Goal-setting and goal-achieving in transport policy

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This licentiate thesis consists of the following papers preceded by an introduction:


II. Rosencrantz, H. “Swedish transport policy goals – between rationality and social welfare” *Submitted manuscript.*

III. Rosencrantz, H. “Performance in complex goal systems – rational trade-offs without precise weights” *Submitted manuscript.*
Abstract


The thesis aims at developing new, alternative approaches and methods based on suggestions and ideas originating from moral philosophy and philosophical decision theory. More precisely, the thesis aims at investigating the rationality of transport policy decisions, including goal-setting and performance evaluation.

Paper I discusses rationality in road safety policy. Problematic features are identified and discussed. The paper argues that the Swedish road safety goal is rational, since it is action-guiding and achievement-inducing. This follows by observing that the goal satisfies the criteria of precision, evaluability, approachability, and motivity. The paper states that previous accusations of irrationality have been unnecessarily imprecise, since no reference is made to independently developed criteria of rational goal-setting.

Paper II discusses the Swedish transport policy goals, and the role of social welfare in rational policy decisions. Goals often come into conflict and trade-offs must be rationally and consistently managed. Policy decisions are outcomes of political processes. In the case of policy goals and decisions, the agent is society. This introduces the problematic concept of social welfare, which itself is an ambiguous goal with many meanings. Whether a decision is rational or not depends on whose perspective one takes on – that of society as a whole or that of the actual decision makers.

Paper III aims at investigating six different procedures for resolving goal conflicts: weighted average, lexicographic preference, conditional lexicographic preference, absolute restriction, generalised prioritarianism, and partial comparability. Criteria for selection, according to the respective procedures, are formulated and summarised in a table. The six procedures are contrasted with respect to their tendency to rule out possible sets of alternatives as being not choiceworthy.

Keywords: rationality; goals; policy goal; transport policy; road safety; goal conflicts; priority; value uncertainty; restriction
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Introduction

Goals, and the norms that they imply, are fundamental inputs to many decision problems. Transport policy is an area that illustrates this. Management of transport infrastructure involves difficult decisions. Major investments in, for example, new roads or railways compete for public resources; benefits are to be appropriately distributed; and negative effects, in terms of safety and the environment, are to be minimised. In a system as complex and important as a national transport system, with actors involving industrial organisations and individual drivers as well as politicians and bureaucrats, the concept of rational policy decisions is well worth investigating.

In Sweden, as well as in several other developed nations, transport policy is formulated in terms of goals, which are explicitly formulated in official documents (Gov. Bill 1996/97:137; Gov. Bill 1997/98:56; Gov. Bill 2001/02:20). But also in other nations, the important roles of national targets and policy goals – for road safety in particular – have been observed (Peden et al., 2004). Such goals guide strategies and constitute criteria for performance evaluation. However, although a rational model of planning presumably entails an approach aiming at social welfare and justice, national policy goals are set on a political level and goal conflicts are often resolved by political – rather than economical – tradeoffs.

Given this context, questions of philosophical nature appear relevant for both specific and general topics. Is it irrational to set seemingly utopian and unachievable goals, such as the vision to reduce road traffic fatalities to zero? If not, is there a price on human lives (Elvik, 1999; Elvik 2003)? What importance should be given to cost-benefit analyses; should they be viewed as a moral standard or as a decision procedure (Adler & Posner, 1999; Hubin, 1994)? How should positive and negative effects of congestion pricing be distributed; what would be fair?

1. Aim and scope of the thesis

The aim of this thesis is to develop new, alternative approaches and methods based on suggestions and ideas originating from moral philosophy and philosophical decision theory. More precisely, the thesis aims at investigating the rationality of transport policy decisions, including goal-setting and performance evaluation. There are good reasons why transport research and transport policy could benefit from an investigation with such an aim. Setting of goals is a political issue and methods of evaluations are economical issues. But justifications of both are, at least partly, philosophical issues. Any reference to welfare or justice, for example, relates to classical questions of ethics and political philosophy – namely what constitutes a good life and a good society (Griffin, 1986; Rawls, 1971). The concept of rationality, in turn, is a main concern of decision theory as well as of moral philosophy – namely what constitutes norms of choices and reasons for actions (Levi, 1997; Parfit, 1984).2

1 There are even more internationally adopted goals and targets that are not associated, or only partly associated, with transport policy. Noteworthy examples include objectives of environmental protection and of poverty elimination (UNDP, 2000; Smith & Todaro, 2006).
2 The term “decision theory” is sometimes narrowly referred to as the theory of rational decisions under risk, uncertainty, and ignorance (e.g., Mattsson, 2005). In this thesis, however, the scope of decision theory is taken to
It is an aim of this thesis to make a constructive contribution to problems of practical concern, that are, at the same time, philosophically interesting. This is what is commonly referred to as “applied philosophy”. Applied philosophy requires identification and understanding of problems of practical concern, and should ideally result in contributions that complement or even replace contributions made by other disciplines (in this case, primarily economics and other social sciences). By its very nature, therefore, the aim of making constructive philosophical contributions to practical problems is ambitious, and demands that the researcher approaches the task with realistic expectations and with respect for contributions from other disciplines.

