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The Nature of Legal Concepts:  
Inferential Nodes or Ontological Categories?

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**Abstract:**

I shall compare two views of legal concepts: as nodes in inferential nets and as categories in an ontology (a conceptual architecture). Firstly, I shall introduce the inferential approach, consider its implications, and distinguish the mere possession of an inferentially defined concept from its endorsement, which also involves the acceptance of the concept's constitutive inferences. For making this distinction, I shall combine the inferential and eliminative analysis of legal concepts proposed by Alf Ross with the views of theoretical concepts in science advanced by Frank Ramsey and Rudolf Carnap. Then, I shall consider how concepts can be characterised by defining the corresponding terms and placing them within an ontology. Finally, I shall argue that there is a tension between the inferential and the ontological approach, but that both need to be taken into account, to capture the meaning and the cognitive function of legal concepts.

**Keywords:**

law

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# The Nature of Legal Concepts: Inferential Nodes or Ontological Categories?\*

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## 1 Concepts as nodes in inferential nets

The simplest and most popular way of representing knowledge is through *conditionals*, namely, informational structures linking a condition and a conclusion according to the following pattern:

IF *condition* THEN *conclusion*

Such conditionals can be understood in different ways. For instance, we may view them as logical connections, asserting that whenever the antecedent is true then the conclusion is also true, or as condition-action connections, requiring an agent to perform an action whenever its precondition is satisfied. A more abstract perspective consists in viewing such conditionals as *inferential links*<sup>1</sup>, which are meant to govern reasoning: the acceptance of a conditional's antecedent justifies the acceptance of its conclusion (at least when no information to the contrary is available). Note that the idea of an inferential link also subsumes the notion of precondition-action link, if we express the need to perform an action through an appropriate deontic qualification, as "it ought to be that". Thus, for instance, the condition-action link

- a. IF there is a faculty meeting, THEN attend it!

becomes the inferential conditional

- b. IF there is a faculty meeting, THEN you ought to attend it

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<sup>1</sup>I prefer to use the term *inferential link* rather than the term *rule*, since the latter term has a variety of meanings—as through the association of a rule with the command of a ruler, with the idea of an obligation, or with the idea of an "exclusionary reason"—that are not relevant to the present analysis. I distinguish the notion of an inferential link also from the idea of a legal or moral norm, since not all norms are inferential links (unconditioned norms are not) and not all inferential links are legal or moral norms (e.g., links concerned with symptom-cause connections are not).

whose conclusion is now the content of a belief I should form when there is a faculty meeting, namely, the belief that I ought to attend it.<sup>2</sup>

The representation of information through inferential links is quite attractive and can be used in different domains.<sup>3</sup> For instance, knowledge concerning diseases and their symptoms could be encoded in connections such as:

1. IF one has a persistent itch all over the body, especially at night, unexplained high temperature, weight loss or tiredness, and cough and breathlessness,
2. THEN one probably has Hodgkin disease.

This is the connection that film director Nanni Moretti discovered by himself in a medical dictionary after a couple of years spent seeing a number of specialists, none of whom was able to provide the right diagnosis (see this in his movie *Caro Diario*).

Representing law through inferential links comports with the widespread idea that legal norms typically have the conditional form:

IF *condition* (operative facts or *Tatbestand*) THEN *conclusion* (legal effect)

Indeed, inferential links provide the most widespread and successful representational model for legal knowledge.<sup>4</sup> For instance, a trivially simplified representation of the discipline of Italian citizenship can be provided by two sets of inferential links, the links leading to the acquisition of the Italian citizenship

- IF  $x$  is born in Italy, THEN  $x$  is an Italian citizen
- IF  $x$  is born from Italian parents, THEN  $x$  is an Italian citizen
- ... (further ways of acquiring citizenship)

and the links establishing the consequences of Italian citizenship

- IF  $x$  is an Italian citizen, THEN  $x$  has the right to stay in Italy
- IF  $x$  is an Italian citizen and  $x$  is of full age, THEN  $x$  has the right to vote in Italian elections
- ... (further consequences of citizenship).

When information is provided by inferential links, concepts—and in particular lexical concepts, namely, the concepts corresponding to the words or syntagms of a language—play no autonomous semantic role. Inferences concern whole sentences (an antecedent sentence and the consequence linked to it), and as a result lexical terms are not primary carriers of meaning.<sup>5</sup>

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<sup>2</sup>I shall not address here the issue of the cognitive function performed by conditionals (see Sartor 2005, Chapter 20). I just remark that we cannot say that a rational agent should always derive the conclusion of every inferential link that agent endorses: one's mind would have to face an unbearable computational load, and one's memory would be cluttered with mostly useless information. For instance, I believe the following: 1 is a natural number; for all  $X$ , IF  $X$  is a natural number, THEN  $X + 1$  is a natural number.

If my rationality obliged me to derive all consequences of such premises, I would spend my time and energies in counting natural numbers indefinitely. A bounded rational agent should rather perform the cognitive operation consisting in the derivation of the conclusion of an inferential link it endorses only when this link may contribute to solve an issue relevant to the agent's interests. On the connection between interest and reasoning, see Pollock (1995).

<sup>3</sup>Proper conditionals can be integrated with unconditional assertions, to be viewed as degenerate inferential links having no antecedent, so that their "conclusion" can immediately be endorsed.

<sup>4</sup>Also for the purpose of developing legal knowledge-based systems (see, for instance Sergot et al. 1986, and Dayal and Johnson 1999).

<sup>5</sup>This view was advanced by Frege (1964, 73) who affirmed that "it is only in the context of a proposition that words have any meaning", and was endorsed among the others by Quine (1960, 13), according to whom "sentences and not words" are "the wholes whose use is learned." See also Brandom (1994), who discusses at length how to extract subsentential meaning from sentential inferences. For criticism, see Fodor and Lepore (2001).



Rather, the meaning of a term results from the set of inferential links concerning the sentences in which the term occurs. For instance the concept of citizenship may be seen as emerging from the set of inference policies establishing what preconditions (birth in Italy, having Italian parents, and so on) determine citizenship and what further consequences are entailed this qualification (permission to stay in Italy, the right to vote, etc.).

## 2 Ross's theory of legal concepts

The idea that legal rules (viewed as inferential links of the type just described) determine, and even exhaust, the meaning of legal concepts was advanced by Alf Ross (1957), who imagines a population, the Noît-cif tribe, endorsing two kinds of links:

1. links stating under what conditions something is (or starts to be) a *tû-tû*, and
2. links stating what normative qualifications or positions are determined by having or acquiring the *tû-tû* quality.

These two types of links are exemplified (Ross 1957) by the following ones:

1. IF one has eaten of the chief's food, THEN one is *tû-tû*;
2. IF one is *tû-tû*, THEN one shall be subjected to a ceremony of purification.

According to Ross, to understand how the word *tû-tû* is used by the Noît-cifonians we need only to gather all links of the two kinds just mentioned, that is, all links establishing the following:

1. when someone or something qualifies as a *tû-tû*, or
2. what further normative qualifications or positions are determined by having the *tû-tû* quality.

