Abstract. Hans Kelsen’s Pure Theory of Law is the most prominent and influential legal theory for continental law systems. This book contains only text and neither logical notation nor pictures. Despite of this, an impression is that Hans Kelsen himself had very clear imagination. In our contribution we make an attempt to start visualizations of his theoretical models. This is important for legal informatics. Explicit visualizations of the structures of law and their theoretical representations are important for the development of legal ontologies. In addition to theoretical importance, visualizations contribute to understanding the law which is expressed in non-textual mode. In particular, legal machines take non-textual effect in legal situations. Kelsen created a paradigm of an up-to-date legal theory so that the visualizations of his ideas bring out an interesting way to understand the pure theory of law. Visualizations proposed in this paper aim at cognition and hence serve as models.

Keywords. Legal visualization. Legal informatics. Interpretation of legal terms. Is and ought. Modeling.

1. Introduction

Hans Kelsen is one of the most studied legal philosophers. The present paper aims to visualize his ideas. His texts are of great linguistic and intellectual intensity and combined with a very clear pre-textual imagination. Reading Kelsen is a must during the studies of law. However his imagination is not easy to grasp from the first reading. Kelsen’s works are not written as textbooks for freshmen. In order to achieve deep understanding, studies of law are necessary. It is also advised to read other books on legal theory. However, a layperson may also wish to find a concise conceptual model of law. Legal informatics needs models in a form which is used for knowledge representation in informatics. Visualization is a middle way to graphical models. This paper divided into several parts. Section 2 is devoted to the significance of the Pure Theory of Law in the historical formation, namely, taking over from the natural law. Section 3 distinguishes between the Is (Sein) and Ought (Sollen) realms. Section 4 describes different kinds interpretations – of facts, legal texts (content), and legal acts. Section 5 is devoted to construction and Section 6 to purification.

2. Historical position

Kelsen wrote two editions of the Pure Theory of Law: the first edition 1934 and the second 1960. A key feature of PTL is a paradigm change of legal theory and proposing a new juridical methodology. Kelsen introduced new concepts and terms, in particular, norm, basic norm, the hierarchy of norms, legal act, etc.
Kelsen stopped the scientific discussion and took over from the natural law doctrine. Here we recall René Marcic (1972) as one of the last important thinkers of natural law. Legal logic and legal informatics succeeded in the research.

A scientific mainstream after Kelsen was the legal logic invented by Georg Henrik von Wright with his article on deontic logic (1951). Other important exponents of this direction are Ilmar Tammelo, Ota Weinberger, Jürgen Rödig and Hajime Yoshino. Since 1970’s, legal informatics exponents are Herbert Fiedler, Leo Reisinger, Alfred Schramm, Erich Schweighofer, Roland Traunmüller, Maria Wimmer, just to mention a few.

To characterize Kelsen’s position, we invoke Stanley L. Paulson’s formulation on resolving the antinomy between the reductive thesis and the normativity thesis. In the introduction to 1992 translation of Reine Rechtslehre first edition 1934, Paulson expresses a view of “how Kelsen distinguishes his own position from those of the tradition” (Kelsen 1992, p. xxviii):

(i) Is the normativity thesis derivable from the morality thesis?


(ii) Turning the question around, is the morality thesis derivable from the normativity thesis?


(iii) Is the separability thesis derivable from the reductive thesis?


(iv) Turning the question around, is the reductive thesis derivable from the separability thesis?


Paulson finds that “Kelsen’s answers to questions (ii) and (iv) suggest the hypotheses which he begins – the normativity thesis without the morality thesis, and the separability thesis without the reductive thesis”. We can symbolize this: NT \ MT \ ST \ RT; see Fig. 1.

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Figure 1. Resolving the antimony. Adapted from Paulson’s introduction (Kelsen 1992, p. xxvi, xxviii-xxix).

3. Is and Ought

Kelsen uses a categorical distinction between Is and Ought; see (Kelsen 1967, § 3 ff.). This represents a very old mythical and religious dualism between the Earth and Heaven, in other words, nature and spirit. In Fig. 2 we visualize the Is with a horizontal plane and Ought with a vertical one. Is/Ought terminology was used already by Pufendorf; see his impositio. As theory, the Pure Theory of Law, aims at cognition and therefore appears on a
Other elements such as the system of terms form a modal indifferent substratum and appear on the metalevel, too.

Material artefacts such as paper documents and verbal formulations appear in the Is world. Their legal meaning (sense, *Sinn*, *Deutung*, *rechtliche Bedeutung*) appears in the Ought. The Is world is factual – it comprises facts, for example, the existence of a certain instance of table. The Ought is connected with culture. The notion of table appears in the Ought.

