

Visualization of the Law

Peter Wahlgren

The Swedish Law and Informatics Research Institute
Stockholm University
S-106 91 Stockholm
peter.wahlgren@juridicum.su.se

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Abstract: This presentation is divided into five sections. The discussion starts with the basic question as to *why* it is relevant to study means of visualizing the law. The second section provides a brief *inventory* of various ways of understanding the concept of visualization of the law. In relation to this some possible connections between established means of legal knowledge representation and the *concept of visualization* are addressed. The third part presents a number of possible *functions* that can be related to different means of representing the law. The discussion continues with an analysis of the *relationships* between various representation forms and finally some tentative *conclusions* are presented.

1. Why Study Visualization of the Law?

If one compares law and jurisprudence to other sciences and to the development of knowledge in general several things come to mind. First and foremost it is apparent that law to a large extent is a text based phenomenon. Legislation, preparatory materials, court decisions, and commentaries almost without exception manifest themselves in the form of texts, and in many situations the law is so intimately correlated to its textual form that it is even difficult to envision any alternatives.

In a broader perspective, however, it appears beyond doubt that well formed and customised representation languages can be of great importance for the development of scientific knowledge. Mathematics, chemistry and physics are candid examples where domain related notations have been important tools during long periods of time, and eventually have become standardized. The digital revolution is another illustration of how means of representation can affect our understanding of various subject matters in the most fundamental way. In all these cases the establishing of non-

textual forms of representation has had effects that are difficult to overestimate. It is also noticeable that visual representations, as e.g. the periodical system and the graphical representations of elements often function as catalysts when it comes to the accumulation of knowledge. As the tools for representations improve, more details, additional levels, and further aspects can be described and communicated, which in turn leads to an aggregation of knowledge, and in many domains this is an iterative process.

Consequently, it is well motivated and interesting to investigate whether and to what extent our understanding and use of the law can improve with access to additional tools of representation, or, to use a slightly different terminology, if the law can be visualised.

2. What are Visualizations of the Law?

In contrast to pure mental representations of the law there exists a large variety of manifestations that are observable and possible to elaborate. Firstly it must nevertheless be mentioned that also *text* is a form of visualization. It should likewise be underlined that text is, and for the foreseeable future will remain the most important tool in this respect.

It is furthermore evident that text in the form of phrases and words can be a core element in other types of formalisms. Well known and already in use in the legal sector are e.g. semi-formal ways to describe relations between different aspects by means of using *matrices* and *tables*. Text elements are also in various ways more or less crucial components in other forms of visualizations. To study visualizations of the law is therefore not primarily an activity contrasted to traditional jurisprudential studies; rather it should be looked upon as an explorative activity in which established methods also are included.

Looking beyond representations utilizing text elements, and approaching what more easily can be understood as visualizations, it is indisputable that *pictures*, *films*, *animations*, *symbols*, and *icons*, can be employed in order to depict different aspects of the law. All these types of visualisations exist in large numbers and in practice some of them are used as primary tools. Examples are road traffic signs (symbols) and clickable “accept icons” on computer screens.

In this context it is also reasonable to mention graphical representations. These in turn can take the form of *fault trees*, *flow charts*, *semantic nets*, *hierarchical illustrations*, and various kinds of so called *mind maps*.

In addition to graphical representations there exists a long tradition in the field known as *legal logic*, where numerous notations are utilized in order to describe legal phenomena. Some logical languages have been developed in other fields of science while other forms have been developed with the specific purpose of supporting the legal domain. The latter is for instance the case with deontic logic.

In its broadest sense one can argue that *law in action*, as e.g. the way it is observable in *court processes*, is a form of visualization, where at least some attributes are elaborated with the intent to communicate legal aspects such as power, legitimacy, etc. Following this line of thought also more *tangible things*, for instance law books, law libraries and court buildings, can be looked upon as visualizations.

The enumeration need not be extended. As this brief overview illustrates it is possible to understand the concept of visualization in several ways. It is likewise clear that both established means of representations and more unorthodox approaches can be included. An important distinction is also that several tools for representations have been developed in a conscious way, while other kinds of visualizations are generated spontaneously and as side effects (e.g. law libraries). It is furthermore noticeable that formal means of representation as well as other visualizations can appear in various combinations.

3. What are the Functions of Various Visualizations/Representations?

Contemplating the existence of various manifestations of the law it soon becomes quite obvious that most of them primarily fulfil different functions. Equally apparent is that this often is an overlooked fact and sometimes a point of departure for criticism; representations of formal logic are for instance often discarded as being too abstract and difficult to understand, while texts are criticized as being voluminous and thus too time consuming to read and complicated to grasp, etc.

