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Knowledge about Implementation of the Law

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Abstract. With good reason, legal positivism insists on a division between legal theory, addressing the sphere of law, and a sociology of power, addressing the sphere of power. The alignment between these spheres is a continuing source of friction, and a driver of change in the sphere of law. Because this dynamic aspect of the legal system has developed into a central problem, in the field of law, in public administration, and in legal knowledge representation, we reflect on the role of the state's contingent implementation of the law, and the scope of the concept of legal knowledge in legal knowledge engineering. Since the subject matter of law is essentially behaviour, a holistic approach to legal knowledge should focus on agents.

Keywords. Law. Legal theory. Public administration. Power. Knowledge Representation.

1. Introduction

Law is a social construct providing society with a mechanism to steer behavior, by promoting desired behavior and discouraging undesired behavior. To remain effective, law must be regularly adapted by and to the regulated society. This makes the law a dynamic system, and a theory of law should describe and explain the mechanisms behind that dynamic system.

Hans Kelsen in his Pure Theory of Law (Kelsen 1967) described the legal system as a hierarchical mechanism where lower norms in a legal system derive their authority or bindingness from higher norms. Kelsen aimed to understand legitimacy without having to include the political system, the institutions that could create law, which he considered a different scientific domain outside the theory of law. Arguably, the question of legitimacy has become more complex since Kelsen's time, making this position on law increasingly problematic in modern legal practice.

Legal pluralism has prominently put the organizing principles of law on the agenda again. Besides the nation state, as power behind the *Grundnorm*, international institutions, such as the United Nations, have accumulated power to create legal norms. Europe received institutions with the power to create laws that sometimes contain direct norms, and sometimes are to be implemented through national laws. International private law now affects more people and more transactions than it did in Kelsen's time. This makes the power that the state can muster to make law effective, a background given for Kelsen, and a hotly contested assumption even then, even more relevant today.

Moreover, information today plays a more central role than it did just a few decades ago. The information revolution has increased the capacity of organizations to orchestrate change, and more money is invested in organizational structures. Not only the state's organizational structures, but also those of other players change faster. Investment in information systems and structures creates sunk costs, and when the law is changed faster

than anticipated, investments made to increase efficiency turn out to be a waste of money. A widely shared perception is that the nation state is losing grip, and moreover that the services it provides are too expensive.

Few today accept Kelsen's rejection of power realism in legal theory without reservations. The pure theory of law is still relevant, however. Because power cannot be taken for granted, its alignment with law being contingent, it is still a valid idea to separate pure law from the mechanisms that make it effective.

In this paper we introduce a concept of law that we have developed over time, not as a philosophical position, but as a constructive theory driving our research agenda in legal knowledge engineering. Since we often work with public administration, we consider the position of the state, and the grip it has on society, in particular. In our work we distinguish the following four loosely connected knowledge representation domains, and implicitly try to distinguish them ontologically in our work:

1. The organization of the sources of law;
2. The organization of legal institutions;
3. Implementation and production of law in social structures; and
4. The application of law in individual cases.

The first two, and in particular the second, are characteristic of a legal positivist perspective on law. The first knowledge domain addresses the structural organization of the text, and the structural organization of the corpus of texts. It deals with reference, discourse context, reuse of terminology, the use of model sentences to express institutional design patterns, perhaps even the intentional use of legal principles like *lex superior*, *lex specialis*, and *lex posterior* in design of legislation, etc. Knowledge about this domain plays a role in legislative XML, metadata vocabularies for linked open government data, legal text retrieval, self-organizing concept maps, and text parsing approaches to knowledge representation. This is the core domain of the legal information sciences.

The second knowledge domains addresses the abstract components of the legal system, its institutional structures, and rules, as posited in the sources of law. This domain is understood best, it is the core subject of legal theory, and it is least interesting to dwell on here. In AI & Law a vast literature exists on abstracts design patterns such as institutions and constitutiveness, norms, legal powers, etc.

The third knowledge domain is characteristic of legal realism, with its focus on the sociological aspects of law. It covers the pragmatics of enforcement, legal service delivery, and judicial decision making. It covers the political arena, and policy making processes. It covers what we will tentatively call the organization of contextualization, for instance:

1. *Lex specialis* as a resolution to the confluence of norms in some context of application (i.e. the discovery of exceptions);
2. law interpreted as requirements and constraints in design processes (i.e. compliance); and
3. theory construction about and measurement of the effectiveness of law in contexts of application.

