility.

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June 2008

Karin Edvardsson Björnberg



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## 1. Introduction

On 25, May 1961 U.S. President John F. Kennedy made a speech to Congress in which he declared that an important goal of his presidency was to put a man on the moon and return him to the Earth before the end of 1969. “I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the Earth”, he stated. To achieve this goal, President Kennedy cautioned the Congress that an estimated \$9,000 million would be needed to fund training, construction of rockets, and other projects. The Congress took up the challenge and during the following years, the goal set by President Kennedy and his administration guided the National Aeronautics and Space Administration’s (NASA) human space flight programme. The Mercury, Gemini, and the early Apollo missions were, among other things, designed with this goal in mind. Despite considerable scepticism about the NASA missions, President Kennedy’s goal finally became reality on 20, July 1969, as Commander Neil Armstrong took his first step on the moon and uttered his historic words, “One small step for man, one giant leap for mankind”.

President Kennedy’s goal illustrates an important point about goal-setting around which the contents of this thesis will evolve. Just like any other successful goal, it will be argued, President Kennedy’s goal to put a man on the moon and return him safely to the Earth helped to regulate action in a way that contributed to the goal’s achievement. By setting the goal and communicating it to his administration, President Kennedy helped convince a majority of the NASA staff of the reasonable chance of actually achieving the goal, which, in turn, could have motivated managers and employees to make extra efforts in the direction of the goal. The setting of the goal also helped organize the activities and decisions of the implementing agencies over time in a way that contributed to the goal’s achievement. On the basis of the goal, NASA was better able to plan its day-to-day schedule and evaluate how work was proceeding as the years passed. Although the goal did not tell the space agency exactly what to do, it functioned as a filter of admissibility in the sense that the NASA would not consider as realistic options those actions that clearly worked against the goal, but instead generated for consideration those actions that could facilitate the achievement of the goal. The setting of the goal also helped coordinate the activities between the NASA and the other agencies responsible for implementing the goal in a way that facilitated goal achievement. By working toward a common goal the agencies were, for example, able to

allocate financial resources and coordinate research priorities among themselves in a cost-efficient way.

The example of President Kennedy's goal makes it clear that goals and actions are related in many interesting ways: goals motivate agents to work towards goal achievement; goals render possible the intertemporal coordination of action, for example, by restricting the agent's deliberations concerning the adoption of sub-goals, plans, and action strategies; and goals facilitate the interpersonal coordination of action for a group of agents with a common goal. In light of this, it is certainly interesting to study what goals should be like to perform their function well.

In this thesis, tentative answers are provided to this question and a few others that are associated with the practice of using goals as decision guides. The empirical basis of the thesis is not President Kennedy's goal to put a man on the moon and return him safely to the Earth, but a quite different set of goals, namely the Swedish system of environmental objectives. Since the overall aim of these environmental objectives is to regulate action toward sustainable development and improved environmental quality, a central research question addressed in this thesis is what the objectives should be like to be successful regulators of subsequent action.

### **1.1 The aim and structure of this thesis**

The aim of this thesis is to present a step toward a theory of rational goal-setting and to illustrate how that theory can be applied in evaluations of public policies, in particular policies concerning sustainable development and good environmental quality. The contents of the thesis are divided into two sections: a theoretical and an empirical section. The theoretical section consists of *Papers I-IV* and the empirical section of *Papers V-VII*.

The first section (*Papers I-IV*) provides a theoretical framework for the study of goal-setting rationality. The aim of this section is to develop a precise terminology for the description of goals in terms of properties that are important in their practical use as decision guides. The section provides a systematic discussion of questions, such as "When is a goal rational?", "Why are goal conflicts problematic?", and "What is a self-defeating goal?". The section also presents a rational goal model that can be used to

discuss the rationality of goals and to help decision-makers assess and evaluate goals used in public policy. The rational goal model consists of a set of criteria often referred to in discussions of goal-setting and goal achievement, but which have not been given any systematic philosophical attention until recently.

The aim of the second section (Papers *V-VII*) is to illustrate how the theoretical findings can be applied in evaluations of public policy goals. The empirical basis of this thesis is the Swedish system of environmental objectives, but the theoretical findings are general enough to serve as an analytical framework in the investigation of other types of public goals.

## 1.2 Related research

Despite goals' central role in decision-making, goals and goal-setting have attracted relatively little attention in philosophical literature.<sup>1</sup> In decision theory, most of the literature is on related concepts, such as preferences and values. This also holds true for the field of philosophical inquiry, sometimes referred to as "philosophy of action". In this field, intentions have attracted considerably more attention than goals, even though intentions and goals function in much the same way.<sup>2</sup> A possible explanation for this noticeable lack of attention, at least from a decision theoretical perspective, is that goals are usually taken as given inputs to the analysis, and the focus is instead on what means are most efficient to achieve the goals. Another assumption is that goals are outside the purview of rational assessment (Section 3.2), and that deliberation on goals is a matter of moral philosophy, where normative reasons, other than instrumental reasons, come to the fore.

In other academic disciplines, goals and goal-setting have received considerably more attention. In management theory and public administration, abundant literature exists on "management by objectives" (henceforth, "MBO"; *målstyrning*) in the public and private sector. Comprehensive MBO bibliographies can be found in Musgrave and Elster (1974), Raia (1974), and Mansell (1977). In the MBO literature, descriptions of desirable goal properties are often presented (Odiorne 1969, Mali 1972, Carroll and Tosi 1973,

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<sup>1</sup> Of course, exceptions exist, e.g., Rosencrantz (2006) and Rosencrantz *et al.* (2007).

<sup>2</sup> Important exceptions include Tuomela (1990, 1996) and McCann (1991). Goals and goal-setting are also dealt with in AI (Pollock 1998).

Quinn 1977, Van Herten and Gunning-Schepers 2000, Johnston *et al.* 2001, and Latham 2003). This endeavour resembles the one taken on in this thesis. However, in the MBO literature, the identified goal properties are usually presented without any or with only a marginal discussion on the function of goals and the relationship between goals and actions. One of the central aims of this thesis is to provide such an account.