Statements of the latter kind can however be confronted rather easily. If one articulates the fact that logic first and foremost is a *tool for analysis*, and not a practicable mean for the communication of comprehensive materials, much of the criticism loses its edge. Similarly, if it is stressed that text primarily is an efficient *vehicle for communication of large quantities of*

data, and not the best way of providing quick summaries of a holistic nature, the disapproving attitude may be challenged.

Reflecting further over this state of the matter it becomes clear that various means of representations have different strengths and weaknesses. As mentioned, formal logic is an analytical tool, which can be highly efficient for the skilled analyst who wants to deepen his or her knowledge concerning a specific issue. At the same time it is evident that it is a rather useless approach to depend on formal logic if one wants to communicate large volumes of information to broad groups in society.

Symbols, as e.g. road traffic signs, on the other hand are doubtlessly efficient means of communication, but as contrasted to logic quite mediocre as tools for analysis. The exemplification can easily be extended: graphical representations and diagrams are primarily ways of summarising complex matters, matrices are ways of illustrating how different aspects of various components can be related to each other in a more comprehensive way than what can be accomplished with linear text, mind maps can be highly efficient when a field of knowledge first is explored and when various components are to be identified, and so forth.

4. The Functions and the Relations between Various Representations

From the existence of various strengths and weaknesses of various forms of representations follows that it would be possible to elaborate the knowledge concerning different visualizations' ultimate function, as related to patent requirements in the legal sector. At least two dimensions of requirements seem reasonable to start out from. It may be suggested that

a) There is a need to represent details as well as a need to represent holistic matters and all things in between, i.e. there is a need to manage various levels of description efficiently.

b) There is a need to analyse as well as a need to communicate, i.e. there is a need to manage various forms of transformation of data efficiently.

It can furthermore be suggested that both a) and b) can be looked upon as spectrums in the sense that there exists a continuum from details to holistic matters, as well as a continuum from forms of representations primarily supporting analysis to forms of representations primarily supporting communication. The functions and relations between various forms of representations in law can thus be visualized as in figure 1.

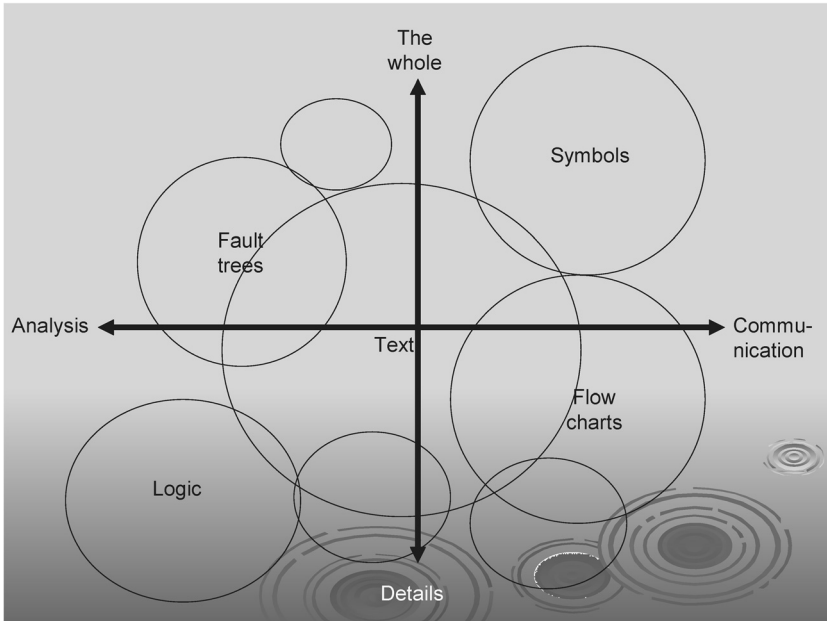


Figure 1: Functions and relations between various representations

5. Conclusions

It is quite obvious that various forms of representation have different pros and cons. Equally apparent is that a better understanding of when and why various forms should be utilized, and, most importantly, how they can be combined, in many ways can improve legal knowledge and facilitate legal knowledge management.

Another conclusion from this brief discussion on visualizations of the law is that the topic should be approached in the broadest possible way. The focal points of research should not only be means of representations. In order to understand what kind of representations are interesting to develop, various kinds of requirements of the law should also be investigated.