The philosophy of traffic and transportation is not a very big area and there is still much pioneering work to be done. However, a few topics should be mentioned. One of the first primarily philosophical works, with a focus on ethical theory, was published in Denmark in the late 1990s (Zeitler, 1997). An investigation on the redistribution of responsibilities for automobile safety during 1960-2000 has been published in the United States (Wetmore, 2003). There is a publication that focuses on the ethics of surveillance and privacy in vehicle safety communication technologies (Zimmer, forthcoming). And, recently, an ethical analysis on moral responsibility in traffic safety has been published in Sweden (Nihlén Fahlgquist, 2005). In Sweden, there is also ongoing work about the ethics of traffic research and about the framing of decisions in the transport sector. All these different research projects look at, or are at any rate related to, goals within the transport sector.

There are different kinds of goals. A goal, or a set of several goals, may belong to an individual or to a collective of individuals. Goals may be implicit or explicit, and they may be more or less precise. Policy goals are generally explicitly formulated and apply for some collective of individuals, but other kinds of goals will also be relevant to much of the discussion in this thesis.

The scope of this thesis includes two areas: goal-setting and goal-achieving (or performance). These areas relate to two very general questions: When is a goal rational? and, How should goal conflicts be rationally managed? Before proceeding, however, some general remarks on rationality will be made.

2. General remarks on rationality

Rawls has famously stated: “Justice is the first virtue of social institutions, as truth is of systems of thought. A theory however elegant and economical must be rejected or revised if it is untrue; likewise laws and institutions no matter how efficient and well-arranged must be reformed or abolished if they are unjust.” (Rawls, 1971, p. 3) Analogously, though contextually different, rationality is the first virtue of decisions – whether made by individual agents making decisions for themselves or by officials making decisions for the public. A decision however thoroughly calculated and thought over must be rejected or revised if it is irrational.

Given the normative nature of the rationality concept, it is natural to associate rationality with ethics; an agent’s behaviour should be rational (reasonable or sensible), and likewise the
agent’s behaviour should be ethical (good or right). Whether there is a deeper connection between ethics and rationality is an issue that has been much discussed. One possible interpretation, which appears plausible at least in the context of group decisions or social choice, is that an irrational agent is somehow irresponsible and therefore morally blameworthy – hence, unethical. On this account, then, an irrational action would be an unethical action. But agents may also be irresponsible in other respects, and we do not normally consider evil (or in some other sense unethical) agents as being necessarily irrational. Several authors – in particular writers in the contractarian tradition of Locke, Rousseau, Kant, etc. – have proposed profound links between rationality and ethics, namely that ethical principles can be derived from principles of rationality (Gough, 1957; Gierke, 1934). In modern writing, this line of thinking is represented by Rawls and Harsanyi – although, as many know (and as will be noted in section 5), their assumptions and conclusions diverged.

Rationality is itself a very complex area, covering both theoretical (knowledge-related) and practical (action-related) aspects (Mele & Rawling, 2004; Spohn, 2002). Practical rationality is often defined in terms of goals, either political goals or individual goals. Although there is much literature on rational decisions and actions relative to given goals, surprisingly little has been written about the rationality of goals themselves. Actions are sometimes assessed as rational relative to goals; an action is rational if it is expected to lead to the achievement of the agent’s goals. Instrumental rationality, the capacity to choose the most efficient means to achieve given goals, represents a reasonable but rather narrow concept of rationality (cf. Simon, 1983). An “efficient” means, in the instrumental sense, need not be optimal – as made famous by the concept of “satisficing” rationality (Simon, 1997; Rubinstein, 1998). Still, an underlying assumption is that ends are rational in themselves.