### 4. 3+2 Interpretations

This section concerns two groups of concepts: (a) facts, norms and texts, and (b) construction and deconstruction. Kelsen describes five (3+2) different interpretations regarding facts, norms and legal texts. We divide these interpretations into two groups:

1. **The interpretation of factual reality (Is, *Sein***). Facts are the entities of the Is-world and are transformed into the legal meaning (sense, *Sinn*; Ought, *Sollen*);
2. **The interpretation of legal texts (content)**. Kelsen describes the interpretation of the content of legal texts and a transformation in a new version of textual understanding. This is associated with the procedure of subsumption;
3. **The interpretation of legal acts (Rechtsakte)**. This is about the interpretation of normative sources (normative texts) and their transformation into valid legal acts (e.g. laws). The basic norm is regarded in this context. In this paper we express the main argument against the Kelsen’s basic norm concept: such a (scientific) basic norm delegates a scientific qualification but no legal validity;
4. **Construction**;

#### 4.1. The Interpretation of Factual Reality

A norm (that is from the Ought world) functions as a scheme of interpretation of a fact (from the Is world):

“The external fact whose objective meaning is a legal or illegal act is always an event that can be perceived by the senses …. However, this event as such, as an element of nature, is not an object of legal cognition. What turns this event into a legal or illegal act is not its physical existence …, but the
objective meaning resulting from its interpretation. The specifically legal meaning of this act is derived from a “norm” whose content refers to the act; this norm confers legal meaning to the act ….” (Kelsen 1967, § 4a p. 3)

Hence institutional facts are interpreted according to the Ought (Fig. 3). The interpretation is erected on both the Is and Ought. Here Pufendorf’s *impositio* can be recalled. See also (MacCormick & Weinberger 1992, p. 49-92) for an institutional theory of facts.

![Diagram of interpretation scheme](image)

**Figure 3.** The interpretation of the factual reality.

It should be noted that a paper document of a draft law (bill) as such has no meaning. A legal meaning is obtained when it is legitimated, e.g. by a parliamentary procedure.

The interpretation above has to be supplemented with the imposition of meaning; see Fig. 4.

![Diagram of imposing meaning](image)

**Figure 4.** Imposing the meaning to facts.

Firstly, facts, i.e. not interpreted facts, appear on the Is-stage. Secondly, *subjective interpreted facts* on the Is stage are subject to subjective meaning (*Sinn*). Subjective interpretation (*Deutung*) is on the mind level. Thirdly,
**objective interpreted facts** on the Is-stage have objective meaning (Sinn) with respect to a legal norm on the Ought world:

““Norm” is the meaning of an act by which a certain behaviour is commanded, permitted or authorized.” (Kelsen 1967, § 4b p. 5)

“The command of a gangster … has the same subjective meaning as the command of an income-tax official … . But only the command of the official, not of the gangster, has the meaning of a valid norm, binding upon the addressed individual.” (Kelsen 1967, § 4b p. 8)

“The norm is the meaning of an act of will, not the act of will.” (Kelsen 1967, § 4c p. 10)

Legal norms conform to the basic norm (Kelsen 1967, § 4b p. 8-9):

“Such a presupposition, establishing the objective validity of the norms of a moral or legal order, will here be called a basic norm (Grundnorm) (cf. § 34a). Therefore, the objective validity of a norm which is the subjective meaning of an act of will that men ought to behave in a certain way, does not follow from the factual act, that is to say, from an is, but again from a norm authorizing this act, that is to say, from an ought.”

The basic norm concept appears at the metalevel, the Pure Theory of Law.

To model the subsumption procedure, we can apply conceptual modelling formalisms which are used in computer science, object-oriented analysis and systems development, namely, the general relationships *is-a*, *instance-of* and *part-of*. Suppose the fact that my-door is open and the norm

N

"The doors ought to be closed".

The norm can be formalised with the following *modus ponens* rule: if x is an instance of Door, then x ought to be closed. Formally, \( \forall x (x \in \text{Door} \Rightarrow O \text{ closed}(x)) \), where O is the deontic operator and closed a predicate. The situation (fact) with the instance my-door is from the Is world. In order to interpret it, the norm (with the door concept Door) from the Ought world has to be chosen. Then my-door is matched with Door, formally match(my-door, Door). This can be simplified and expressed with a truth statement instance-of(my-door, Door) or my-door ∈ Door. This truth statement is from the Is world. A graphical notation is shown in Fig 5. A duty which is conferred on me, to close my-door, is from the Ought. In the Is world I can decide to leave my-door open thus violating the norm.

![Figure 5](image-url)

Figure 5. Graphical notation of the instance-of relationship, instance-of(my-door, Door) or my-door ∈ Door. This visualizes that my-door (from the Is world) is matched with the Door concept within N which is from the Ought.