Note that the Noît-cifonian population endorses both kinds of links: those concerning the determination of the *tû-tû* quality (for instance, rules stating that killing a totemic animal determines the killer's *tû-tû*-ness, or that meeting one's mother-in-law determines one's *tû-tû*-ness), and those concerning the effects determined by *tû-tû*-ness (for instance, rules stating that *tû-tû*-ness determines the prohibition from participating in certain ritual activities, or the obligation to undergo a purification ceremony). We thus get the normative information represented in Figure 1, where each arrow-connection represents a general rule.

For instance the arrow between "*x* eats of the chief's food" and "*x* is *tû-tû*" stands for the rule

FORANY (*x*) IF *x* eats of the chief's food THEN *x* is *tû-tû*

The members of the tribe perform two inference steps for obtaining deontic conclusions (for inferring permissions or obligations) in *tû-tû* matters: the first step is concerned with establishing that someone or something is *tû-tû* (according to links concerning *tû-tû*'s initiation), and the second step is concerned with establishing a deontic implication of *tû-tû*-ness (according to links establishing *tû-tû*'s effects).

Ross argues that the *tû-tû* concept is superfluous, in the sense that the same deontic conclusions licensed by *tû-tû*-based inferences can equally be obtained through inferences directly connecting facts and deontic qualifications. If the members of the tribe were to disremember the *tû-tû* links and learn the links in Figure 2, they would not lose any real normative information: they would still be able to derive, given the same factual preconditions, the same deontic

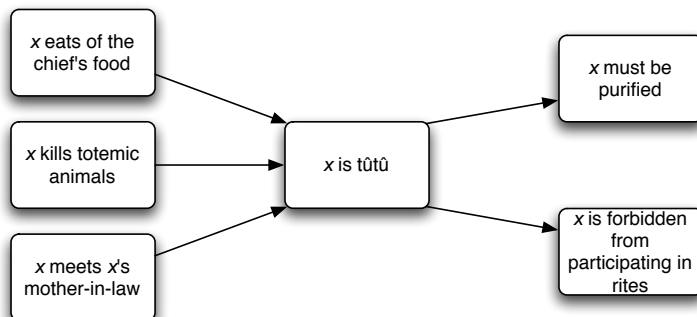


Figure 1: Tû-tû, an intermediate normative concept

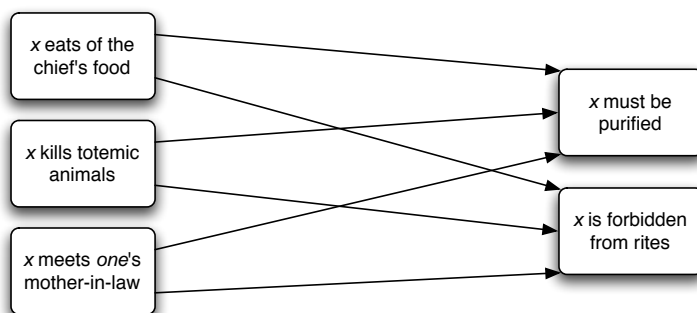


Figure 2: Elimination of tû-tû

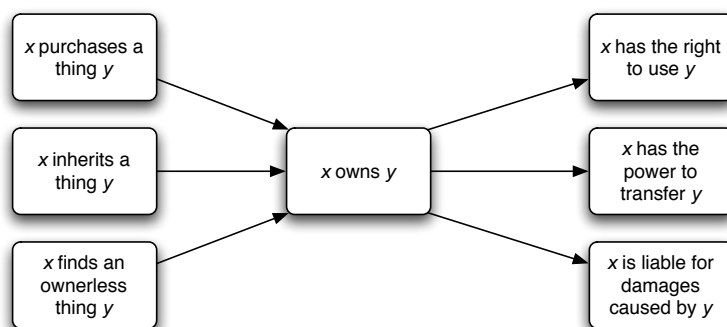


Figure 3: Ownership: An intermediate legal concept

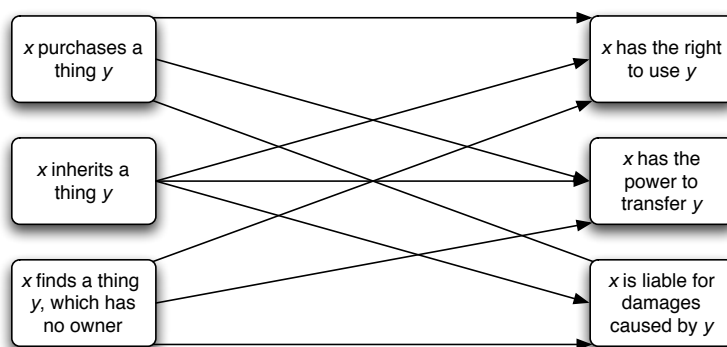


Figure 4: Ownership: an intermediate legal concept

conclusions they could previously obtain (when they were still operating under the  $\hat{t}\hat{u}$ - $\hat{t}\hat{u}$  links). According to the new links of Figure 2, these conclusions would be derived in one step, for instance directly jumping from the fact that Tom ate the chief’s food to the conclusion that Tom must be purified, without passing through the intermediate conclusion that Tom is  $\hat{t}\hat{u}$ - $\hat{t}\hat{u}$ .

Ross claims that non-deontic legal qualifications, such as the notion of ownership, are logically not different from  $\hat{t}\hat{u}$ - $\hat{t}\hat{u}$ -ness: their function is limited to being relay nodes between factual preconditions and normative effects, as you can see in Figure 3. Like  $\hat{t}\hat{u}$ - $\hat{t}\hat{u}$ -ness, so ownership can be eliminated without deontic loss, simply by substituting the set of links in Figure 3, with the set in Figure 4. The result we obtain by eliminating ownership is a more complex knowledge representation: in Figure 4 we have nine connections, that is, nine links rather than the six links of Figure 3.<sup>6</sup> However, Ross correctly remarks that ownership can be eliminated—through a

<sup>6</sup>As Lindahl (2003, 186, 193ff.) observes, ideas similar to Ross’s were advanced about the same time by Wedberg (1951). According to Wedberg, the use of “meaningless expressions” has the function—not only in the law, but also in the natural science—of reducing the number of links that are needed to license certain conclusions. When we have  $m$  sentences  $A_1 \dots A_m$  and  $n$  sentences  $B_1 \dots B_n$ , in order to be able to infer from each  $A_i$  all of the  $B_1 \dots B_n$ , we have two choices. The first choice consists in having, for each  $A_i$ ,  $n$  links connecting  $A_i$  to each of the  $B_1 \dots B_n$ . This implies having  $m * n$  links altogether (this is the situation we have represented in Figures 2 and 4). The second choice consists in introducing “a meaningless symbol  $Z$ ” having the following links: (a) for each  $A_i$ , one link connecting  $A_i$  to  $Z$ , and (b) for each  $B_j$ , one link connecting  $Z$  to  $B_j$ . This implies having only  $m + n$  links overall, a number of links much smaller than  $m * n$  (when  $m$  and  $n$  grow large enough), as you can see by comparing Figures 1 and 3 to Figures 2 and 4.

conceptual revision of all the original ownership-based links—in such a way that the possibility is preserved of inferring the same deontic conclusions in the same factual situations.

