

# The dynamics of law and normative structures

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## Introduction

This paper takes its departure in an assessment of a large infrastructure project that attempted to construct a railway tunnel through a ridge in southern Sweden. The ridge is important as a ground water basin and is also of national cultural and environmental importance. The excavation of the tunnel caused a drop of ground water level by almost 100 metres. Large amounts of chemicals were then injected into the ridge to overcome the problems with the ground water flow. The water movement in the ridge were however too massive and a much of the chemical followed the path of the water and subsequently spread into the environment. Both people and animal were directly affected by the toxic chemical and the project to stop.

The legal provisions with relevance for the project proved ineffective to prevent that wrong decisions were taken and carried through. As a matter of fact, on critical occasions the public authority in charge of the project even neglected the law. Obviously the law failed in protecting the environment and the case demonstrates the importance of understanding why this happened and the mechanisms behind the failure. The problem is that current research in the socio-legal field offers little instruments for this understanding. However, a new approach to theories of norms, developed at the University of Lund, seem to offer such an instrument. Recently a large reconstruction of the normative structures of the case has been carried out and has proved fruitful in finding important factors with relevance for the ineffectiveness of the law.

To understand the complex interrelations behind legal instruments and the society, we have to take the investigation one step further. The objective of this paper is to study and develop a model of the dynamics of law and normative structures. An enhanced mechanistic understanding of the system may thereby improve legal designs.

## Outlining the problem

The impact of society upon law and law's impact on society has traditionally been the focus of the socio-legal field of research. But to understand how the law operates in

different contexts or different situations is to understand both how the law operates internally as well as having one or more theories of how society functions.<sup>1</sup> One problem connected to the study of the relations between the legal system and the society is the difference between the two. The law is built up by imperatives and is not empirical when it operates or when it comes to the application of statutes or cases. The law is a hierarchical system and the legal system has developed argumentation techniques to find the right answer to a legal question, often based on a single case.<sup>2</sup> In contrast, the sociological study of society is empirical and theories are normally based on generalisations rather than a single case. To simplify, we can talk about a branch of science which is based on imperatives, and one branch which is based on empirical translations of facts. But when it comes to assessment or evaluation of legal provisions or programmes, they are often statistical in the sense that they study effects which are expected to be a result of e.g. a legal programme. As a result of the difference in the two branches, the effects of the law and the mechanisms behind these effects are seldom analysed. To overcome this problem a new approach to the *theory of norms* is developed at the Institute for Sociology of Law at Lund University.

## **A new approach to the theory of norms**

In social sciences norms are usually regarded as something belonging to the social life. However, the new approach argues that norms originate from social systems like politics or economy as well as the natural systems as they supply premises for the development of the norms. Conditions of e.g. the biotic system influence how norms develop and is continuously revised as the society's understanding of the biotic system changes. These norms develop in cooperation with the fulfilments of certain societal needs. In most cases, these norms are about exploiting natural resources. Taking another example, politics is about deciding for the common interest. This means that the political system is a decision-making system and the norms originating from this system often distributes competence to decide and procedures for the decision process. The system then produces norms that guide e.g. an administrative system in their activities. An important feature that should be pointed out is that norms have two sides: one factual, empirical and one prescribing side. Norms originate from empirical facts, like common behaviour or regularities, but then have the effect of prescribing behaviour (which in turn can be the basis for norms). Consequently, the norm can transform regularities into prescriptions. This means that norms also link the behavioural micro level with the societal macro level. The new approach to norms assumes that norms prescribe action, and that legal statutes are a certain category of norms. Despite the fact that norms can originate from different systems, this approach consider norms ontologically to be social constructions. The fact that the new approach stresses that norms have to sides makes this approach suitable for a understanding of law as well as society (and nature). We thereby have a common denominator for the theoretical understanding of the relationships between law and society.

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<sup>1</sup> For an overview of these theories and relations between the two, se Cotterrell, R The sociology of law. London: Butterworths 1992.

<sup>2</sup> Se Habermas, J Faktizität und Geltung. Frankfurt am Main: Suhrkamp 1992. Confer the title of the english translation: Between facts and norms.

A theory also has to be practical, and in figure 1 we present a model for studying norms.<sup>3</sup> This model can be seen as a screening device in order to reconstruct norms or normative structures. We will briefly comment this model. First, a norm answers to certain needs. This means that the model must be open to driving forces of different kinds. Apart from various needs articulated by politics, religion, ethics etc., norms often have the function of reducing complexity in complex situations and thus answering the general need for efficiency. Second, norms must take in consideration cognitive aspects. Facts about reality are perceived in different ways depending on age, gender, formal training etc. Third, norms depend on different systems, be it social systems or natural systems. Norms regulating construction of a bridge, for example, answers to our need to efficient use of natural resources which in turn answers our desire to live a pleasant life. These norms are often created by men, in a rational, technical way, sometimes with some additional experience. The norms must then take into account the regularities of nature, like mechanics of materials, how whether affect durability etc., but also the conditions of the economical system – often we see a balancing between durability and cost. Technical norms like this are often very exact, like formulas.