Some writers have explicitly stressed this assumption. It has been said:

It 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. (Allais, 1953[1979], p. 70)

In the cases of what might be called “genuine” goals, goals that truly are ends in themselves and not means to other ends, this position seems plausible at first sight; if a goal is set without reference to any other goal, and if the goal is consistent with the other goals that the agent has, how can we say that it is irrational? Amartya Sen has argued that a person whose goal it is to cut off her own toes with a blunt knife would be better off by revising the goal to cut off the toes, rather than by optimising the goal by using a sharper knife, and that therefore this goal may be said to be irrational (Sen, 2002). But this goal can be said to be irrational only if it is understood that the goal is a means to another goal, namely to become somehow “better off”, and not if it is understood that the goal is strictly an end in itself. It is true that the person in Sen’s example seems irrational. But if she maintains that her goal is genuine and an end in itself, then there seems to be no ground for criticism in terms of rationality.

3. What is a rational goal?

Should we settle for consistency as the only criterion of rationality of goals? By such an account, goal systems are rational if and only if they are consistent. And it certainly seems plausible to say that goals are irrational when they are contradictory, or in some other way stand against each other. But how useful is this criterion? Two distinct cases of inconsistency can be identified. Logical inconsistency of goals certainly seems irrational, but would be rare.
It would be irrational to set a goal to reduce road traffic fatalities to zero while at the same time setting another goal to increase road traffic fatalities to a number greater than zero, but cases of this kind are rare in practice. Contingent inconsistency of goals may be more common, but it is doubtful whether such inconsistencies ought to count as irrational. A goal to reduce road traffic fatalities to zero may be in conflict with an accessibility goal to make people able to drive faster on the roads, or safety may in some other way be in conflict with accessibility, but mere goal conflict is not a sign of irrationality.3

Notably, these two cases of inconsistency refer to systems of more than one goal. Can a goal be inconsistent by itself? Perhaps inconsistency is the wrong term here, but a goal – by itself – can clearly be self-defeating in a contingent way. (A goal may also be illogical in its own right. Such peculiar goals are, however, not worth discussing at length here; consider, for example, the goal to “Design a transport system that is safer than itself.”) The goal to advance one’s own individual interests is self-defeating, since, taken as a general principle, it often leads to people having more frustrated interests than they would have had if they did not pursue the goal; and similarly, the goal to attain the greatest possible societal well-being is self-defeating, since, taken as a general principle, it demands too much of individuals and would make their aggregated well-being less than it would be had they not pursued the goal (Parfit, 1984).

The last point leads the discussion to collective, or political, goals – such as policy goals. In a society, whether it is small or large, each individual has his or her own goals – which do not necessarily need to be goals of self-interest in the narrow sense. In addition, groups or parties within the society have their own goals. For societal goals, it could be demanded that they should also be consistent with the other goals in society. Naturally, it is sometimes hard to find a common goal that everyone finds desirable, or even acceptable (von Hayek, 1944). This is not to say that goals encompassing individuals are generally problematic, and should be avoided if possible, but it gives us reason to reconsider, and the means to explain, the rationality of political goals. If the setting of collective goals is a process of strategic interactions between different agents, then it quite conceivable that such a goal may be rational for some and irrational for others. Whether it is rational for the collective remains an open question. A regional goal, aiming at offsetting disadvantages of long travel distances in sparsely populated areas, may be rational for those living in such areas but not for others; a good-willed politician, who wants to reach fame as a champion of the environment, may strive to institute environmental targets far more ambitious than actually economically efficient; and equally well-meaning engineers and scientists, in pursuit of new but possibly very expensive challenges, may press for the adoption of national transport policy goals to promote superior technical quality at very high costs.

Whether or not a goal is rational, then, is by no means always a question with an unambiguous answer. But at least it appears to be a meaningful question. It could be asked how goals relate to rational decision-making; what roles do they have and how do they function? By answering these questions, we may actually impose some requirements for rational goals. The next step would be to present general rationality criteria for a goal taken as an end in itself, and not in relation to other goals.

3 Second thoughts on this issue are made in section 8 of this introduction.
4. When is a goal rational?

Goals have certain functions in decision-making – at any rate, there are ways in which goals should function. A goal should be meaningful, or non-trivial, if it is to affect any agent’s decisions and it should not be vague or ambiguous. If a goal is an end in itself, and if it is rational, then it should be possible to rank alternative actions with respect to the goal. Moreover, a goal should make it possible to plan or coordinate actions over time (and, in the case of goals for organisations or societies comprising more than one individual, between individuals). To put it more generally, a goal should say or imply something about how the agent who has the goal should act. Otherwise, it seems fair to say that the goal would not be rational.