This short list covers the major sources of input to policy argumentation, and has, in our view, potential to explain a major part of the forces that move the legal system forward over time.

The fourth knowledge domain is clearly the one most legal professionals act in most of the time: interpretation of the law in context, from a specific perspective, given certain knowledge, expectations, motives, a concrete problem, a plan.

A legally proficient player has working knowledge of these domains, and uses that knowledge effectively to attain its goals. The legally proficient player is not just a norm subject, but also a stakeholder and investor in the legal system. In this paper we consider what this means for legal knowledge engineering.

2. State Institutions as Mediators between the Sphere of Law and the Sphere of Power

Hans Kelsen's legal positivism insists on a radical division between legal theory, addressing the sphere of law, and a sociology of power, addressing the sphere of power (Kelsen 1967). From a legal positivist perspective, power-realist conceptions of law that permit power to be conceptualized as an element of the legal system reduce it to a mere epiphenomenon of a more fundamental struggle among competing power interests. In doing so, it is claimed, the power-realist obscures law's normative character, the abstract structures of legal institutions, and the rules of legal argumentation.

On the other hand, power cannot be ignored in the practice of law. Even if the spheres of power and law should be differentiated in analysis, means of effectively linking the two spheres must exist, for law to have effect, and these links are a continuing source of friction.

Three basic mechanisms exist that explain how law and power get aligned. Sometimes the means arise more or less automatically from an alignment of interests. One could for instance say that the driver of a car has practical, and pretty reliable, power to make other drivers coming from the left hand side yield in traffic. This practical power arises not from the effectiveness of enforcement of a norm that one ought to yield for traffic from the right, but from the mere expectation that traffic from the right will not usually yield, and an interest in avoiding collisions. The norm has a mere coordinating function.

Not all norms are equally inspirational for spontaneous coordination of behaviour. Additional power must be generated. A second way to effectuate law is to rely on the interest of participants in norm violations in law enforcement. This mechanism is most obviously at work in areas of private law, where a victim of norm violation is entitled to go to court, and usually has an interest in doing so, to have the case adjudicated by professional judges. In this case power is generated by private persons and the resources they are willing to invest in enforcement of the law. In principle one can successfully run a legal system on resources voluntarily made available by victims, as experiences in Europe up to the late 18th century show.

The third and most comprehensive link between the two spheres is in modern society clearly the state. One could in fact argue, following Carl Schmitt (Scheuerman 1999), an infamous contemporary of Hans Kelsen, that the defining function of the state is to translate the norms of the abstract legal universe into concrete reality. State institutions, including a state-subsidized judiciary, act as reliable and omnipresent transmission belts between the sphere of law and the sphere of power (Scheuerman 1999). The state gives the law hands and feet, interprets it, and changes it. While Schmitt considered the state's power at least potentially as absolute, supplying a theoretical opening for the *Führerprinzip* (leader principle) in a time when this was opportune, modern observers attribute considerably less power to the modern state. This makes the problem of generating and applying limited power acute.

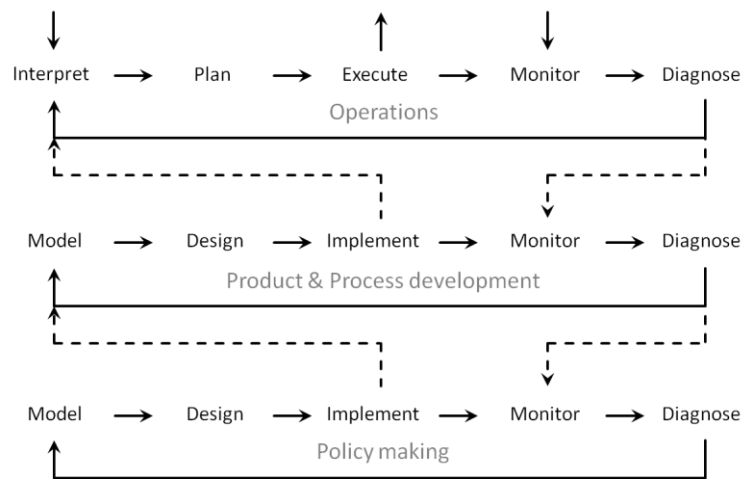


Figure 1. The operations, development, and policy making problem solving cycles.