MBO literature is also quite extensive in Swedish, with particular emphasis on applications in the public sector. A comprehensive account of the development of MBO in the Swedish public sector is provided in Sundström (2003). Other discussions of goal-setting and MBO in a Swedish context are provided in Pihlgren and Svensson (1989), Rombach (1991), Svensson (1997), Ekfeldt *et al.* (2001), Tarschys (2006), Persson *et al.* (2007), and Hedenquist and Håkansson (2008). Case studies and discussions of particular applications of MBO include Alexandersson (1999) and Andersson and Vedung (2005). Discussions of public sector MBO can also be found in official documents, e.g., SOU 1993:58, SOU 1997:15, RRV 1996:13, Ds 1991:19, Ds 2000:63, RiR 2005:1, and ESV 2006:7.

Psychology is another academic field that deals extensively with goal-setting and the prerequisites for efficient goal achievement. Over the years, psychologists and behavioural scientists have conducted a vast number of empirical studies on various aspects of goal-setting and goal achievement. Among the issues that are most frequently studied are the “goal difficulty function”, i.e., the relationship between the degree of difficulty pertaining to a goal and the level of performance displayed by the agent as she reaches for the goal (Latham *et al.* 2002; Locke and Latham 2002), and the effects of assigned versus self-set goals on performance (Dossett *et al.* 1979; Chang and Lorenzi 1983). Locke and Latham (1990) provide one of the most comprehensive bibliographies in this field.

So far, relatively little research has been performed on goals and goal-setting in an environmental context. This is somewhat surprising, since environmental goals and interim targets are frequently set to direct work toward sustainable development and improved environmental quality at all public administrative levels. European environmental policy is, for example, partly administered through the *Sixth Community Environment Action Programme* (1600/2002/EC), which contains goals concerning climate

change, the protection of wildlife, the preservation of natural resources, and the management of waste. Environmental objectives and performance targets are also set in several member states, e.g., the Netherlands and the UK. Notable examples of environmental management plans and goals outside the EU include, for example, Australia's National Environment Protection Measures (NEPMs), broad framework-setting statutory instruments that outline agreed national objectives for protecting or managing particular aspects of the environment, such as air quality, fresh water quality, noise, site contamination, environmental impacts associated with hazardous wastes, and the recycling of used materials ([www.ephc.gov.au](http://www.ephc.gov.au)).

In the environmental science literature, goals and goal-setting are occasionally discussed from a rationality perspective, although the term "rational goal-setting" is seldom used. Writers in this field have proposed that environmental goals and targets should satisfy similar criteria as the ones suggested in the MBO literature (e.g., Barber and Taylor 1990). Some writers have also proposed that in addition to the goal criteria discussed in the MBO literature, environmental goals and targets should be participatory, dynamic, transdisciplinary, understandable, and possible to communicate to a broad audience (Slocombe 1998; de Jong 1998). The fact that additional criteria have been proposed for environmental goals could be taken to suggest that the environmental context is of particular interest to applied studies of rational goal-setting. Unlike many other public policy areas, the framing and implementation of environmental policies and decisions are often distinguished by a strong public engagement, which could impose particular demands on operationalizing goals and interim targets.

## **2. What does it mean to have a goal?**

The example of President Kennedy's goal outlined in the previous section serves as an introduction to the topic of this thesis. This section briefly presents the theoretical starting points from which the arguments in the thesis are developed. Section 2.1 discusses the role of goals in agency and Section 2.2 contains a tentative discussion of the differences and similarities that exist between goals, intentions, and desires with respect to agency. The ideas presented in these sections, in particular Section 2.2, are not worked out in detail, but will hopefully provide a philosophical background to some of the arguments presented later in the thesis.

## 2.1 The role of goals in agency

A central argument in the thesis is that agents typically set goals because they want to achieve the states corresponding to those goals and because they believe that the setting of the goals enhances the likelihood that these states will be achieved. Hence, the typical function of a goal is to further goal achievement. In *Paper I*, the term “achievement inducing” is introduced to describe goals that perform their typical function well, namely to regulate action in a way that successfully furthers goal achievement.

Goals regulate action intertemporally and interpersonally. Intertemporally, goals enable agents to plan their activities over time so that their goals are more easily reached. In normal cases, having adopted a goal means that one will act to achieve it—the agent will stay committed to the goal (McCann 1991, p. 206). In this sense, goals introduce a certain settledness about action and deliberation. Having adopted a goal the agent will typically hesitate to consider as realistic options those actions, plans, and strategies that clearly work against the goal, and will instead consider those actions that she believes could facilitate achievement of the goal (cf. Levi 1986, p. 69ff.; Nozick 1993, p. 146). The goal functions as a “conduct-controller” in the sense that it narrows the agent’s scope of future deliberations to a limited set of options, and it provides a reason for considering some of the options but not others (cf. Bratman 1999, p. 33; Schmitz 1995, p. 7).

Goals also facilitate coordination in social contexts. On the basis of an adopted goal, a group of agents can plan and coordinate their actions in ways that benefit goal achievement. As *Paper II* points out, this interpersonal coordination can be formal, as in the case of a football team deciding on a playing strategy for an upcoming game, or it can be informal, as in the case of the First World War when German and French soldiers coordinated their trench warfare to facilitate both sides’ goal to enjoy a ceasefire during meals that were served at the same time (Axelrod 1984, p. 77ff.).

The planning benefits gained in social situations also derive from the stability of action and deliberation conveyed through goals. When an agent has adopted a goal other agents can to some extent predict and rely on her behaviour and pursue for themselves the goals whose achievement is contingent on that agent’s goal-directed behaviour (cf. Nozick 1993, p. 9). Assuming that people in general have survival as one of their

primary goals, an agent running for the bus can in normal cases take a short cut under the bridge without fearing that other people will throw themselves out from the bridge unintentionally killing her.

The ability to predict an agent's actions on the basis of one's knowledge of her goals is of course severely restricted in that she could have other goals that compete for her attention. If an agent has many goals that conflict in that actions that are performed to reach one goal render it more difficult to reach other goals, social planning benefits can most easily be gained where one has knowledge of the agent's priorities among the goals. However, even when one has such knowledge it can be difficult to predict exactly what actions the agent will perform to get closer to her goal, since many goals can be achieved through a multitude of different actions.