Yet, from this fact, so clearly stated, Ross comes at questionable conclusions. In particular, he makes the following claim:

[T]he “ownership” inserted between the conditioning facts and the conditioned consequences is in reality a meaningless word without any semantic reference whatever, serving solely as a means of presentation. (Ross 1957)

Therefore, Ross’s view of the function of intermediate legal concepts—they enable us to simplify the representation of normative information—leads Ross to a radical conclusion concerning the semantics of these concepts: they are just meaningless dummies.

This seems to me rather excessive. In fact, we need to reformulate our links, so as to eliminate the concept of ownership all the while preserving the same normative consequences. This shows that the term *ownership* did have a meaning after all, in the sense that it played a conceptual role: the reformulation is required exactly to express in a different way the legal contents we previously expressed by relying on the term’s conceptual role.<sup>7</sup> With regard to terms expressing legal qualifications, we could thus say that such terms have an *inferential meaning*. The *meaning* of a legal qualification *Q*—intended as *Q*’s *conceptual function*—is given by two sets of inferential links:

- a. the links stating what conditions determine the qualification *Q* (*Q*-conditioning links), and
- a. the links linking further properties to possession of the qualification *Q* (*Q*-conditioned links).

The connection between meaning and inferences enables us to derive two corollaries. First, *Q*-conditioning and *Q*-conditioned links *constitute* *Q*’s inferential meaning, since they determine what inferences lead to *Q* and what inferences depart from it. For instance, we can say that:

- a. ownership-conditioning links contribute to constituting the notion of ownership by establishing that ownership is acquired under certain conditions, while
- b. ownership-conditioned links contribute to constituting the notion of ownership by establishing the rights and duties of owners.

Secondly, such links determine whether *Q* applies to particular individual entities and what further properties *Q*-qualified entities have. Therefore, these links *constitute* the fact that certain individuals are *Q*’s, as well as they constitute the normative consequences of this fact. For instance, we can say that:

- a. ownership-conditioning links contribute to constituting current owners’ ownership of certain things by having enabled the normative generation of their ownership of those things (as resulting from the conditions determining ownership according to such links), while
- b. ownership-conditioned links contribute to constituting current owners’ ownership by enabling the normative generation of the normative entitlements owners have with regard to their possessions (as resulting, according to such links, from their ownership of these possessions).

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<sup>7</sup>In general, the fact that we can transform a theory  $T_1$  using term  $t$  into a theory  $T_2$  that does not use term  $t$ , but has the same implications of  $T_1$  with regard to statements not containing  $t$  does not prove that  $t$  is meaningless, but rather that we can conceptualise a certain domain in different equivalent ways (the issue will then be what way is simpler, more elegant, more helpful for a certain inquiry). It is indeed very common especially in formal disciplines (like logic, game theory, etc.) that equivalent systems can be provided, which use different terms, defined in different ways.

Hence inferential links have a double legal significance: they determine legal meanings and they determine legal effects, and the two aspects seem to be necessarily interdependent: any choice concerning the meaning of legal terms amounts to a choice concerning legal effects.

### **3 Implications of an inferential theory of legal concepts**

The idea that legal concepts have an inferential semantics has some interesting implications. A first implication is that this idea (at least when all inferential links are treated equally) eliminates the distinction between terminological information (word knowledge) and substantive information (world knowledge), and it consequently eliminates the distinction between linguistic (analytic) and legal (synthetic) information. If the meaning of legal words were defined independently of inferential links (as provided by substantive legal norms), then we could separately consider what meaning a legal word has, and what norms are expressed using that word. If norms constitute meanings, such a distinction is no longer possible.<sup>8</sup>

A second implication of the view that legal meanings are determined by inferential connections consists in the fact that legal concepts are determined by legal systems: since each legal norm using a concept contributes to characterising the meaning of that concept, and different legal norms exist in different legal systems, then different systems have different concepts (for a discussion of conceptual diversity, see, for instance, Ajani and Ebers 2005).

A third implication is that legal semantics is determined (among other things) by legal doctrine, which determines, identifies or constructs legal norms on the basis of the sources of law. This is that case, in particular, if we assume that the statement that a legal norm is existent (being binding or valid) is no mere description of a psychological or social fact, empirically ascertainable (for instance, the fact that lawyers and judges have certain behavioural or mental attitudes), but rather amounts to the normative assertion that we are justified in endorsing such a norm (such an inferential link) in legal reasoning, as a correct premise for legal inference.<sup>9</sup> Thus, the discussion concerning the meaning of legal concepts is inseparable from the doctrinal discussion concerning what norms (leading to, or departing from, the term expressing the concept) are to be adopted as correct premises of legal reasoning, given the available legal material, such as legislation, precedent, custom, and so on (on the doctrinal nature of legal concepts, see Dworkin 2004). In fact, when we argue that a legal norm exists linking a certain condition to the application of legal concept (or that such a norm does not exist) we are in fact arguing that such a linkage is legally correct, namely, that under the given condition we are justified in ascribing the concept and hence justified in applying the legal consequences that follow from ascription of the concept. Correspondingly when we argue that a certain consequence follows from a legal concept, we affirm that we are justified in applying such consequence in all cases fulfilling the conditions leading to the ascription of the concept.

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<sup>8</sup>According to a long tradition (extending from Leibniz and Kant to logical empiricism), the truth-value of an analytical judgement is determined exclusively by the meaning of the terms occurring in it. A synthetic judgement, by contrast, says something that is not included in the meaning of such terms. “Bachelors are unmarried men” is a classical example of an analytic judgement, while “Bachelors take longer holidays” is an example of a synthetic judgement, whose truth-value depends not only on the concepts used but also on the states of affairs in the world. I cannot here considering in any depth the distinction between analytic and synthetic judgements, one of the fundamental tenets of logical empiricism, famously criticized by Quine (1951) and recently proposed again in new forms (see, for instance, the interesting attempt by Boghossian 1997).

<sup>9</sup>This applies regardless of the source of such an inferential link: legislation, judicial law-making, custom, etc. (see Sartor 2006).