These normative requirements make the ground for formulating rationality criteria for goals appear firmer. Goals that are trivial, goals that are imprecise, goals that do not say anything about how performance should be evaluated, and goals that in any other way fail to guide the agent’s actions are pointless – hence, not rational. The general requirement that goals should be action-guiding has recently been proposed in the discussion on rationality of goals (Edvardsson & Hansson, 2005). More specifically, the requirement of being action-guiding means that goals must satisfy three rationality criteria: precision, evaluability, and approachability. In addition, rational goals must also be motivating, since no agent would want to achieve or even be interested in pursuing goals that are not motivating. These four criteria resemble the five criteria behind the mnemonic SMART (i.e., objectives should be Specific, Measurable, Achievable, Realistic, and Time-bound), often used in project management in public services (e.g., van Herten & Gunning-Schepers, 2000). Other criteria may appropriately describe the requirement that rational goals should guide actions, but it seems clear that action-guiding goals must provide the agent with information and be adapted to the agent’s abilities; rational goals must be meaningful in the sense that they inform the agent on how to act and how to evaluate acts, and in the sense that the goal is relevant to choices between alternative actions that are feasible for the agent.

The property of being action-guiding may be viewed as a property of four dimensions – one for each of Edvardsson and Hansson’s above mentioned rationality criterion. Clearly, there are situations where these dimensions need to be traded against one another; a vague or difficult goal may not be very precise or approachable, but such goals are often highly motivating. However, there is no obvious way to evaluate such trade-offs. It may therefore prove difficult to say whether one goal is more or less rational than another, but weak dominance – i.e., that a goal is at least as rational as another if it satisfies each of the four criteria at least as well – appears a plausible sufficient condition. Rather than using the criteria as a means for ranking goals in terms of rationality, however, they may be used in order to identify strengths and weaknesses of goals, to identify problems, and to point out whether a given goal could be formulated in a better way.

To summarise the main point in the above paragraphs: Whether a goal is rational depends on whether having the goal makes it easier to achieve the goal – whether the goal induces its own achievement. There is a wider, and simpler, requirement that can be imposed; a goal is rational to adopt if having it makes the agent somehow better off, or helps the agent to achieve some other goal. Goal-rationality may therefore be said to incorporate two issues: rationality of goals and rationality of goal-setting. While the former requires that goals should be action-guiding and achievement-inducing, the latter does not pose these requirements. A vague, non-measurable, or even trivial goal may be rational to adopt (set) if it helps to achieve some other goal, or if it has some other positive side effects. Politicians may set a vague or
utopian goal just to show their good will and ambitions; although such a goal may not be action-guiding or achievement-inducing, the setting of such a goal may benefit society as a whole (and not just the politicians who are in need of their voters’ support). It may be argued that the Swedish road safety goal exemplifies this, since it brings attention – internationally as well as domestically – to an urgent problem, although the goal to eliminate all road traffic fatalities arguably is impossible or even dishonest. Cases where the setting or adoption of a goal is more rational than the goal itself are therefore conceivable, though perhaps not very likely.

5. Rational policy decisions and the goal of welfare

What is meant by rational policy decisions? In this context, decision makers are often politicians or officials and those affected by their decisions are often larger groups of individuals. As mentioned earlier, decisions are generally perceived as rational for the agent who makes the decision, and acts are perceived as rational relative to the goals of the agent (Allais, 1953[1979]). A rational decision may therefore be a decision grounded on self-interest, if this is the agent’s goal. But in this case, since the decision makers are supposed to represent those who are affected, rationality assessments are expected to relate to common goals – or, at any rate, compromises based on the goals of each individual.

One such goal that is frequently referred to in order to justify collective choices is the goal of efficiency. On this account, the Pareto criterion may be viewed as a principle of rational choice (Arrow, 1951; Sen, 1970). If a policy option would make each affected individual at least as well off as she would be had an alternative policy option been chosen, and if at least one individual would be better off in the former option than in the latter, then certainly it seems plausible to say that the latter option would be irrational. For social decision makers, whether politicians or officials or others, this is fairly uncontroversial. But, due to the fact that instances of Pareto dominance are fairly uncommon in practice, and the fact that several supposedly good policy options cannot be chosen without a minority becoming at least slightly worse off, the Pareto criterion needs to be expanded.

One such expansion is the Kaldor-Hicks criterion – the criterion of potential Pareto improvement through compensation. As a principle of rational choice, however, is not entirely unproblematic. A fundamental concept in cost-benefit analysis, the Kaldor-Hicks criterion is equivalent to the criterion of positive surplus. The criterion of positive surplus clearly appears a rational decision procedure, but it should not be thought of as a moral standard and it is certainly not the only rational decision procedure for social choice (Adler & Posner, 1999; Hubin, 1994). Welfare maximisation coincides with surplus maximisation only under special assumptions (Varian, 1978). Moreover, as will be discussed below, the goal of welfare maximisation may itself be questioned.