3. Spheres of Law-based Action

Our recent work, in the Agile project and before, with a tax and an immigration administration, is primarily about the use of power to effectuate law, rather than about positivist law (Boer and Van Engers 2010, Boer and Van Engers 2011a, Boer and Van Engers 2011b). Kelsen would perhaps not have considered it a contribution to legal science proper. In earlier publications we have used variations of Fig. 1 to explain the relationship between three spheres of law-based action in public administration: the legal-political policy making sphere, the design-oriented development sphere, and the work floor operations sphere. In each of these spheres, struggle between competing interests, limited resources, and discretionary, unregulated, use of power play an important role, but it takes on different forms in each sphere. This is in essence our take on the state's transmission belt between law and power.

In the lower or deeper two spheres, policy making and process and product development, the activities of the state organization are systematized, subjected to generally binding rules, explained in documentation, restricted by business processes, allocated limited resources, described in database management systems, etc. These are design activities. At the top level primary government services are delivered, and decisions on individual cases are taken. These are planning activities. Problems regularly arise on the top level, and a diagnosis gives them a meaning, or possible meanings, on each level. A hard case on the operational level does not only call for a solution on that level, but also means that more resources should be allocated, or that documentation should be changed, or that the database tables should be redesigned, et cetera, or, finally, that the law should be changed to overcome friction with hands-on reality. The diagnosis of a problem in the operational sphere may function as an argument for change in the development or policy making spheres.

In private business, we usually speak of compliance of products and processes with the rules in the development sphere, and of action conform the rules in the operations sphere. Law is perceived in the first place as a constraint on designs and operations in private business. In the state's organizations, law has a broader significance: the organization enforces, interprets, and it delivers the services implied by the law. The law makes its actions possible and meaningful, determines the identity of the organization by stating its mission, etc.

To understand the dynamics of the legal system, we must understand the friction generated in its implementation by the state. There are always implementation problems, and divergent interpretations of their

meaning. The state's resources are always limited. Clamor for change of the law, and opposed to it, is always there, from within the state, and from parties interacting with it.

From the perspective of the state organization, we are dealing with two mutually dependent design activities: 1) the organization designs itself, using the legal rules as a source of requirements and constraints, and 2) its performance limits, as perceived by itself, are a source of requirements and constraints in the design of legal rules. As a stakeholder in policy making, it represents in the first place sunk costs of the state. This does not mean that the organization narrowly represents its own interests in policy making, but rather that it represents its diagnostic interpretation of the frictions that it observes, internally, in its network, among its clients. Any stakeholder, no matter how objective and beneficent it aims to be, is limited by his perspective on the domain.

Legal theory is clearly not about managing large organizations. There are other, more qualified, social sciences. Specific public administration topics do however demand attention in legal knowledge engineering. One deals with the agility of public administration. To react promptly and rationally to problems, the organization needs to know the extent of its freedom to interpret and implement within the limits of the rules. It, in other words, needs to have traction on:

1. the alternative interpretations of the law, and of its expected effects, that exist in the organization,
2. the organization's formal account of the current interpretation and implementation of the law in the organization and the network around it,
3. its perspective on alternative possible implementations within the design space constrained by the current law in the organization and the network around it, and
4. how proposed policy affects the potential performance envelope of the organization and the network around it.

A state organization that appreciates this point of view, will appreciate the distinction between the legal system per se, and its contingent alignment with a system of state exercise of power, as represented by its business process specifications and decision support system knowledge bases. This distinction can be reflected in knowledge representation, and in the long term it is better to make that distinction. An organization that has no grip on the environment it works in, perceives that it lacks control, and is tempted to ask for more legal powers, less legal constraint, more legal constraints on its network partners and clients, etc.