Consider, for instance, the recent debate about torture, where the absolute prohibition of torture<sup>10</sup> has been recently questioned with regard to the treatment of suspect terrorists (for a critical review of this debate, see Waldron 2005). A lawyer believing that the law permits infliction of pain on detainees for the purpose of extracting useful information has two ways to go about showing that this is the case: the lawyer can take either a restricted view of the conditions for applying the concept of torture (requiring, for instance, that permanent physical damage is caused, so as to exclude that there is torture when pain is inflicted without such an effect) or a restricted view of the consequences of qualifying an act as torture (assuming that only certain kinds of tortures are always forbidden, while other kinds of torture are in certain circumstances permissible). Correspondingly, a lawyer believing, on the contrary, that the law never permits any infliction of pain for the purpose of extracting information will claim that any pain inflicted for that purpose qualifies as torture, and will claim as well that the law always prohibits torture regardless of the form it may take. The two lawyers, in offering what they view as justified conditions for qualifying an act as torture or as justified consequences following from this qualification, will characterise (in different ways) the concept of torture, and this will have relevant deontic implications (the first characterisation of torture permits certain action on detainees which the second characterisation prohibits).

## 4 Possessing and endorsing legal concepts

According to an inferential understanding of the meaning of legal terms, a neutral construction of legal concepts—one not committed to substantive legal conclusions—becomes quite doubtful. We can obviously make an uncommitted statement by asserting that another person is using the concept of torture in a certain way (which we may not share), but when we frame in a certain way the very concept of torture we are using we apparently take a stand on what counts as torture and on what normative consequences follow from this qualification. Every statement concerning what inferences can be derived from a certain legal concept, or what inferences lead to a legal concept, seems to become immediately a substantive legal commitment.

This approach to the inferential meaning of a legal concept can be connected with the general view that having a concept entails endorsing certain substantive inferences. This idea has been developed in particular by Michael Dummett, who has offered a well-known example concerning the French word *boche*, used disparagingly during World War I to refer to the Germans: you call someone a “boche” who is German—this forms the basis for calling that person a “boche”—and being boche entails having certain negative qualities, such as being cruel. According to Dummett (1973, 454), one has the concept of *boche* just in case one endorses the following inferential links:

- if  $x$  is German, then  $x$  is boche;
- if  $x$  is boche, then  $x$  is cruel.

Developing this viewpoint, Brandom (2000) says, “the use of any concept or expression involves commitment to an inference from its grounds to its consequences of application.”<sup>11</sup>

<sup>10</sup>As stated in Art. 5 of the Universal Declaration of Human Rights: “No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment.”

<sup>11</sup>Brandom continues as follows: “Critical thinkers, or merely fastidious ones, must examine their idioms to be sure that they are prepared to endorse and so defend the appropriateness of the material inferential commitments implicit in the concepts they employ. The proper question to ask in evaluating the introduction and evolution of a concept is not whether the inference embodied is one that is already endorsed, so that no new content is really involved, but rather whether the inference is one that ought to be endorsed. The problem with *boche* is not that once

While I agree with Dummett and Brandom on the importance of an inferential understanding of (legal) concepts, I believe that an inferential theory of legal concepts cannot limit itself to this strong (committing) way of having a concept; it must also provide a weaker way of possessing conceptual inferences, a way not involving the endorsement of such inferences and therefore enabling us to knowingly possess defective concepts (concepts whose constitutive inference links we know to be wrong), or local concepts (concepts whose inferences we know to be applicable in certain contexts, but not in certain other). For characterising this weaker kind of conceptual possession I shall first provide some examples, and then I shall attempt at constructing a theoretical model (borrowing some ideas from Boghossian 2003).

Suppose that I am analysing different approaches to marriage and that I identify a view of marriage, let me call it *patriarchal marriage*, which is characterised by (i.e., whose meaning is given by) the following inferential links:

- IF a couple goes through a marriage ceremony, THEN the two spouses are in the relation of patriarchal marriage, and
- IF two spouses are in the relation of patriarchal marriage, THEN the husband has power over his wife.

Suppose that these links fully constitute the meaning of the term *patriarchal marriage*, as I understand it, and that I am fully aware of that (I know that the meaning of this term is constituted by such links). Consider now the following question. Does my knowledge of the meaning of term *patriarchal marriage* entail that whenever I know that a couple has gone through a marriage ceremony, I should conclude that the husband has power over his wife? The answer must be negative: while possessing the concept of patriarchal marriage and knowing that a marriage ceremony has taken place, I must be able to reject the conclusion that the husband has such power. This seems very reasonable, but it is incompatible with the view that knowing the meaning of a term (and thus “having”, in a strong sense, the concept corresponding to such a term) involves endorsing the corresponding inferential links.

The problem with regard to inferentially characterised concepts is that the preconditions for ascribing such concepts do not logically entail the consequences following from such an ascription. The fact that a couple went through a marriage ceremony—this being the precondition for qualifying the couple as being linked by a patriarchal marriage—does not entail according to logic alone that the husband has power over the wife: for drawing this conclusion we need to make substantive assumptions, namely, we need to assume that the inferential links hold that characterise the concept of patriarchal marriage. But our possession of a concept should not force us to accept (the truth or the validity of) the inferential links characterising that concept.

Let me introduce another example to clarify this point. Suppose that the concept of *debt-bondage* (a legal institution quite common in ancient legal systems, and unfortunately still in use in some parts of the world) is defined by the following links:

- IF  $x$  fails to repay  $x$ 's debt toward  $y$ , THEN  $x$  is under debt-bondage toward  $y$  until  $x$ 's debt is extinguished;
- IF  $x$  is under debt-bondage toward  $y$ , THEN  $x$  is bound to serve  $y$ .

Suppose that I grasp (and thus, in this sense, possess) this concept and that I know that Tom did not repay his debt toward Laura. Should I conclude that Tom is bound to serve Laura? This conclusion seems absurd: I can consistently possess the concept of debt-bondage and deny that

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we explicitly confront the material inferential commitment that gives the term its content it turns out to be novel, but that it can then be seen to be indefensible and inappropriate, a commitment we cannot become entitled to.”

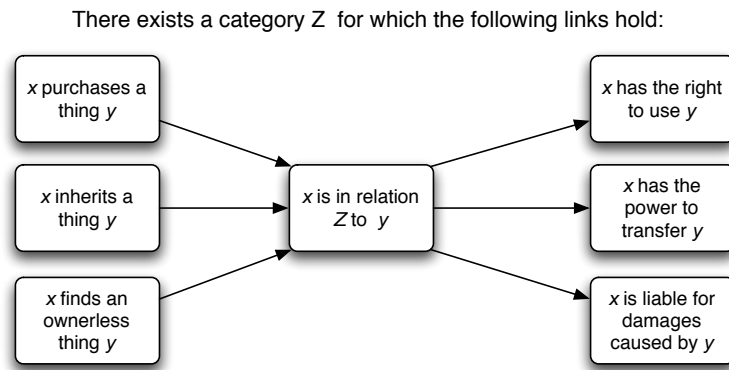


Figure 5: The Ramseyfication of property

its constitutive links hold and consequently reject the concept's consequences, even when its preconditions are satisfied). In fact, I need to possess a concept even for rejecting it, in the sense of declaring that it does not apply.