Welfare is a concept much referred to, by philosophers and economists as well as by politicians and officials, but its meaning and measurement are widely disputed (Griffin, 1986). Surplus, on the other hand, is well defined; it is the difference between the amount that those who benefit from a certain change are willing to pay to institute the change and the amount that those who lose from the change demand in order to accept the change. This is a very useful monetary measure of efficiency. Certainly, it seems plausible to assume that surplus measures and welfare measures are significantly correlated; if an instituted policy creates a positive surplus, then this policy is more likely to be associated with a positive welfare change than with a negative welfare change.
As for the meaning of welfare, it is customary to distinguish between a mental and a material component (Hansson, 2004; Sumner, 1996). The former refers to mental states, or “perceived happiness”, while the latter refers to objective measures such as endowments of food, housing, and other material goods. Although each notion appears to give a good account of the meaning of welfare, the mental component and the material component do not necessarily coincide. There is evidence that, due to habit or lack of knowledge, people who are poor or oppressed may be more content than those with higher material welfare; and, conversely, it is well known that those who are abundantly endowed with material goods may still be more frustrated than those who are less fortunately endowed (Sen, 1985). In such cases, it seems plausible to say that the oppressed should not be content and that the abundant should not be frustrated. On the other hand, what right do we have to say how anyone else should feel? And, considering that different individuals may have different tastes and preferences, it certainly seems false to claim that material endowments say everything about how well off a person is. In short, neither the mental component nor the material component gives a complete account of the meaning of welfare.

As for the measurement of welfare, the mental interpretation and the material interpretation pose different problems. Assuming a purely material interpretation of welfare, and hence relying on purely objective measures, the issue reduces to the “trivial” (in the sense that it has nothing to do with surplus measures) task of quantifying endowments of these objective measures – provided, of course, that some objective list of these measures exists and is known. The mental component appears more closely linked to surplus measures, but two problems should be mentioned here. First, income differences are likely to distort the convergence between welfare and surplus. If those who benefit have much higher average incomes than those who lose, then – even if the (positive) welfare change for the former is small in comparison to the (negative) welfare change for the latter – we are likely to have a positive surplus. Second, willingness to pay and willingness to accept are preference indicators and not necessarily welfare indicators. Surely, an individual’s preferences need not be concerned solely with the same individual’s own welfare. A person may very well have preferences that involve considerations of others, such as future generations. A person may also be willing to pay for the protection of endangered species – protection that may be regarded as valuable in itself, and not as valuable for the sake of any individual.

Having discussed the problems of meaning and measurement of welfare, it may be asked what moral significance it has. Naturally, given the problems raised in the previous section, it may be asked whether any goal of welfare is meaningful at all. But given the implicit aspirations often held by politicians and economists, as well as the frequent use of the term “benefits” and its close connection with the concept of welfare, the issue is well worth bringing up. To be more precise, it may be asked whether welfare maximisation is the goal relative to which policy decisions should be assessed as rational.

First of all, the goal of welfare maximisation is associated with utilitarianism – the moral principle stating that an action is good if and only if it maximises the good (pleasure, welfare, or whatever else is meant by the notion of goodness) – and utilitarianism is not the only rational ethical principle. By this, it is not meant that the goal of welfare maximisation is equivalent to (welfare) utilitarianism. One may have other goals besides welfare maximisation. Most forms of utilitarianism only allow the goal of maximising a single good, such as welfare, and this one-sided focus has made utilitarianism subject to much criticism.
(cf. Singer, 1979). But welfare maximisation may very well be one goal among several others, and welfare maximisation would then indeed seem reasonable to pursue.

Given considerations of distributive policies, however, welfare maximisation rarely seems to be the goal of focus in real life. Policymakers often show egalitarian concerns, or concerns to give priority to those worse off. In transport policy, this is manifested in regional policy goals that aim at offsetting disadvantages associated with long travel distances. Rather than welfare maximisation, then, the goal to be pursued would be a welfare scheme. One example of such a scheme is provided by the introduction of a nonlinear, strictly concave, welfare function for each individual – sometimes referred to as prioritarianism (Parfit, 1991; Nagel, 1991). But far more famous is the Rawlsian difference principle (Rawls, 1971). An interesting feature of the difference principle is that it is illustrated by a principle of rational individual choice, namely the maximin principle. Similarly, however, utilitarian-like principles may be derived from Bayesian principles (Harsanyi, 1976). Either way, attempts to justify principles of rational social choice by means of principles of rational individual choice remain largely unsettled.