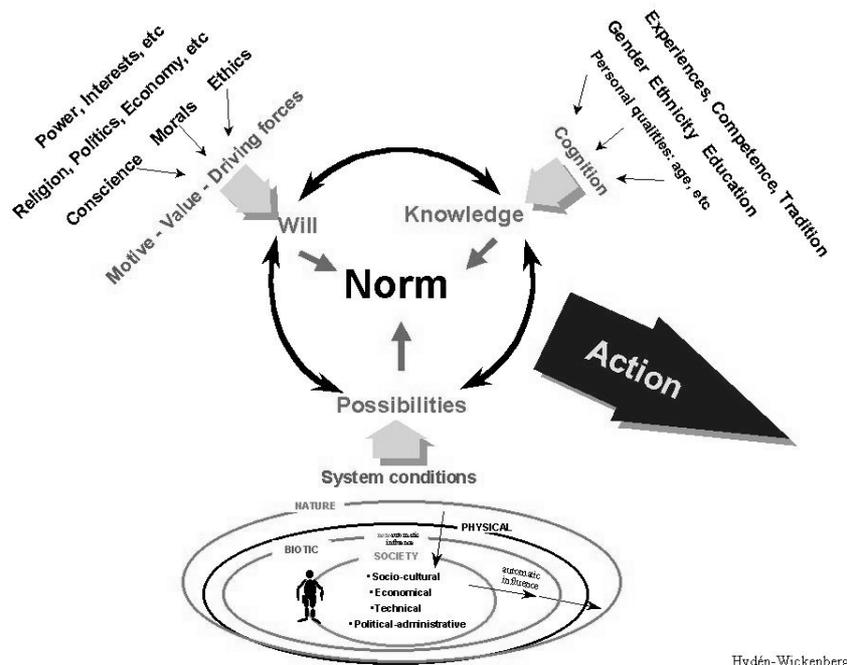


Figure 1. A model of the theory of norms.

We now want to go to a better understanding of the dynamics between law and society. The next step is therefore to find a case that is suitable to model for this dynamics. Since “law” and “society” are broad conceptions, we shall limit our study to one case in

<sup>3</sup> Presented in Hydén, H. Hållbar utveckling ur ett normvetenskapligt/rättsociologiskt perspektiv. In Hydén, H. ed. Rättsociologiska perspektiv på hållbar utveckling. Research report 1998:1 Sociology of law. Lund University.

the environmental field were the law failed to be effective. We will use a case that is extensively studied<sup>4</sup> and that offers a broad spectrum of factors relevant for this paper.

## **Background and development of the project**

In the midst of the 1980s a highly influential industrial lobby organisation presented a report on Swedish and Nordic infrastructure. The report argued for heavy investment in new railways and roads and presented it as “Missing links”. At this time Sweden experienced a recession and the government wanted to show political action. Infrastructure investments appeared to be one way to do this and at the same time overcome unemployment. Thus the parliament decided on an extensive infrastructure programme that gained support on regional as well as municipal levels. For various reasons other important institutions also supported the programme and consensus prevailed on the subject. A special priority was given to a railway tunnel through a ridge in southern Sweden. In 1991 the government assigned the National Rail Administration to construct the tunnel (two tunnels actually) and designated a budget of SEK 1.250 M and a time frame of six years for the project to be completed. The ridge is known for being of cultural and biological importance and hence protected as of “national interest” in the National Resource Act. In contrast with much of the Swedish bedrock, the ridge is geologically a horst containing much fissures, is aquiferous and thus a great challenge to the project. The only entrepreneur that accepted the time frame and the budget intended to excavate the tunnel with a tunnel boring machine (TBM). This entrepreneur was the only one of ten possible that claimed to use a TBM on the whole project. Normally the TBM-technique is much more cost efficient than conventional excavation. The attempt to use a TBM failed after only 13 metres. The entrepreneur now had to shift to excavation with conventional technique and this failure caused a big delay and additional costs. Soon after the entrepreneur was declared bankrupt because of the high damages it had to pay to the purchaser. 1996 a new entrepreneur continued the project. One major problem during the project was the draining of ground water. This is quite normal in underground activity, but the ridge was more aquiferous than expected and the problems the water caused was obviously underestimated. The slow tempo caused additional costs and one measure taken to increase speed was the starting of four new excavation fronts from middle of the tunnel by going down from top of the ridge. This measure caused an significant increase of water inflow and at this time the permit given by the Water Rights Court was exceeded by almost 100%. Now the costs are way over budget and the project is delayed by several years. The problem is to seal the excavated area from water inflow, but the standard procedure with cement injection isn't sufficient. An alternative is to use lining, i.e an inner concrete pipe. This method is very costly and was therefore rejected as an alternative. Now chemical injection is discussed and various tests are carried out. After a full scale test with 1400 tons of solution, a chemical compound named Rhoca Gil is found to be very efficient. Rhoca Gil is a solution made up of two toxic monomers and after injection a polymerization takes place and the resulting polymer is harmless. To a certain degree this didn't happen and toxic substances were spread into the ridge and out to the environment. Subsequently the substances poisoned cattle and fish on the ridge. Many workers also suffered health

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<sup>4</sup> The case is used as empirical material for a PhD dissertation due in 2002 by Matthias Baier. The case is also studied by a governmental commission.

disorders from the chemical. These effects caused a public scandal and the project had to stop.