A solution to this puzzle may come, I think, from some ideas originally developed by Frank Ramsey and Rudolf Carnap, as they have recently been applied by Boghossian (2003). Ramsey developed the idea that theoretical concepts can be removed from scientific theories, but in a way different from the way in which Ross eliminated legal concepts: theoretical terms can be replaced by variables.<sup>12</sup> Thus, given a theory (which for simplicity we can assume to consist of inferential links of the kind described above) containing a certain theoretical term, we can substitute that term with an existentially quantified variable (in other words, we can assume that there exists some predicate that, substituted for the variable, yields true or valid propositions).<sup>13</sup>

For instance, a Ramseyfied version of the inferential theory of the concept of ownership consists in the claim that there exists a category  $Z$ , which is characterised by the following inferential links (see Figure 5):

- if  $x$  buys a thing  $y$ , then  $x$  is in relation  $Z$  to  $y$ ,
- if  $x$  inherits a thing  $y$ , then  $x$  is in relation  $Z$  to  $y$ ,
- ..., and
- if  $x$  is in relation  $Z$  to  $y$ , then  $x$  can use  $y$ ,
- if  $x$  is in relation  $Z$  to  $y$ , then  $x$  can transfer  $y$ ,
- ...

Ramsey observes by substituting theoretical terms with existentially quantified variables no observable (in our case, no deontic or potestative) consequences of the original theory is lost (assuming that the theory provides all the inferences concerning the theoretical terms at issue).

<sup>12</sup>This idea was put forward in the paper "Theories", written in 1929 and published posthumously in 1931 (see Ramsey 1991). By a *theoretical term* Ramsey means a term occurring in scientific theories, which applies to non-observable entities, like mass, energy, or proton. Intermediate legal qualifications are likewise not observable (through our senses), so that we can assimilate them to Ramsey's theoretical terms.

<sup>13</sup>In general, given a theory  $T$  containing a term  $C$ , representing a theoretical concept, that is, denoting a non-observable category (a property or relation), we do the following: (a) we substitute  $C$  with a variable  $Z$  in all statements of  $T$ , obtaining a result that we denote as  $T[C/Z]$ , and (b) we specify that  $Z$  is existentially quantified. Thus, Ramsey's version of  $T$  is  $\exists(Z)(T[C/Z])$ , where  $\exists(Z)$  is to be read as "there exists a  $Z$  such that." (For expediency, I will assume here that there is just one theoretical concept.)



Note that if possessing a concept amounted to endorsing the Ramseyfied version of the theory characterising that concept, then possessing a legal concept would amount to endorsing substantive legal claims. Having a concept would not only consist in understanding an idea, but would also amount to claiming that this idea has concrete reality, namely, that there exists a category for which the concept's constitutive inferences really obtain. For instance, possessing a concept of patriarchal marriage would entail assuming that there exists (in the legal reality) a relation  $Z$  having the following inferential features: (a) if a couple goes through a marriage ceremony, they are in this relation  $Z$ , and (b) if a couple is in the relation  $Z$ , then the husband has power over the wife. The existence of the category entails the holding of its inferential connections. On the contrary, it seems to me that I can possess the concept of a patriarchal marriage—and use, at least in negative or meta-level assertions, like when asserting that  $x$  and  $y$  are not linked by patriarchal marriage, or that this kind of marriage involves the husband's supremacy—without assuming that the inferential links that are constitutive of such a concept hold in the legal domain. We need to distinguish the possession of a concept, from the belief that the concept's constitutive links obtain.

To clarify this distinction we can adopt an idea advanced by Rudolf Carnap (see Psillos 2000, containing the text on a hitherto unpublished lecture delivered by Carnap on 1959). This is the idea is that a concept's possession can be expressed through a conditional sentence having the following content: if there exists some category that satisfies the concept's inferential links, then these links hold with regard the concept at issue. In other words, the Carnap sentence says that if there exist a category (a property or relation) satisfying the concept's inferential links, then we may assume that this is the same category as is denoted by our concept's name, and we may apply to it the corresponding inferential links.<sup>14</sup> For instance, Carnap's statement about patriarchal marriage would be something like the following:

- *if there exists a category  $Z$  such that*
  - if a couple goes through a marriage ceremony, they are in this relation  $Z$ , and
  - if a couple is in relation  $Z$ , then the husband has power over the wife
- *then*
  - if a couple goes through a marriage ceremony, they are in relation *patriarchal marriage*, and
  - if a couple is in relation *patriarchal marriage*, then the husband has power over the wife

Let us assume that the possession of a concept is expressed by the endorsement of the corresponding Carnap sentence: I possess the concept of patriarchal marriage if I believe that, in case there exists a category having the inferential features proper to patriarchal marriage (a marriage ceremony entails this relation, which entails husband's power), then these inferential features do indeed characterise the concept of patriarchal marriage. This way of possessing of concept of patriarchal marriage does not lead me to conclude that husbands have power over their wives with regard to legal or social systems where this is not the case: I can draw such a conclusion only with regard to a context where a relation exists having all the inferential properties of patriarchal marriage, namely, where it is the case that a (successful) marriage ceremony brings about a relation between husband and wife entailing the husband's power. With regard to any context

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<sup>14</sup>Let us assume that  $TC$  is our original theory containing term  $C$ , and let us denote the corresponding Ramsey statement (the Ramseyfication of theory  $TC$ ) as  $\exists(X)(TC[C/X])$  as  $TC_R$ . The corresponding Carnap statement (or rather, a simplified version of it) would then be  $TC_R \rightarrow TC$ .

where it is not the case that all of these entailments do hold, my understanding (possession) of the concept of patriarchal marriage does not commit me the sexist conclusion at issue. The possession of the concept is even compatible with the view that nowhere husbands have a legitimate power over their wives (this being in conflict with prevailing universal human rights<sup>15</sup>): according to this view the possessed concept will nowhere be applicable, since its constitutive inferential links nowhere hold. However, such a defective concept may still be useful, for instance, in order to argue that it is indeed inapplicable, or to argue that somebody (wrongly) believes that it is applicable.

I think that this idea is particularly interesting for comparatist lawyers. As a comparatist lawyer, I may want to characterise a legal concept in inferential terms, but this characterisation should not automatically commit me to the belief that the corresponding inferential links hold in all legal systems: such links will hold only in those contexts where the concept is applicable, namely, where such inferences actually hold. My grasp of a concept does not commit me to any existential assertion, but is rather a heuristic tool that leads me to look for certain inferential links: my grasping the concept of patriarchal marriage leads me to search for certain inferential links (those constituting this concept), and to label the combination of such links accordingly (if I ever happen to find it, either in the legal reality or in wrong legal beliefs).

We can then distinguish the mere *possession* of an inferentially characterised concept from the *endorsement* of such a concept, with regard to a particular context.

My possessing (in the sense of understanding or grasping) a concept requires only that I endorse the corresponding Carnap sentence, namely, that I believe the following proposition: if there exists a category having the inferential links of the concept, then the concept's inferential links obtain. For instance, I possess the concept of patriarchal marriage in case I have the following belief: if there exists a relation having the inferential features of patriarchal marriage, then the term *patriarchal marriage* applies to this relation and the corresponding inference hold with regard to this term.