## **2.2 Goals, intentions, and desires**

The role of goals in agency is similar to that played by related concepts, most notably intentions and desires. However, the differences that exist among the three concepts show that goals deserve philosophical attention in their own right.

The first difference among goals on the one hand and intentions and desires on the other is that intentions and desires can readily be characterized as mental states whereas goals cannot be similarly described. A goal is not a mental state, although having a goal can be, namely if the agent to whom the goal belongs is an individual. If the goal belongs to an organization, the goal itself is not a mental state. Nor does the "having" of a goal represent any such state, since organizations cannot have mental states. Since intentions and desires are usually perceived as mental states, it is a little odd to talk about the intentions or desires of an organization, whereas it makes perfect sense to talk about an organization's goals.

The second difference among the three concepts concerns their conduct-controlling force. Goals, intentions, and desires are similar in the sense that having them means that the agent has a, *ceteris paribus*, disposition, or pro-attitude, towards actions of some sort, namely those actions that she believes will bring her closer to fulfilling her goal, intention, or desire (Bratman 1999, p. 15). As *Paper II* notes, when I have a goal, intention or desire to visit the city hall tonight, this means that I have a certain

disposition towards actions that will bring me closer to visiting the city hall tonight. However, the relationship between my having this disposition and letting it influence my actions is stronger for goals and intentions than for desires. This explains why it makes sense to say, “I desire to visit the city hall tonight, but I won’t (or can’t) do it”, while it does not, under normal circumstances make sense, to say, “I intend to visit the city hall tonight, but I won’t (or can’t) do it”. It is also a little odd to say, “My goal is to visit the city hall tonight, but I won’t (or can’t) do it”. Intentions and goals seem to involve a stronger commitment to action than desires—goals and intentions are not merely conduct-influencing but also conduct-controlling (Bratman 1999, p. 16; McCann 1991, p. 206).

A third possible difference between goals, intentions, and desires that relates to the second difference mentioned above, concerns the availability of means towards their realization. Whereas one could reasonably desire what one cannot achieve, or perform actions to approach, it does not seem reasonable to have as one’s goal a state that cannot be achieved or approached to a meaningful degree. Nor does it seem reasonable under normal circumstances to intend things that cannot possibly be realized. A person who is irrevocably paralysed can desire to participate in this year’s Olympic marathon using her own legs, but cannot reasonably intend to do so. And she can reasonably have as her goal to do so only to the extent that she can perform some actions to approach her goal. In this sense, the formation of intentions and goals seems to be more tightly related to considerations concerning the availability of means than the formation of desires is.

This thesis does not address the relationship between goals and intentions. Are goals and intentions inextricably related, so that an intention is always directed toward some goal, and having a goal always means that one has an intention to perform actions to achieve the goal? Assuming such a solid connection between goals and intentions would exclude the possibility of having goals without intending to do something in pursuit of them. However, such situations are possible. For example, an agent could have the goal to close the door and yet not a corresponding intention to perform actions that bring her closer to achieving this goal, because her more important goal is to eat ice cream (Schmid 2005, p. 55). At the same time, following the account above it could be argued that the commitment expressed through the intention to do something about one’s goals is precisely what distinguishes goals from desires.

### 3. When is a goal rational?

The previous section clarifies the concept of rationality as central to the arguments presented in the thesis. Therefore, this concept will be briefly reviewed as well as how it is used in the analysis.

#### 3.1 The concept of rationality

Rationality is a complex area covering theoretical (epistemic) and practical (action-oriented) aspects (Mele and Rawling 2004; Spohn 2002). Simply put, theoretical rationality is concerned with what it is rational *to believe*, while practical rationality is concerned with what it is rational *to do*. In the field of theoretical rationality, an agent is usually considered rational when she forms beliefs in an appropriate way, i.e., when a particular relation holds between the agent's beliefs and their sources. Classical basic sources of rationality of belief are perception, memory, introspection, reasoning, and intuition (Audi 2004, p. 18f.). An additional, or sometimes alternative, source of theoretical rationality embraced by some philosophers is coherence among one's beliefs.

In the field of practical rationality, an agent is usually considered rational when she performs actions that she believes constitute the most effective and efficient means of bringing her closer to achieving her goals. If the agent's preferences among her goals can be converted into a utility function, her rational action can be understood as the action that maximizes her utility. In this situation, rational action or choice, is perceived as instrumental, i.e., actions are valued as an effective (or ineffective) and efficient (or inefficient) means to some end(s). The goals are taken for granted and not considered subject to rational assessment. Some of the criticism mounted against the traditional instrumental concept of rationality is briefly discussed in Section 3.2.

The notion of instrumental rationality is persuasive in that it does not seem to need justification. Philosophers usually take it to be more or less self-evident that we have reasons to act as instrumental rationality requires (Jollimore 2005). Once it is determined that a certain action is an effective and efficient means of satisfying an agent's goals, one can automatically conclude that the agent has a reason to perform that action. However, some philosophers challenge this assumption. For example, Nozick (1993, p. 134) rhetorically asks and then answers in the negative:

“So let us ask why we should be *instrumentally* rational. Why should anyone pursue their desires or goals in the most efficient and effective way? Because then it is most likely that they will achieve their goals or satisfy their desires, at the least cost (and so be able to achieve the greatest overall goal and desire satisfaction). But why should they achieve their goals and satisfy their desires? Because that is what they want to do. But why should they satisfy *that* desire? Is there any noncircular answer, any answer that does not beg the question of justifying instrumental rationality?”

Acting instrumentally, i.e., choosing what one believes to be the means most likely to achieve one’s goals, can be difficult for agents with limited cognitive capacities, such as humans. It presupposes not only that the agent has a clear picture of the goals involved, but also that her belief in a particular action as the most effective and efficient means of reaching her goal(s) has been formed appropriately, given the evidence, and that she has collected an optimal amount of evidence to support her belief (Elster 1989, p. 30). The concept of bounded rationality is sometimes used to account for the fact that perfectly rational decisions are seldom feasible in practice, partly due to the limited cognitive or computational individual or organizational resources available (Simon 1957).