The National Rail Administration applied for all legal permits necessary for the project, like building license and right to expropriation. Permits were generally granted, but on one occasion the nearby municipal refused to give a permit considering opening up a working tunnel on top of the ridge. Strong political pressure was then exercised upon the town council and permit was finally given in exchange of new roads worth SEK 95 M. In the aftermath of the project, the entrepreneur was found guilty of violating the Chemical Products Act and Occupational Safety and Health Act. Later this year we can foresee a verdict considering violation of the Water Act. Although the law is a corrective instrument *ex post*, it's clear that the law didn't prevent these environmental damages.

Research done on the case demonstrates that a normative structure prevailed on the project. The project gained a broad political and societal support which made it not legitimate to criticize it. And since the project was about improvement of the railway, environmental interests were also satisfied. Together with economical conditions and the time aspect, the normative structure was built up that best could be described as asymmetric. This means that important knowledge on several occasions was ignored and thus could the cognitive factor not balance the structure. One wrong decision then leads to more costs, less time and thus stronger incentives to find "shortcuts". This strong normative structure is a way to explain the failure of the legal provisions. It is also clear that coincidence cannot explain the events. The project makes up a large case both with reference to the time aspect and general complexity. This way it provides us with lot of factors with relevance for a general discussion on legal efficiency and is therefore suitable as a base for modelling.

## **Conceptual modeling**

So far we have tried to understand the complex case and the legal provisions with relevance to it with norms as common denominator. The model presented in figure 1 has directed us in the study of the normative structure. However, the model is somewhat static and in order to better understand the dynamics between the normative structure and the effects of legal instruments, we now want to describe the case in terms of causal loop diagrams.

We start with the assumption resulting from the above study that a legal norm of any kind depends on the prevailing normative structure within society. Let us call this relationship "norm difference". When the legal norm differs too much from the prevailing societal norms, we tend to decide and act according to the societal norms. If the action results in undesired effects, those effects are taken into account. Violating traffic rules may cause a serious accident to yourself or someone in your surroundings. It is thereby a strong incentive to follow the traffic rules. An action may also render economic profits or other forms of positive effects. A wrongful action must be monitored to result in social sanctions of different kinds. The monitoring in itself often cause right behaviour and if not, the sanctions might create incentives to do so. Costs

are however attached to monitoring and sanctioning, which in time may render less support for the law. In figure 2 we illustrate this in a causal loop diagram.

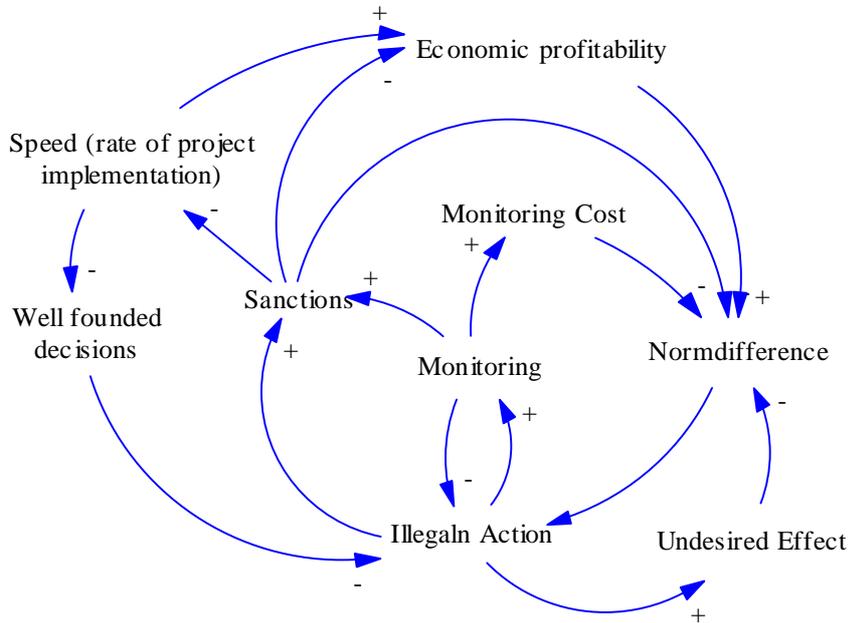


Figure 2. This conceptual model illustrates some causal links forming the dynamics between law and normative structures.

We expect to finish this paper in the near future and well prepared in time to the conference.