My *endorsing* a concept requires an addition to its mere possession: besides accepting the Carnap sentence, I need to accept as well the corresponding Ramsey sentence, that is, I need to believe that a category exists such that the inferential features of the concept obtain with regard to that category. By combining the Ramsey sentence (an appropriate category exists) with the Carnap sentence (if an appropriate category exists, then the concept's inferences obtain), I can conclude that the concept's inferences actually obtain.<sup>16</sup> Thus, if I endorse the concept of patriarchal marriage with regard to a certain context, I need to believe that there exists in that context a relation generated by marriage that gives the husband power over his wife (the content of this belief is my Ramsey sentence), a relation that (according to the corresponding Carnap sentence) I will identify as patriarchal marriage.

Note, however, that the existential commitment characterising the endorsement of a concept (as opposed to the mere possession of that concept) can be undertaken implicitly, as when one considers the inferential connections of a term already used by a certain linguistic community, being applied in a certain domain. In this case, unless I indicate that I am proposing an abstract characterisation of a concept (a characterisation that is looking for an application, rather than being committed to particular applications), my specification of the inferential connections proper to that term will be understood as pre-supposing the existence of the category corresponding to my concept, namely, as stating inferential connections that (I believe) really obtain in the domain

<sup>15</sup>In particular with Art. 16 of the Universal Declaration of Human Rights, stating that men and women "are entitled to equal rights as to marriage, during marriage and at its dissolution."

<sup>16</sup>Given the Carnap sentence  $TC_R \rightarrow TC$  and Ramsey sentence  $TC_R$  I can infer  $TC$ .

at issue.<sup>17</sup> This is the case, for instance, when a lawyer is attributing certain inferential connections to a category of his or her legal system, using a term that is already in use within that system. For instance, if I say that, without qualifications, in a discussion within Italian lawyers, that marriage entails the husband's power over the wife, I will not be understood as characterising a particular concept of marriage (like the notion of patriarchal marriage), which may not apply to the Italian context, but rather as stating what consequences are entailed by marriage according to Italian law (taking for granted that the marriage is am considering is indeed that situation that results from a marriage ceremony according to Italian law). Thus I would not only possess a (quite old-fashioned and objectionable) concept of marriage, but I would assume that this concept belongs to the Italian legal system, so that the ensuing normative qualifications (the husband's power and the wife's subjection) hold according to Italian law.

This existential assumption is usually presupposed when the doctrinal characterisations of a legal concept is tied to a certain legal system, so that the concept is assumed to apply in that legal system a (the concept's inferential links are assumed be legally valid in that system). In fact, a doctrinal characterisation is usually assumed to provide the meaning of the occurrences of the corresponding term in the legal sources of that system, namely, the sources which are assumed to provide legally binding norms (for instance, by characterising in a certain way the concept of self-defence, I will be indicating how occurrences of the term *self-defence* in legal texts are to be understood). On the contrary comparative legal research and legal theory are not tied to a particular legal systems: thus in these domains we may need to distinguish the characterisation of a concepts and the assertion that it applies to a certain domain (namely, that its constitutive inferences obtain in that domain).

## **5 Inferential links vs ontologies**

The view that meaning results from inferential connections between sentences or beliefs can be contrasted with the idea that conceptual meaning inheres in words or terms. According to this second perspective, meaning is compositional: the meaning of sentences results from the meaning of their lexical components (rather than the meaning of sub-sentential components being abstracted from inferences between sentences). Following this approach, we need to distinguish conceptual knowledge from world knowledge. Conceptual knowledge is packed into the terminology, and is expressed through the definition of terms, and through their connections. Rather than abstracting terminological meaning from sentential inferences, we can express a conceptual framework through a terminology, and then use this conceptual framework to express substantive information.

By associating terms with categories (concepts), characterised through (partial or total) definitions and by organising such categories according to relations (such as the inclusion of a species in a genus, or the participation of a part in a whole) we obtain what is nowadays commonly called an *ontology*. Ontological efforts have recently gained much significance in connection with the development of information technologies and in particular with the need to organise information in such a way that it can be accessed, interpreted, and processed by multiple heterogeneous users (humans and machines), according to a shared and consistent meaning.

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<sup>17</sup>By saying "inferential connections that really obtain" I am not committing to a particular theory of legal reality. In fact, the distinction I am proposing (the distinction between possessing a concept and endorsing it), is compatible with all of the following views: that the existence of a legal inferential link is an empirically ascertainable fact, that it is a socio-institutional fact, or even, as I believe, that it is a purely normative fact, consisting in normative justifiability.

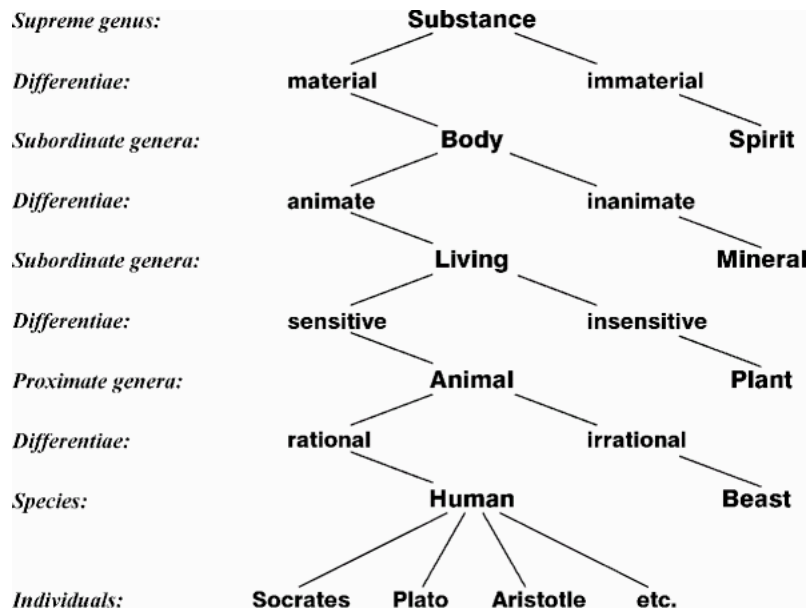


Figure 6: Porphyry's tree

According to their coverage, we can distinguish foundational ontologies from domain ontologies. Foundational ontologies deal with the most general concepts (such as those of identity, difference, similarity, parthood, . . . ), applying to all regions of being (following the model of the Aristotelian metaphysics, viewed as the study of being *qua* being, see Loux 1998, 11ff.). As examples of this kind of ontology, see Figure 6, showing Porphyry's tree (a famous conceptual taxonomy originating from neoplatonic philosophy in the 3th century) and Figure 7, showing the basic taxonomy of DOLCE, a formal ontology developed in the recent years (Masolo et al. 2003). Domain ontologies deal with particular areas of knowledge, and they may aim at covering a discipline as a whole (biology, chemistry, medicine, engineering. etc.) or they may focus on a particular aspect or activity (for example, we may have ontologies dealing with food, computers, airplanes or cars). Among the domain ontologies we can thus include legal ontologies, providing a conceptual architecture for a legal system as a whole (see, for instance, Visser and