This thesis deals primarily with practical rationality, since goals figure centrally in reasoning about what to do. Moreover, the thesis deals with a particular type of instrumental rationality, “auto-instrumental rationality” (Section 3.2). Bounded rationality is briefly touched upon in *Papers VI-VII*, which argues that the lack of information and knowledge can sometimes make it difficult to adopt optimal goals in practice.

### **3.2 Is rationality attributable to goals?**

Many philosophers throughout history have embraced the idea that goals, unlike beliefs and actions, cannot be assessed in terms of rationality. Goals are perceived as non-rational, i.e., it does not make sense to say that one goal is more rational than an agent’s other goal. Instead, it is sometimes considered an analytic truth about deliberation that it must always start out from some end, or goal. In the *Nicomachean Ethics* (1112b11-12), Aristotle writes that “[w]e deliberate not about ends, but about what promotes ends”, which has been interpreted to mean that deliberation is essentially about choosing means

to some end.<sup>3</sup> A similar standpoint is expressed in Hume’s much quoted statement that “[t]is not contrary to reason to prefer the destruction of the whole world to the scratching of my finger” (Hume 1978[1739], p. 416). In Hume’s view, or at least according to one interpretation of Hume, reason is exclusively concerned with ascertaining what is true or false. Since desires cannot be true or false, i.e., they lack truth value, it follows that reason cannot settle purely prescriptive questions, such as what goals to adopt (Richardson 1997, p. 14). At the same time, goals and desires have an important role in action, specifically that of providing direction and motivation. Goals and desires master reason; they get instrumental reasoning going.

Among the philosophers who have recently argued that goals cannot be assessed in terms of rationality are Russell (1954), Simon (1983), and Allais (1979[1952]). Russell (1954, p. 8) writes:

“[r]eason’ has a perfectly clear and precise meaning. It signifies the choice of the right means to an end that you wish to achieve. It has nothing whatever to do with the choice of ends.”

In a similar fashion, Allais (1979[1952], p. 70) concludes:

“[i]t cannot be too strongly emphasized *that there are no criteria for the rationality of ends as such other than the condition of consistency*. Ends are completely arbitrary. To prefer highly dispersed random outcomes may seem irrational to the prudent, but for somebody with this penchant, there is nothing irrational about it. This area is like that of tastes: they are what they are, and differ from one person to the next.”

On the traditional instrumental account of rationality, goals figure in rationality assessments only as given inputs to analyses of means-ends, or instrumental, rationality. The only way in which goals can be rational or irrational is if they are instrumentally effective and efficient, conversely ineffective or inefficient, in achieving goals taken as givens. Arguably, on this view there is little scope left for a thesis concerning goal rationality. It is therefore interesting to investigate if there is room for moving beyond

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<sup>3</sup> However, Richardson (1997, p. 14) points out that it is debated whether Aristotle intended this claim to rule out deliberation of ends, including “final” or “ultimate” ends, i.e., ends that are not valued for the sake of some other end(s).

the traditional instrumental account of rationality and toward a more comprehensive theory of the rationality of goals.

Several philosophers have argued differently the prospect of moving beyond the traditional instrumental account of rationality. For example, Richardson (1997) devotes a book to defending the view that rational deliberation can concern goals. In his view, three philosophical obstacles need to be cleared before a positive account of how to deliberate rationally about ends can be constructed: the scope, system, and source obstacles. Clearing the scope obstacle basically means addressing the traditional instrumental account as described above. Addressing the system obstacle means addressing the argument that we cannot rationally deliberate about goals without a commensurate final end, e.g., happiness or utility, to which the goals in question are means. Dealing with the source obstacle means dealing with the idea that even if we can deliberate about subordinate goals, as the system obstacle seems to imply, we cannot deliberate about final goals. In his book, Richardson purports to show that all three obstacles can be overcome.

The traditional instrumental account of rationality has also been challenged in disciplines other than philosophy. In a paper published in *Economics and Philosophy*, Stewart (1995) criticizes the standard economic definition of rationality for being less useful than is often supposed. In his view, the effect the means can have on the end shows the inadequacy of thinking of rationality in purely instrumental terms. To assess the rationality of a particular economic policy instrument, such as a fair trade agreement, it is not enough to determine how well it contributes to realizing the end(s) of the agent. The assessment should also include an analysis of the desirability of the effect on the agent's preferences and goals. Consequently, to reach a rationally defensible decision the agent must deliberate about ends.

In this thesis, a different way of moving beyond the traditional instrumental account of rationality compared with Richardson and Stewart is presented. It means that one can rationally distinguish between goals on the basis of their non-substantial properties. From the quote on page 11, it is clear that Allais allows only one such property, namely consistency. This thesis argues for a wide range of properties on the basis of which rational criticism of goals can be performed. The suggested properties are non-

substantial in that they apply equally to all goals regardless of, for example, moral content.

Here, one could object that the thesis does little to extend the traditional account of rationality documented by Hume and others, since the thesis builds on the notion of instrumentality. A central argument in the thesis is that goals are rational when they are “achievement-inducing”, i.e., when they are effective and efficient means toward their achievement. Arguably, this could be taken to mean that the traditional instrumental view of rationality is confirmed. However, the answer depends on how the notion of instrumentality is defined. When something is considered instrumental this usually means that it is employed to achieve something else and not as a means to achieving itself. On this more narrow definition, the thesis does not operate with a traditional instrumentalist notion of rationality. However, as *Paper I* argues, it would not be wrong to describe goals as auto-instrumental, which could be considered a particular type of instrumentality. Auto-instrumentality can be described in the following way. The term “goal” can be used to denote either (a) the objective to achieve a specific state of affairs (S) or (b) S itself. Auto-instrumentality means that the goal in sense (a) is instrumental to the goal in sense (b). With an auto-instrumentalist situation, we are operating with an instrumental, albeit not traditional, account of rationality.

### **3.3 Rationality criteria for single goals**

The notion of auto-instrumentality is central to the claim that a rational goal performs its achievement-inducing function well. A single goal is achievement-inducing, i.e., the goal has the capacity to guide and motivate action that contributes to its achievement, when it satisfies the criteria of precision, evaluability, attainability (approachability), and motivity. As Section 1.2 points out, several other rationality criteria are proposed in the literature, for example, that goals should be understandable, participatory, and able to be communicated to a broad audience. The selection of criteria in this thesis therefore needs some explanation.