Quite apart from these considerations, it may be asked whether it is appropriate to assess policy decisions as rational, relative to a goal of social welfare. The wide scope often assigned to social goals has been seriously questioned, since such an approach allegedly requires central planning for the implementation of the goals (von Hayek, 1944). This objection will not be discussed in detail here, but a major point made by some writers in the libertarian tradition is that that justice can be defined without reference to any welfare scheme. An idea that illustrates this is Nozick’s notion of justice as the outcome of a history of just – i.e., free and voluntary – transactions (Nozick, 1974).

6. How should goal conflicts be rationally managed?

Transport is a policy area in which conflicts between goals are of particular concern. As mentioned earlier, the most striking examples involve goals of road safety and environmental protection. Such goals, primarily concerned with the negative effects of traffic and transportation, often come into conflict with accessibility or quality – goals primarily concerned with the positive effects of traffic and transportation. In these contexts, some seemingly rather uncompromising attitudes have been expressed. The Swedish road safety goal, for example, explicitly states that it is “unacceptable” that anyone is killed or seriously injured as a consequence of road traffic accidents (Gov. Bill 1996/97:137). Similar road safety goals have been adopted in Denmark and Norway (Færdselssikkerhedskommissionen, 2002; Steinset et al., 2002). The widely influential statement of the Precautionary Principle in the Rio Declaration of 1992 represents a stringent attitude in assessments of uncertainties concerning large-scale environmental impacts (UNCED, 1993). And the definition of sustainability as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” is an explicit statement of an uncompromising attitude (Brundtland Commission, 1987; my emph.).

However, the word “compromising” in the notion of sustainability may be given several different interpretations (cf. Chichilnisky, 1996; Heal, 1998). Likewise, the notion that some consequences of road traffic accidents are “unacceptable” has been interpreted differently by different authors; some have interpreted it as a lexicographical preference ordering, whereas

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4 Popper (1957) has also expressed criticism against social goals, favouring “piecemeal social engineering” to “utopian social engineering”.

others have interpreted it simply as placing a high weight on road safety (cf. Elvik, 1999; Hårsmann et al., 2002). There is therefore some uncertainty as regards the notion of compromising and the notion of acceptability, and it is sometimes unclear what the notions imply for the management of goal conflicts.

It is often assumed that the rational solution to goal conflicts is a weighing procedure, in which each objective is assigned a certain weight and decisions are reached through maximising an objective function formulated as a weighted average of performance measures. This is manifested in the two main approaches used in transport appraisal: cost-benefit analysis and multi-criteria analysis (Jonsson, 2003). In the former, the weights are set to reflect the stakeholders’ willingness to pay for (or the willingness to accept) the changes brought on by a strategy; and in the latter, non-monetary weights are set on the indicators of each objective. It certainly is correct that many rational decisions are reached through some form of (explicit or implicit) weighing procedure, but it seems too hasty to assume that this is the only way a rational decision-maker should treat goal conflicts. Such an assumption would rule out any absolute restriction or priority as irrational, since it seems that they cannot be accounted for by procedures based on weighted averages.

Obviously, there are approaches involving absolute restrictions and priorities that would be irrational. We could minimise the negative effects of traffic and transportation by simply shutting down the transport system altogether, but such an option is not desirable and would hence not be rational. Neither would it be rational to perform such extreme measures as spending half a nation’s public services budget on road safety enhancements, or to undertake equally extreme measures in order to protect the environment. But sidesteps from procedures based on weighted averages need of course not imply such deviations from rationality. Rather, rational agents may treat absolute restrictions and priorities as setting limits for conventional trade-offs and for economic analysis. There are a variety of ways in which this may be formally represented, but the point should be clear enough anyway; absolute restrictions and priorities need not imply extremely large costs.

To summarise: Prevalent ways of resolving goal conflicts often appear inadequate in their account of problems relevant to transport policy. In particular, absolute restrictions and priorities appear problematic. One more problem should be mentioned; economic analysis often presupposes exact comparability. Exact comparability is a simplification that has been made in order to facilitate the analysis, but it is not always unproblematic and it fails to account for the value uncertainty often faced by agents.