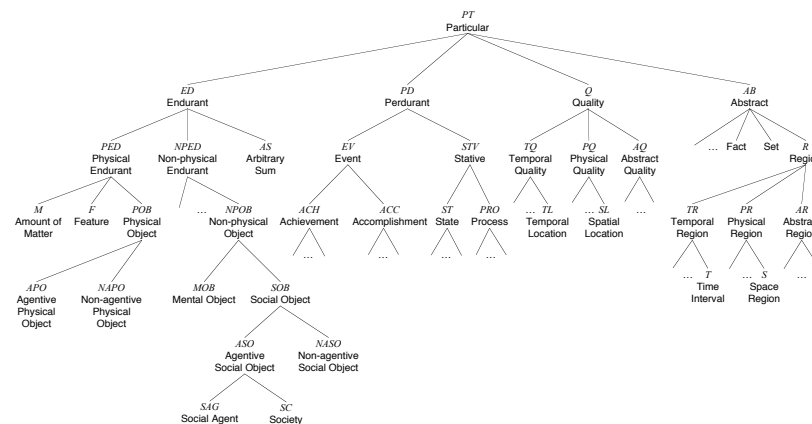


Figure 7: Dolce's taxonomy

Bench-Capon 1998, Gangemi et al. 2005, and Breuker and Hoekstra 2004), for large sections of it (like private law, see for instance Ajani et al. 2006), or for specific subdomains of the law, like fundamental legal concepts (Rotolo et al. 2006), intellectual property, civil liability, or contracts (on various approaches to legal ontologies, see Breuker et al. 2004 and Benjamins et al. 2005). I cannot here engage in presenting the multifarious ideas and the different research programs currently covered by the concept of an ontology,<sup>18</sup> I shall only briefly characterise some aspects that seem particularly relevant to me, for the purpose contrasting inferences and conceptual structures.

An ontological approach to the law—intended in a broad sense, namely, as any attempt to define legal categories and specify the architecture of their relationships—can be traced back to the Aristotelian ideas adopted by the Roman lawyers, and had its heyday in the so-called conceptual jurisprudence of the XIX century. Indeed, this approach to legal research was focused on defining legal concepts—for example, types of legal facts and legal rights—and on ordering them along conceptual trees or pyramids. (Figure 8 shows a part of the conceptual architecture proposed by Windscheid 1900, as schematised in Pound 1924.)<sup>19</sup>

Frequently, legal classifications take the shape of progressive dichotomies, namely, of binary trees. For instance, according to traditional Italian legal doctrine, facts are usually divided into legal facts and legally irrelevant ones, legal facts are divided into mere legal facts and legal acts, legal acts are divided into legal transactions (*Rechtsgeschäfte*), and other legal acts, legal transactions are divided into contracts and other kinds of legal transaction, and so on (see Figure 9). In traditional legal doctrine we can also find mereological (whole-part) relationships, as when considering the elements of an obligation (the parties, the performance to be provided, the conditions, ...), of a contract (the parties, the agreement, the binding content of it, ...), or of a tort (an act, a damage, a casual connection between them, possibly a psychological component, ...)

Since the second half of the 19th century a series of attacks have been brought against the basic components of legal ontologies (conceptual definitions and taxonomic relations), namely, against the idea that legal reasoning and interpretation mainly consists in framing definitions of legal concepts and in understanding such concepts according to taxonomic inheritance (in transferring to subcategories the meanings associated to supercategories). In fact, many criticisms against the use of logic in legal reasoning—as expressed by Holmes's (1881, 1) slogan that “the life of the law has not been logic; it has been experience”—do not concern logic in general, but they mostly focus some ways of structuring conceptual information into taxonomies and of

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<sup>18</sup>For instance, we may distinguish realist and subjective approaches to ontological research. Realistic approaches (according to the Aristotelian tradition) aim at developing a science of categories (of universals), namely, at identifying what kinds (categories) exist, and at describing their features and their connections so as to create a map of the structure of reality (see Smith 2004). More subjective approaches (according to some Kantian, idealistic, or constructivistic ideas), focus on capturing the cognitive structures through which humans organise their view of reality (as an example of a moderate subjectivism, see Masolo et al. 2003). In the legal domain, however, it is difficult to distinguish clearly these two kinds of approaches, given that the law is a social and normative reality which is also determined by people's views about it. Sometimes a distinction is also traced between philosophical ontologies and computer-science ontologies, which aim at supporting IT applications (for instance, by organising coherently a database, by enabling conceptual information retrieval, or by ensuring communication and interoperability between different applications dealing with the same domains). In computer-science ontologies, though philosophical ideas remain relevant, the focus is on how a conceptual scheme can be translated into a computable representation of the concepts it includes (see Gruber 1993). In the legal domain, some ontologies aimed at specific IT applications have been developed in the recent years (see, for instance, Delgado and García 2005).

<sup>19</sup>Note, however, that Pound's representation of Windscheid's taxonomy does not proceed coherently: it mixes kinds of laws (classes of legal norms, such as family law, or law of inheritance), classes of legal positions (such as right to performance or right arising from contract) and classes of legal facts (such as pure agreement or gift).