As *Paper I* argues, the rationality criteria apply to the goals and not to the process that arrived at the goals. Hence, when this thesis speaks about rational goals and goal-setting, it does not purport to say anything about the actual process of setting goals, for example, whether the agents responsible for operationalizing the goals have participated

in the goal-setting process, or whether the goals were set according to some consultative process involving representatives from different academic disciplines. The requirements that goals be participatory and transdisciplinary are therefore not directly included. However, the thesis does not deny that decision processes that satisfy these criteria can render goals more achievement-inducing. The reason, however, is that participatory and transdisciplinary decision processes can contribute to satisfying the goal criteria identified here. A participatory decision process can, for example, contribute to rendering goals more motivating and a transdisciplinary decision process can contribute to making goals more precise and realistic.

When discussing rationality criteria for goals it is useful to remember that the criteria are selected under the assumption that goals are set and used by agents. As *Paper I* argues, there are at least three major dimensions involved in goal-based human action according to which the goal criteria can be identified and structured—an epistemic, an ability-related, and a volitional dimension. These aspects are related to what the agents *know*, what they *can* do, and what they *want* to do.<sup>4</sup> Precision and evaluability are epistemic criteria that reflect what goal-seeking agents know. Approachability is an ability-related criterion that reflects what agents can do, and motivity is a volitional criterion that reflects what the agent wants to do.

Among the goal criteria, motivity is perhaps the criterion most difficult to defend. A number of potential objections to this criterion are discussed in *Paper I*. The most difficult challenge to be addressed is what makes a goal motivating, apart from its actual content. Some empirical evidence suggests that specific and challenging goals tend to make agents more motivated in terms of intensity and durability (see references in *Paper D*). This also holds true for goals that are evaluated and where information about where the agent stands in relation to the goal is fed back to the agent. However, if satisfying the other rationality criteria is what makes a goal motivating the criterion of motivity is obviously redundant.

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<sup>4</sup> The idea that goals and goal-setting can meaningfully be discussed on the basis of a three-part model, such as this one, is not entirely new. Similar ideas are discussed in Van Meter and Van Horn (1975) and Lundquist (1987).

Nutt and Backoff (1997) have formulated a set of criteria for well-functioning corporate and organizational visions that gives a clue about what constitutes a motivating goal. One of the criteria they put forward concerns the goal's articulation. By formulating a vision in quick-witted slogans and through expressive images a shared understanding of the vision can be promoted throughout the organization. In a report to the Swedish Association of Local Authorities and Regions, Targama (2006, p. 10) gives the following answer to, "What is a good vision?" (author's translation):

"Like the boor, a vision should be big, shaggy, and inciting, and should appeal to one's emotions as much as to one's instincts. It should respond to our conscious and unconscious needs and desires. At the same time, it should not stand out as a mere figment of the imagination. It should be kept within the bounds of possibility, even if the challenge that it presents seems to be insurmountable at the time being."

Two important criteria discussed in the literature—that goals ought to be understandable and able to be communicated—are conducive to the achievement-inducing function of a goal. Still, the rational goal model proposed here does not cover them. Being understandable and communicable is not equivalent to being precise, since a goal can be scientifically precise and still difficult to understand and communicate. It could possibly be argued that being understandable and able to be communicated are prerequisites for being motivating, but that claim needs justification empirically.

### **3.4 The rationality of goal systems**

One requirement that Hume need not object to is the requirement of consistency accounted for by Allais above, i.e., the requirement that sets of goals be jointly co-possible to achieve. Certainly, there are strong pragmatic reasons for systematizing one's ends so that goal conflicts are avoided. From an action-regulating viewpoint, goal conflicts are problematic, as they prevent the efficient coordination of action. At the same time, to argue that goal conflicts are problematic from an action-regulating viewpoint is not equivalent to saying that having conflicting goals is irrational. In *Paper II*, three arguments are forwarded to defend the idea that having conflicting goals is not necessarily irrational—an epistemic, empirical, and normative argument.

From an epistemic viewpoint, allowing for some degree of conflict among one's goals can be wise considering the difficulty of knowing in advance whether one's goals are consistent in a long-time perspective. Goals in conflict at one point in time can become consistent as new means of goal realization arise. For example, buying my fiancée a luxurious wedding ring and my mother-in-law an extremely well-bred Russian Blue can be impossible given my current financial situation, but could be feasible next year as I win one of the top prizes in the national lottery. Similarly, my goal to become a formula-one champion effectively prevents achieving the goal of stabilizing concentrations of greenhouse gases in the atmosphere (a goal I am firmly committed to), but these goals could be co-possible to achieve as advanced fuel cell technologies are invented.

Empirically, goal conflicts are more or less a fact of life, among individuals and within organizations. Goals adopted by governments often conflict because the achievement of some goals renders it more difficult to achieve other goals. In some policy areas, such as industrial safety and crime prevention, highly ambitious goals difficult to reconcile with other societal goals are often adopted and then compromises are made among the goals once the initial goals have been adopted (Hansson 2001).

From a normative perspective, *Paper II* argues that the creation of goal systems free of conflicts need not be desirable. To create goal systems free of conflict, one would have to systematically avoid goals that represent a commitment, as there is always a risk they will conflict with one another (cf. Hansson 1998). The problem is that goals that do not represent any commitment are pointless—they bring us no closer to where we want to be.

Together, these arguments support the claim that goal systems containing conflicts are not necessarily irrational (as in not functional). It is, however, difficult to determine how severe conflicts can be in a goal system before that system loses its capacity to guide and motivate action. At the end of *Paper II*, the idea is raised that a goal system can contain conflicts and still guide and motivate action if the system also contains principles on which priorities can be made. The problem with goal conflicts in the public sector is that such principles are often lacking. As a consequence, goal implementation often becomes fragmented and ill-coordinated, at least in the absence of a continuous dialogue among the implementing authorities.