### 4.2. The Interpretation of Legal Texts

The second interpretation is relative to the classical interpretation of the content of legal texts. The subsumption procedure is concerned. The terms which are found in the legal text appear on the metalevel. The terms are modal indifferent substratum (Fig. 6). On the function of application of law, adjudication by a court, see e.g. (Kelsen 1967, § 35 g)

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4.3. The Interpretation of Legal Acts (Rechtsakte)

Legal acts are interpreted with respect to the basic norm (Fig. 7). The authors of this paper maintain that Kelsen views the basic norm as a scientific product that has scientific meaning but no normative validity. Thus the main argument against Kelsen’s basic norm concept is that such (scientific) basic norms can only delegate a scientific qualification but no legal validity. We think that this is a problem – a drawback of the PTL. The scientific significance of the basic norm comes together with normative validity.

Niklas Luhmann devotes a separate chapter to the concept of validity. He notes that “validity is not a norm” and adds:
“If one follows Kelsen the question is most often asked the other way around: what is the special status of a basic norm in relation to validity – extra-legal, hypothetical, moral?” (Luhmann 2004, p. 126)

On the basic norm and the transcendental argument see Stanley L. Paulson:

“The distinction between ‘is’ and ‘ought’ implies altogether separate tracks for establishing, respectively, the truth of empirical claims and, inter alia, the validity of legal norms. Tying the distinction between ‘is’ and ‘ought’ to the normativity thesis – in the manner of methodological dualism – is not to deny the familiar distinction between ‘is’ and ‘ought’ associated with the separability thesis. … Where the distinction is invoked on behalf of the normativity thesis, ‘ought’ flags legal norms, and ‘is’ gives expression to facts; where it is invoked on behalf of the separability thesis, ‘ought’ flags norms of morality, and ‘is’ gives expression to valid, i.e. existing, legal norms.” (Kelsen 1992, p. xxxii)

5. Construction

Next is the structural interpretation involving scientific notions where Kelsen was very creative.

5.1. Double-norm (doppel Norm)

Kelsen makes a transition from the hypothetical norm concept, if condition then reaction, to categorical norm; see (Kelsen 1967, § 25) and Fig. 8.

![Figure 8. Hypothetical and categorical norms.](image)

Other norm concepts can be proposed, see e.g. that of Luhmann (Fig. 9).

![Figure 9. Another concept of norm (Luhmann 2004).](image)

5.2. Hierarchy of Norms

This section presents a bit more modern version of what Kelsen wrote. Constitution, law, statute and decision form a hierarchy, a hegemonic law; see (Kelsen 1967, part V, especially § 35) and Fig. 10. This expresses governing by one state. EU primary law and EU secondary law form another hierarchy with the international law being above. Private treaty appears on the bottom. Basic norm is above all and also in the mind.
5.3. Norm Monism

The legal order exclusively consists of norms (Fig. 11). Legal definitions are part of other norms.

Another concept is that there are other legal elements such as indicative legal sentences and legal signs (Fig. 12).

A formalisation of the legal order with one notion, the norm, makes the model very pure. This is useful to speak on a high philosophical level. However, on lower levels of discourse, more notions would be helpful. For example, legal theory distinguishes between norms to-do, norms to-be (see e.g. Sartor), etc. Other classifications of norms are possible.

In mathematics a formal theory can be formalised with a small number of axioms. Adding an axiom makes the theory more specific and deleting – more abstract.
6. Purification – a Deconstruction

Kelsen’s approach to purification rests on a critical interpretation of other theories. This is a deconstruction of the traditional legal theory.

Personality is a traditional key concept. In the Pure Theory of Law a person is only a quantity of rights and duties (Fig. 13).

A traditional concept of institution comprises state, etc. In the Pure Theory of Law, institutions are only sets of norms (Fig. 14). Therefore Kelsen devotes a separate Chapter VI to law and state (Kelsen 1967, sect. 36 ff.); see especially sect. 41b.

An effect of the Pure Theory of Law is also that Kelsen put a new interpretation on traditional terms. State and person are examples where this arises. This is not new in the history of jurisprudence. Both happen: on the one hand adoption and, on the other, re-interpretation of previous terms and creating completely new terms. Guido Tsuno investigates these issues at Chuo University in Tokyo within the project about legal lexicon; see (Tsuno 2011).

7. Apotheosis

Kelsen’s work entails a paradox. He tried to deconstruct and unmask the former juridical system especially the personification of the state with a paternal face. However, on the other hand he tried to make a personification of
his own theory – an apotheosis with a female virgin image named Pure Theory of Law (Fig. 15). There are some rhetorical indications in this direction (Lachmayer 1984).

Figure 15. A personification of Kelsen’s theory – an apotheosis with a virgin female image.

References