7. Preview of papers I-III

Paper I

The first article, written together with Professor Sven Ove Hansson and fellow PhD student Karin Edvardsson, discusses rationality in road safety policy. Sweden’s ambitious road safety goal, “Vision Zero”, has met with much criticism. Among other things, the goal has been accused of being illusory and irrational. Three reasons for this criticism should be mentioned. First, the goal itself appears to be utopian. No one, the criticism goes, can seriously believe that the goal of zero people killed as a consequence of road traffic accidents can be achieved and sustained; anyone claiming to believe that it can be achieved is dishonest, and the goal itself is not earnest. Second, Vision Zero seems to imply – or, at any rate, suggest – an implausible approach to trade-offs. Should road safety be prior to any other goal? Enormous
amounts of monetary resources would be dedicated to safety enhancement, while all other goals (including goals of saving lives in other areas) would fall behind, and goals like accessibility and transport quality would have to be compromised endlessly. Finally, the ambitious road safety goal appears dictatorial. Everyone has his or her own attitude towards risk taking in traffic. As long as no one else is harmed, it should arguably be each person’s own choice to wear seat belts or motorcycle helmets, but Vision Zero seems to support the rather hysterical view that extreme precaution should be imposed on everyone.

After noting that Vision Zero need not imply the above dangers, the paper states that such accusations of irrationality have been unnecessarily imprecise, since no reference is made to independently developed criteria of rational goal-setting. The paper argues that the Swedish road safety goal is rational, since it is action-guiding and achievement-inducing. This follows by observing that the goal satisfies the criteria of precision, evaluability, approachability, and motivity. Nevertheless, some problematic features – such as the lack of temporal precision in the long-term goal and the difficulty of comparing fatalities and serious injuries when evaluating performance – are identified and discussed.

**Paper II**

The second article discusses the Swedish transport policy goals, and the role of social welfare in rational policy decisions. In Sweden, the overall goal for transport policy is to provide a system that is both economically efficient and sustainable in the long term. This overall goal is specified by six sub-goals: (1) an accessible transport system, (2) a high standard of transport quality, (3) safe traffic, (4) a good environment, (5) positive regional development, and (6) equal opportunities. The first two are concerned with promoting the positive effects of the transport system – the purpose why there is a transport system in the first place. The next two sub-goals, in contrast, are concerned with preventing the negative effects of the transport system. Finally, the last two sub-goals express distributive concerns – that positive and negative effects should be fairly distributed between regions and between the sexes. The six goals often come into conflict and trade-offs must be rationally and consistently managed.

Policy decisions are outcomes of political processes. In the paper, the issue of rationality of transport policy goals and decisions is raised. The basic assumption is that goals and decisions are rational if they make the agent somehow better off – at any rate, not worse off than the agent would have been without having the goal or having made the decision in question. In the case of policy goals and decisions, however, the agent is society. This introduces the problematic concept of social welfare. Given the ambiguities and many interpretations that arise regarding the definition, measurement, and value of welfare, social welfare is itself an ambiguous goal with many meanings. Moreover, policy decisions are generally made by politicians, public servants, and other individual (or groups of) agents with goals of their own. Whether a decision is rational or not depends on whose perspective one takes on – that of society as a whole or that of the actual decision makers.

**Paper III**

The third article aims at investigating six different procedures for resolving goal conflicts: weighted average, lexicographic preference, conditional lexicographic preference, absolute restriction, generalised prioritarianism, and partial comparability. Weighted average captures much of what is commonly meant by “compromising”, when referring to goal conflict resolution, and is often used by actual decision makers in transport policy. However, a number of common issues – most notably, absolute priorities and restrictions – in transport policy are difficult to combine with this approach. Moreover, in general, conventional
economic approaches to trade-off procedures in goal conflict resolving often assume exact comparability of different values – i.e., that the value of different goods can be compared through a rate of substitution. It is true that this exactness facilitates analyses, but it nevertheless appears illusory. Introducing partial comparability captures the intuition that value is often uncertain.

Given the motives for introducing the different procedures, their properties are analysed. Focus is put on the way in which all-things-considered judgments are derived from considerations to single goals. Criteria for selection, according to the respective procedures, are formulated and summarised in a table. The six procedures are contrasted with respect to their tendency to rule out possible sets of alternatives as being not choiceworthy.

8. The continuation: Where to go from here

Paper I deals with a specific practical problem and Paper III provides a formal analysis of more general problems, whereas Paper II may be seen as an intermediate step between the two. The aim of making constructive contributions to problems of practical concern will continue, but more attention will be paid to general decision theory topics.

One possible topic may be the question of whether a goal conflict itself may be an indicator of irrationality – or, to put it differently, whether rational agents ought to avoid having conflicting goals. This was briefly touched upon in section 3, and quickly dismissed, but some second thought may be in order here. It seems plausible to say that mere conflict is not a sign of irrationality. But although an agent who has a highly conflicting set of goals is not necessarily irrational, she could have a reason to revise her goals.