## **4. Rational goal-setting in Swedish environmental policy**

The empirical basis of this thesis is the Swedish national environmental quality objectives. These objectives are part of an environmental goal system that also contains a number of fundamental values, action strategies, sectoral goals, and local and regional goals as described in *Paper V*. The focus of the thesis is on the 16 national environmental quality objectives and their respective sub-goals. Sectoral environmental goals and similar goals set by municipalities and county administrative boards are only dealt with in passing.

The preparatory work makes clear that the environmental quality objectives are intended to guide and motivate action toward sustainable development and improved environmental quality in all sectors of society. In the government's view, using MBO, distinguished by a consistent and well-defined system of environmental objectives, together with a transparent system for monitoring and evaluation, is the most effective way of implementing a broad environmental strategy involving participants in all sectors of society (Gov. Bill 1997/98:145, p. 38). This section provides an outline of the way in which MBO is applied in the Swedish public sector and a discussion of the prerequisites for effective MBO.

### **4.1 MBO in the Swedish public sector**

The origins of MBO as a steering technique are commonly ascribed to the U.S. in the 1950s. The American business economist Peter F. Drucker is often said to have introduced MBO in his book *The Practice of Management* (1954) (Carroll and Tosi 1973, p. 1). Originally, MBO was designed as a management technique for private businesses, but a few decades later it became an important part of the public sector steering philosophy "New Public Management" (NPM)—a set of reforms designed to modernize the public sector.

A central idea behind MBO is that action toward goal achievement can be effectively regulated through the adoption of goals (Rombach 1991, p. 10). This corresponds well with the idea defended in this thesis that the basic function of goals is to regulate action that furthers goal achievement. Another central idea behind MBO is that the activities performed in the public sector can be more effective and cost-efficient by separating the tasks of politicians and the national administration (Sundström 2003). Hence, MBO

regimes commonly make politicians responsible for formulating long-term goals, while the implementation and evaluation of the goals are left to officials within the administration. MBO is therefore typically distinguished by a considerable amount of decentralization, deregulation, and delegation of decision-making power from politicians at the national and local levels to the administration. The Swedish national environmental quality objectives provide an example of this practice, because the objectives were adopted by the Swedish Parliament, and the implementation and evaluation were left to a number of subordinate bodies, among them the Swedish Environmental Protection Agency and the Environmental Objectives Council.

In Sweden, MBO was introduced on a large scale at the end of the 1980s through two governmental bills—the “verksledningspropositionen” (1986/87:99) and the 1988 “kompletteringsproposition” (1987/88:150) (Sundström 2001, p. 18). At the national level today, MBO is largely executed through governmental goals communicated through appropriation directions (*regleringsbrev*) and ordinances with instructions to authorities issued by the government (*myndighetsinstruktioner*). The environmental quality objectives are part of the MBO regime currently in force, but differ from regular MBO goals communicated through appropriation directions and ordinances at the instruction of the government, as they are not only intended to regulate the actions of specific national authorities but everyone, i.e., national and regional authorities, organizations, corporations, and the general public.

#### **4.2 Prerequisites for effective MBO**

MBO techniques should satisfy a set of conditions to function well. These techniques are ideally characterized as follows:

1. Rational (functional) goals
2. A participative goal-setting process
3. A well-defined system of monitoring, evaluation, and feedback concerning goal achievement
4. Adequate channels for communication between the organization’s leadership and the implementing agents (Carroll and Tosi 1973, p. 3; Rodgers and Hunter 1991, p. 322f.)

The first condition is generally met when the goals satisfy the SMART criteria. According to this criteria, goals should be Specific, Measurable, Accepted, Realistic, and Time-bound (see *Papers VI-VII*). The SMART criteria roughly correspond to the rationality criteria proposed in this thesis. The requirement that goals should be accepted is not specified in our rational goal model, but could possibly be incorporated into our criterion of motivity.

The second condition requires adequate participation in the goal-setting process by the agents responsible for implementing the goals. Participation is a means whereby adopted goals can gain legitimacy—in other words, participation can foster greater acceptance of and commitment to the goals in question. Participation is also believed to promote understanding throughout the organization, since by letting the implementing agents participate in the goal-setting process, problems associated with the implementation of the goals rise to the surface (Rodgers and Hunter 1991, p. 323).

The third criterion is met with an adequate process of monitoring and evaluation in force and with feedback concerning goal achievement communicated throughout the organization. Evaluations have many functions: They can be used to establish actual goal achievement, give positive feedback to those implementing agents who have been successful, provide the goal-setter with information necessary to re-formulate the goals in question, motivate the implementing agents to work harder to reach the goals, and other tasks. Goal achievement can be evaluated through a number of different evaluation practices. This thesis does not contain any systematized discussion of these practices, but interested readers should refer to the works of Chen (1990), Pawson and Tilley (1997), and House and Howe (1999).

A well-developed organizational communication system is often considered a prerequisite for efficient MBO (Leonard 1986; Wibeck *et al.* 2006). The requirement of adequate channels for communication between political decision-makers and the administration follows naturally from conditions number two and three above. Goal-setting processes cannot be participative without a functioning dialogue between goal-setting and implementing agents, nor can the benefits of evaluation and feedback be obtained without adequate communication processes. Moreover, communication

concerning action strategies and goal priorities plays a vital role in the coordination of action among agents working toward common or similar goals.

From the discussion above, it is clear that this thesis deals with a particular requirement for successful goal achievement, namely that the goals are rational. Apart from this, successful goal achievement, at least within an organizational framework, depends on additional factors external to the goals. In this thesis, these factors are only dealt with in passing. Admittedly, to provide a more comprehensive account of rational goal-setting in organizational contexts, one would have to also cover these aspects of goal-setting.

### **4.3 Application of the rationality criteria**

The rationality criteria proposed in this thesis are applied in two studies: *Paper VI* applies the rationality criteria to five environmental quality objectives and *Paper VII* applies the criteria to the environmental quality objective *A good built environment* and its sub-goals. The most important lesson from the studies is that the application of the goal criteria is not as straightforward a task as it may initially seem. Basically, the fine-tuning of goals is context-dependent and conflicts sometimes arise between two or more of the criteria.