4. The Contextual Aspect of Legal Knowledge Engineering

To shed light on the concept of legal knowledge, let us consider what is being produced in each of the three spheres (see table 1). It is natural to think of social structures first: the law gives us rules and institutions, the implementation by the state gives us processes and systems, which are operationally used to deliver services, to enforce, to perform public legal acts. Each of these is presented/represented in information structures: the sources of law represent the legal system, while specifications, manuals, websites, program code, knowledge bases, communication protocols, standardized forms, and database schemas represent implementation, and formal decisions and judgments, database entries, filled in forms, and propositions in knowledge bases represent operations. As information scientists and knowledge engineers, we are on the interface between these products. We study the social objects indirectly, by studying information about them, and propose new ways of structuring the information that represents them.

Table 1 Social and information structures

	policy making	development	operations
social information	rules, institutions sources of law	processes, systems specifications, manuals	services, acts decisions, judgments

The production of legal information structures belongs to a sphere of action. Knowledge representations, whether they are direct representations of the sources of law, decision support system knowledge bases, standardized decision argument structures, policy field simulations, jurisprudential theories of some domain, or organization-wide legal ontologies, represent knowledge in a context of use. This is even true of representations of legal knowledge in the judiciary. In the judiciary, the development sphere is underdeveloped, and the operational level has a great deal of autonomy, but development of knowledge assets for judicial decision making as a problem domain clearly still exists, in the form of theory construction from case law.

When we represent the law, we can make a practical distinction between a legal positivist skeptical mode of reasoning about what the law says, and a credulous mode of reasoning about the expectations we have of behaviour based on that law, based on considerations of power and motive. In law we see a lot of normative expectations that bridge the gap: expectations about the coordinating effect of norms, expectations about the assignment of responsibility for norm violation based on position to know and ascribed abilities and intent, expectations about the feelings of victims of norm violations, expectations of tax evasion behaviour, etc. And the micro-expectations we have on the operational level, are different in form from the macro-expectations we have about the legal system and its implementation. We can argue about the exact dividing line: it is not crystal clear. The real knowledge management problem is however to assign each expectation to its context of use.

Legal knowledge engineering makes itself useful if it can present an integrated, holistic view on the law and its implementation that helps the organization to gain and keep traction on the dynamics of the legal system. A power and value-free legal positivist knowledge representation of the legal system is part of that, but it is not, in itself, useful on the operational level. It acquires value when positioned in a greater, continually changing, system. State organizations only make resources available for it, if they are able to take a step back and see the whole system instead of focusing on the operational sphere.

5. Agent Role-based Research

An open question, and a key theme for future work, is how to practically separate the legal system per se from knowledge about contexts of use, and the expectations that come with that context of use, in a large organization. We believe the context of law is provided by the agent role we are acting in. The role description embodies a self-other representation, pointing both at the social situation to which it is appropriate, the social-legal abilities of the agent in that situation, and the perspective on, and knowledge about, the situation that we ascribe to the agent. Pure law, if anything, is the knowledge shared by the relevant agent role descriptions, of positive law.

An example: Dutch law tells us that a sale involves a buyer and a seller, that it involves an offer and an acceptance, and that it leads to an obligation to pay on the part of the buyer, and an obligation to deliver on the part of the seller. It does not entail that the seller and buyer feel harmed if the counterparty does not meet its

obligation, it does not tell what they will do if that happens, it does not tell when an offer will be acceptable, etc. We do have expectations about those things, but these are contextual.

Generally, we agree that the obligation of a seller to deliver a good is correlative to a claim of the buyer; We expect that the buyer has an operational motive to monitor whether delivery takes place; We expect, on a deeper level, that the actions taken by at least some buyers against sellers who do not deliver, will make the legal obligation effective. On the operational level, action makes sense if it is profitable.

On the development level, however, it makes sense to take action occasionally to set an example, even if it costs in that case, to influence other trading partners. These expectations structure most sales that take place.

In certain prototypical money laundering scenarios, however, a tax administration has reason to expect that the buyer and seller share an interest in non-delivery of the good, and the tax administration is the one with an operational motive to check whether goods were actually delivered.

Generally, a trade is acceptable if it is at market value. Whether a trade is acceptable is normally not on the radar of the legal system, but a trade that is not representative of market value may be an evasion of taxes or a money laundering operation. This inference assumes a certain rationality of the offender, who pays tribute to the legal system in his own way by dressing up his offense in a legally appropriate dress, and of a tax administration, that assumes that the *real* market value that would be paid by a *normal* buyer and seller acting at arm's length, and foregone taxes, can be reliably estimated (Boer and Van Engers 2011b).