The above suggests that we introduce the concepts of goal system coherence and revision. This puts already familiar topics from epistemology into a context of goal-oriented decision theory. Coherence is a widely discussed concept in epistemology, connected to Bayesian decision theory. Much of the discussion has focused on propositional sets that “fit together”, in a probabilistic sense, and the question of whether coherence itself is an indicator of truth (BonJour, 1985; Lewis, 1946; Olsson, 2002; Olsson, 2005). Belief revision is another topic of epistemology and much of the discussion has focused on how rational agents ought to revise propositional sets in order to avoid inconsistency when new information is added (Alchourrón et al., 1985; Gärdenfors, 1988; Hansson, 1999; Levi, 1980). The two discussions are related and there have been recent attempts to account for “coherence in belief revision” (Hansson, 2006).

The idea that coherence is an important property of goals or plans, as it is of beliefs, is not entirely new; on the contrary, it has been claimed that coherent plans make more sense than coherent theory choice (Millgram, 2000). The concept of goal system coherence has recently been introduced in decision theory (Edvardsson, 2006). In order to be rational, it has been argued, a set of goals must not only be consistent but also have a certain degree of coherence. Goals must “fit together”, so to speak, in the same way as coherent observations – expressible as propositional statements – fit together. Exactly how coherence should be defined or measured remains to be clarified, however, and some work is needed here. In the epistemic context, coherence applies to propositional sets, in which it is meaningful to assign a

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5 In fact, the well-known AGM account of theory change was preceded by investigations on revisions of normative codes (Alchourrón & Bulygin, 1971).
probability to each proposition. In the context of goal-setting, coherence is to apply to sets of goals. A point of departure may be to introduce propositions of the type “Goal $g$ is achieved” and interpret coherence in the original, propositional sense. There are, however, at least three problems with this approach. First, goal-achievement is a practical matter, dependent on the actions of the agent who is to achieve the goal, whereas fact-stating propositions refer to states of nature. The difference between achievement-stating propositions and fact-stating propositions will not be further specified here, but it suffices perhaps to say that statements like “There is a 50% probability that the goal of finishing my doctoral thesis will be achieved” somehow alienate the agent from his own performance, making it a chance-dependent event like the state of nature referred to in the proposition “There is a 50% probability that the coin lands heads up”. Second, while propositions in classical logic can only be either true or false, there are goals that can be achieved to a greater or lesser extent. Even if the probabilistic description of goal-achievement may be given a plausible interpretation (e.g., by letting a low probability of goal-achievement be interpreted such that the goal is more difficult to achieve than a goal with higher probability of goal-achievement), it would only allow a binary performance measurement: achieved or not achieved. Third, conditional probability does not fully capture the concept of goal conflict. A goal $g$ may, if it is achieved, make another goal $h$ more difficult to achieve. But this is not the same as saying that $g$, if achieved, lowers the probability that $h$ will be achieved.

Nevertheless, despite these three worries, it seems meaningful to speak of goal system coherence and to say that goals may fit together in a way analogous to the way coherent propositions fit together. If this can be accounted for, then the issue of goal system revision remains. A rational agent, it may be argued, should revise her goal system not only when the goals are inconsistent but also when the goals are highly incoherent. Assuming that “highly incoherent” may be given a plausible interpretation (e.g., “involving much conflict”), it remains for the agent to decide how this revision should be made. As for goal system coherence, an initial attempt to account for goal system revision may be to interpret goals as propositions. Systems should be revised in such a way that inconsistencies are removed and coherence is increased. In the epistemic context, revisions are restricted by postulates of theoretical rationality – such as the rules of avoiding premature judgment and avoiding unnecessary loss of information. An interesting task would be to see how such postulates, or analogous postulates of practical rationality, would apply to the context of goal systems. Finally, a remark can be made on the difference between goal system revision and mere compromising. When goals are in conflict, a compromise may be reached by partial achievement of a goal (or of several goals), without abandoning any of the goals. Goal system revision, on the other hand, involves abandoning or altering a goal (or several goals). Thus, in a goal-setting context, compromising and revising represent two different ways to resolve conflicts. An interesting question that follows naturally from this is when an agent should compromise and when she should revise her goals. This question, along with the others mentioned in this section, will be left open for now. The reader is left with the conclusion that much more can be done to follow up the study performed here and that there is no lack of future work.

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6 A discussion that relates to this issue is whether normative rules ought to be “restrained”, rather than revised, and how this should be accounted for (Hansson & Makinson, 1999).
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