At the end of *Paper I*, it is argued that rational goal-setting requires that the criteria are balanced from case to case to optimize the achievement-inducing function of a goal. Since goals are used by agents in specific contexts, factors beyond the goals will determine the extent to which the criteria need to be met to advance goal achievement. Consequently, the goal criteria are not “absolute” in that every criterion must be satisfied for a goal to be achievement-inducing.

In *Paper VI*, this point is illustrated through an analysis of the objectives *A balanced marine environment* and *Natural acidification only*. To achieve these objectives, effective MBO presupposes that a functional balance can be struck with the requirements of precision, communicability, acceptability, and motivity—requirements that can be difficult to reconcile in practice. For example, formulating an environmental goal in scientifically precise terms could render the goal less motivating, and *vice versa*. As the analysis reveals, no clear-cut principles stipulate how this balancing should be carried out.

Another central conclusion in *Papers VI-VII* is that effective MBO presupposes that goals can be set with a reasonably high degree of approachability. To hit the optimal degree of difficulty, the goal-setter must have access to adequate information on the basis of which the goal can be adopted. Since such information is often lacking, particularly in the environmental context where many factors give rise to negative effects, the prospect of setting rational goals is considerably circumscribed. In *Paper VI*, this point is illustrated through an analysis of the objective of *A non-toxic environment*, which has proven to be one of the most difficult environmental objectives to reach.

#### **4.4 Are the Swedish environmental quality objectives rational?**

To answer the question of whether the environmental quality objectives are rational, one must perform at least four analyses. First, it must be investigated to what extent the objectives satisfy the requirements of precision, evaluability, and approachability. This investigation involves looking into questions such as how precise the environmental quality objectives have to be, taking into consideration the contexts in which they operate. Increased precision is often called for by agencies responsible for implementing, monitoring, and evaluating the environmental quality objectives. Interestingly, this demand for precision runs against the central idea behind MBO, namely that for reasons of efficiency the administration should not be managed in detail. The difference between a detailed management by rules and a detailed management by objectives is, it could be argued, rather insignificant (Sundström 2001, p. 27).

Secondly, the action-motivating qualities of the objectives should be investigated. As previous sections indicate, the meaning of the criterion of motivity is difficult to grasp. Even if this criterion is considered satisfied in that several of the environmental quality objectives are formulated through quick-witted slogans and expressive images, such as “a non-toxic environment”, “natural acidification only”, and “a magnificent mountain landscape”, it is still an empirical question whether these phrases contribute to fulfilling the achievement-inducing function of the goals. Here, more empirical studies are clearly needed.

Thirdly, whether the environmental quality objectives are adequately operationalized should be investigated. Since the overarching national environmental objectives are ambiguous, the adoption of sub-goals can be a tricky business. Opinions can differ

regarding the content of the objectives and whether the sub-goals in force cover the most important aspects of the overall objectives. Conducting an inquiry into the appropriateness of the operationalization of the environmental objectives requires a rough idea of what constitutes a good, successful, or functional, operationalization. *Paper II* offers a set of tentative requirements that can be used to evaluate the appropriateness of particular operationalizations. In *Papers VI-VII*, two of these requirements are discussed, namely the requirements of comprehensiveness and non-redundancy.

Finally, the coherence of the system of environmental objectives merits further investigation. In this study, the important task of identifying and analyzing conflicts among the environmental quality objectives has been largely omitted. However, several other studies provide a comprehensive analysis of the conflicts that exist among the environmental quality objectives and between the environmental objectives and other societal goals, e.g., Wandén (1997, 2003), Natuvårdsverket och Nutek (2006), and Statens energimyndighet (2007).

## **5. Comments on Papers I-VII**

In this section, I summarise the contents of *Papers I-VII* and comment on the most central issues in each paper. All of the papers have either been published in peer reviewed international journals or are under consideration for publication in such journals. The papers have been written at different occasions during the past five years, and some of the arguments presented in earlier papers are modified in later papers. As a consequence, the thesis may contain some minor inconsistencies.

### **Paper I**

*Paper I*, written in collaboration with Professor Sven Ove Hansson, aims to clarify what a rational goal is. In the paper, it is argued that agents typically set goals because they want to achieve them and they believe the setting of goals facilitates their achievement. A term is introduced to denote goals that perform their typical function: “achievement-inducing”. It is further argued that goals are achievement-inducing when they have the capacity to guide and motivate agents to work toward their achievement. A set of rationality (or functionality) criteria are presented that specify the properties goals ought to have to be achievement-inducing: precision, evaluability, attainability (approachability), and motivity. The criteria cover three aspects involved in goal-based

action: the agent *knows* the goal and how close she is from achieving it (epistemic aspect); the agent *can* perform actions that bring her closer to achieving the goal (ability-related aspect); and the agent *wants* to achieve the goal (volitional aspect). Further rationality criteria for single goals are discussed in subsequent papers.

After analysing the four rationality criteria, the paper concludes that to determine the rationality of a goal, all criteria must be taken into consideration. In some situations, the action-guiding capacity of a goal is more conducive to its rationality, whereas in other situations, the rationality of a goal is primarily determined by its action-motivating capacity. This means that the exact degree to which a goal must satisfy the rationality criteria to be achievement-inducing must be established from case to case, considering the context in which the goal is to be implemented. Arguably, the question “When is a goal rational?” is therefore an empirical question that cannot be answered solely through philosophical analysis. However, in our view, a philosophical study of rational goal-setting is complementary to empirical studies, as it conceptually clarifies and systematizes the aspects of goal-setting that form the object of those studies.

## **Paper II**

*Paper I* identifies a set of rationality criteria for single goals, whereas the primary focus of *Paper II* is the rationality of sets of goals, or goal systems. *Paper II* is an analysis of the notion of goal system coherence and a discussion of the relationship between goal system coherence and goal rationality. Following Bonjour’s account of coherence, it is argued that goal system coherence is determined by the relations among the goals in the system. The paper identifies four goal relations: operationalization (O-relation), means and ends (M/E-relation), support (S-relation), and conflict (C-relation). After having analysed each relation, the paper discusses if, and why, it could be considered irrational to have conflicting goals. The paper concludes that even though having conflicting goals is not necessarily irrational, goal conflicts are problematic from an action-guiding (and perhaps action-motivating) viewpoint, especially without clear principles on the basis of which goal prioritizations can be made.