In our recent work we give this separation between pure legal inference and law-in-context-based expectations hands and feet by focusing on the following ideas:

network arrangements: The organization should not only model its own behaviour, reflecting on its own objectives, resources, plan operators, and information flows. It should give almost equal attention to the behaviour of its network clients and partners, even if it can only guess at the objectives, resources, plan operators, and information flows involved (Boer and Van Engers 2010).

agent role descriptions: The ascription of objectives, resources, plan operators, and information flows is based on attribution of agent roles. If we know we are dealing with a seller, we know not only the legal qualifications of certain behaviours (offering, accepting, delivering, etc.), but we also have expectations about the rationality behind those actions, including for instance the price a seller should find acceptable (Boer and Van Engers 2011a).

health and fault models: Expectations do not only exist of healthy, normal agents, but also of faulty agents who violate normative expectations. A tax administration implicitly manages knowledge of typical tax evaders, and experts have some ability to forecast how these adapt to changing law, given the rationality behind their behaviour. By assigning a number of health and fault models per normative agent role, the problem of assigning the right model to the right participant in a multi-agent system becomes a model-based diagnosis problem (Boer and Van Engers 2011b). Because fault models also lead to expectations about abnormal information flows, they also point towards the potentially available evidence.

policy argumentation as model-based diagnosis: The quality of policy input from state organizations is largely a product of how accurate its policy field and policy effect theories are. The methods we propose encourage an organization to model as wide a network around it as possible, to consider information flows that are inaccessible to itself, but accessible to others, and to reflect on the statistical biases in its information collections, and the macro-economic expectations that it

formulates based on those. It also encourages organizations to see alternative interpretations of the policy field and policy effects.

agility in implementation: The organization can use multi-agent simulations (Boella et al. 2009) based on agent role descriptions to test alternative ways of delivering services and enforcing compliance without first committing to the upfront costs of modeling the field to be simulated from scratch.

6. Conclusions

The ability to collect and process huge amounts of information, and the ability to simulate, were absent when the pure theory of law was developed. In this context, it makes sense that the dynamic aspects of the legal system attracted less attention: they were less tractable, less objective.

In a more dynamic and information-rich environment, it makes sense to reconsider organizations that are big enough to deal with design-level compliance, with a position as recognized stakeholder in law making, or with the power to make law itself, as agents acting rationally in the domain of law and law making. Knowledge of the law is however strongly perspective-bound: the law addresses almost all areas of human activity, and by necessity does so only fragmentarily and in the abstract.

We introduced agent-roles as descriptive elements, allowing us to take perspective in modeling, and model the internal structure of the state and the structures of its networks with (other) norm addressees from various points of view. Legal qualifications of cases, and the willingness to act on them, often depend on motives attributed to the agents involved. The beliefs, desires and intentions, plans and acts in our multi-agent-system models provide us with the means to express expectations about behaviour in scenarios. An important feature of our approach is that we use a similar mechanism and recurrent patterns for describing the three spheres introduced in section 3. Obviously the agent roles in the policy making sphere have a policy-level perspective on the world, and we attribute intentions, plans, and abilities in terms of that perspective, but the abstract mechanisms are the same.

A legally proficient player uses legal knowledge effectively to attain its goals with the legal system. It understands the network it operates in, and the effects the law has in that network, intelligently influences legal effects in that network, and intelligently argues what it would like the law to be. Legal knowledge is the knowledge that we attribute to this player acting in its legally relevant agent roles. This is a wider concept of legal knowledge than is typical in legal theory. As a sweeping knowledge level generalization in Artificial Intelligence, in the style of Newell in (Newell 1982), it is an appropriate domain characterization: legal knowledge is the knowledge that we attribute to a agent, such that its behaviour in the legal domain can be predicted in accordance with the principle of rationality. It is, in our view, the concept of legal knowledge that the modern state should adopt.

Legal positivism makes us aware that the alignment of law and power should be analyzed separately from law per se, but the problem of organizing this alignment is best addressed armed with practical legal knowledge.

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