## **Paper III**

*Paper III* contains an analysis of one of the rationality criteria for single goals, namely attainability (approachability). The literature often argues that goals ought to be realistic,

as it is unreasonable to adopt goals that cannot be achieved and that are of no use in the selection of means towards their realization. However, in actual political practice, utopian goals are often adopted, for example, the Swedish Vision Zero for traffic safety. This makes it interesting to investigate how well-founded the proposed requirement of attainability is.

In *Paper III*, four arguments that can be raised to support the criterion of attainability are elaborated: utopian goals are (1) too imprecise, and (2) too far-reaching to guide action effectively, (3) counterproductive, and (4) morally objectionable. The first three arguments rest on a functional understanding of goal-setting; utopian goals should be avoided because they are irrational, i.e., they do not facilitate their achievement. The fourth objection is taken from *The Poverty of Historicism* (2002[1957]) in which Popper rebuts the use of utopian goals on epistemic and moral grounds.

The paper builds a tentative defence of utopian goal-setting through counter-arguments put forward to weaken the four objections. The conclusion is that goals should not unconditionally be rejected solely on the grounds of being utopian. Goals arguably can guide and motivate action even if they are utopian, provided that the other rationality criteria for these goals are satisfied. An effective way of mitigating the drawbacks of utopian goal-setting is to let utopian goals be a part of goal systems in which they are operationalized through short-term sub-goals that satisfy the proposed rationality criteria. The Swedish system of environmental objectives is an example of this practice.

## **Paper IV**

*Paper IV*, written in collaboration with Professor Sven Ove Hansson and Dr. John Cantwell, investigates the conditions under which goals become self-defeating. The paper identifies three types of situations in which self-defeating mechanisms obstruct goal achievement: (1) situations in which the goal carries the seeds of its non-fulfilment (*self-defeating goals*), (2) situations in which the activity of goal-setting contributes to goal failure (*self-defeating goal-setting*), and (3) situations in which disclosure of the goal interferes with progress (*self-defeating goal disclosure*).

In this paper, we identify six different types of self-defeating goals: analytical, physiological, causal, epistemic, attentional, and motivational. We also examine two

types of self-defeating goal-setting (direct and indirect), and three types of self-defeating goal disclosure (conceptual, attitudinal, and strategic).

We provide examples of each type of self-defeatance. Some of these are rather contrived constructions. This applies, for example, to analytically and physiologically self-defeating goals. Analytically self-defeating goals are goals that refer to themselves, or to goal-setting or goal endorsement in general, and which run the risk of self-referential failures. The goal not to have any goals is an example of this kind of goal. It is an immediate consequence of having the goal that it is not achieved.

Other types of self-defeatance are more common. This applies in particular to goals that are self-defeating by psychological mechanisms, such as attentionally and motivationally self-defeating goals. Becoming a happy, spontaneous, or self-realizing person are examples of goals that tend to be attentionally self-defeating. The more one pays attention to them, the harder it is to achieve them. In the literature, the most commonly suggested method of achieving these objectives is to realize that they are essentially by-products of other actions and cannot be brought about by conscious effort.

In writing this paper, all of us have in significant ways contributed to the overall structure and coherence of the text. Sven Ove and John were primarily responsible for sections 2.1-2.4, 4.1, and 4.3, while Karin wrote most of sections 2.5-2.6, 3, and 4.2. That said, we were all actively involved in all parts of this paper.

## **Paper V**

*Paper V* was written during an early phase of my doctoral studies. It contains a brief description of the Swedish system of environmental objectives and a preliminary inventory of the management difficulties of this goal system. The paper is intended to function as an introduction to the Swedish system of environmental quality objectives for environmental scientists and managers working in other countries.

## **Paper VI**

*Paper VI* contains an investigation into the rationality of five Swedish environmental quality objectives through the application of the goal criteria identified in *Papers I-III*. The paper is a continuation of two articles published in the proceedings of two sustainable

development conferences (Edvardsson 2006a, 2006b). The aim of the paper is to bring the rationality of the Swedish environmental quality objectives up for discussion and to point at some of the difficulties associated with the use of goals in environmental policy and management.

Four main difficulties associated with MBO in environmental policy are identified and discussed. First, effective MBO presupposes that a functional balance can be struck between the rationality criteria, specifically among the requirements of precision, communicability, acceptability, and motivity. The paper points out that no clear-cut criteria are discernable for carrying out this balancing act. Secondly, effective MBO presupposes that accurate and useful information about actual goal achievement has been gathered and given to the goal-setter. The resulting tendency to focus on goals and indicators that can be expressed in quantitative terms is unfortunate, since many aspects of ecological sustainability are not easily quantifiable. Thirdly, effective MBO presupposes that goals with a reasonably high degree of approachability can be set. The problem with environmental goals is that the information necessary to set optimal goals is seldom present at the time when a goal is actually set. Consequently, the prospect of setting rational environmental goals is in practice considerably circumscribed. Finally, effective MBO presupposes that goal conflicts can be identified and handled in an early phase in the goal-setting process. However, goal conflicts are often present with little or no guidance as to how they ought to be handled, which in the end contributes to rendering the goal system insufficiently action-guiding (and perhaps action-motivating).

## **Paper VII**

Like *Paper VI*, *Paper VII* uses the Swedish environmental objectives as an empirical basis for its analysis. In this paper, the sub-goals of the environmental quality objective *A good built environment* are analysed on the basis of the five identified rationality criteria. The fact that the analysis is limited to a single environmental quality objective allows for a more detailed rationality analysis than that performed in *Paper VI*. *Paper VII* concludes that some of the sub-goals are formulated in unnecessarily vague terms and that others are problematic from the viewpoint of evaluability. Furthermore, the paper concludes that all sub-goals are possible to get closer to and that the criterion of approachability is therefore satisfied. Regarding motivity and coherence, the paper concludes that further

studies are needed to determine the relations among the sub-goals and to determine the capacity of the objective to guide and motivate action.

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