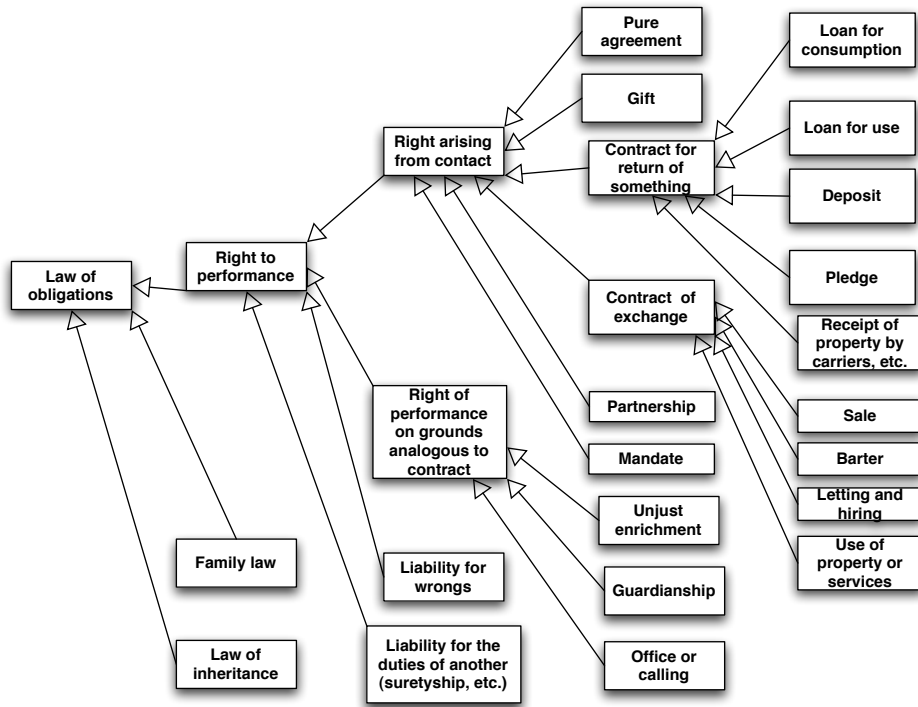


Figure 8: Windscheid's taxonomy

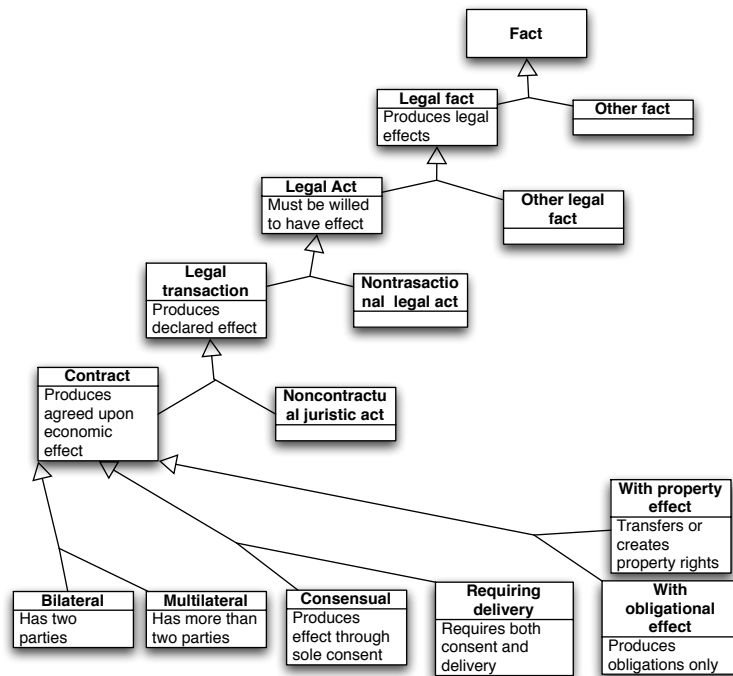


Figure 9: A binary legal classification

reasoning accordingly.<sup>20</sup>

Such criticisms against ontological (definitional-taxonomic) approaches to legal reasoning can be grounded on different considerations.

Firstly, legal change may question the validity of conceptual hierarchies. As the law evolves, new inferential links are introduced— by the legislator, by precedents, by custom—newly associating a legal concept to a certain condition or a certain effect, or dissociating the concept from one of its pre-existing conditions or effects. In introducing such new inferential links, conflicts with existing conceptual structures, as resulting from definition and from taxonomic inheritance, are inevitable, and inevitably legal evolution is to prevail over static conceptual hierarchies.

Secondly, we cannot ensure that a definition fully captures the meaning of a legal concept (at least when the definition comes from a nonlegislative source), and this makes it so that, to use a famous Roman saying, “every definition is dangerous in law” (*Omne definitio in iure civili periculosa*, Digest of Justinian 50.17.120). In fact, on a non-legalistic approach to the law (namely, on a perspective which does not identify the law with the explicit statements of legislators and judges), to determine what inferential links characterise a certain concept we must also consider what can be obtained through correct interpretation of laws and cases, what emerges from customs and other legally relevant social interactions, etc. In this perspective, legal concepts, though normative (non-descriptive), appear to be synthetic or *empirical*, in the sense that only through experience we can learn what is the most appropriate way to apply them, and circumscribe correspondingly their normative content. Thus they cannot be fully encapsulated by any complete definition.<sup>21</sup>

Thirdly, a definitional approach to legal concepts appears even more unable to fully capture the inferential aspects of legal meanings, if we include among the relevant inferential links those emerging from legal practice, such as non-verbalised attitudes of legal reasoners.<sup>22</sup> Note, however, that if we were to take such a broad view of legal inference, then we would need to

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<sup>20</sup>For example, Pound 1924, 937, criticises the view that “the process [of classification] is a mechanical logical one proceeding by dichotomy to the point of exhaustion”, a process of “formal logic” where each upper class is always divided into two mutually exclusive subclasses. He observes that in the law it often makes sense to divide a category differently, for instance, into three or four subclasses. For examples, he notes, while “logic” would require us to divide animals into wild and domestic, the common law distinguishes animals into three categories: wild animals, domestic animals that are likely to cause harm to property when unattended, and domestic animals that are usually harmless even when unattended (like cats and dogs). According to Pound’s view, this departure from “formal logic” is opportune, since the common law regulates the owner’s liability differently for each of these different classes: “system exists for the sake of the ends of law, not the law for the ends of system.” And he observes that many ternary or quaternary divisions can also be found in Roman law as for obligations (*ex contractu*, *quasi ex contractu*, *ex delicto*, and *quasi ex delicto*) and contracts (verbal, literal, real, and consensual). I fully agree with Pound’s view that legal classifications do not need to be binary and need to be functional to the understanding and the application of the law. However, this does not go against formal logic as this study is commonly understood today, namely, namely, as the the study of formally valid inferences, especially by means of artificial symbolic languages. The incompatibility that Pound detects between “formal logic” and functionally appropriate legal classifications depends on the fact the he is using the term *formal logic* in a generic sense, namely, to denote certain traditional ways of reasoning and organising knowledge.

<sup>21</sup>“Since the synthesis of empirical concepts is not arbitrary but rather is empirical and as such can never be complete (because one can always discover in experience more marks of the concept), empirical concepts . . . cannot be defined” (Kant 1992, 631).

<sup>22</sup>Here is how Hayek (1973) puts it: “The fact that language is often insufficient to express what the mind is fully capable of taking into account in determining action, or that we will often not be able to communicate in words what we well know how to practise, has been clearly established in many fields. It is closely connected with the fact that the links that govern action will often be much more general and abstract than anything language can express. Such abstract rules are learnt by imitating particular actions, from which the individual acquires “by analogy” the capacity to act in other cases on the same principles which, however, he could never state as principles.” Similar ideas have also been expressed also by Rodolfo Sacco when speaking of mute law or of cryptotypes (Sacco 1993).

change our knowledge-representation model: rather than being made up of inferential link, legal knowledge would have to consist of individual cases, from which inferential links can be abducted (possibly through analogical reasoning), or even from sub-symbolic representations (as in connectionist networks) capable of learning adaptively from cases.

Fourthly, the inferential links constituting a concept can be viewed in an argumentation-semantic or dialectical perspective: inferential links leading to the concept make the concept dependent upon the reasons justifying its application, while links departing from the concept indicate what conclusions the concept is a reason for. Such reasons can be supported by rationales, and they can be attacked by contrary reasons (reasons why the concept should not be applied or why we should not, given certain situations, derive its conclusions). These underlying dialectics get lost when we take a definitional attitude.

Finally, a further source of conflict between the inferential and the ontological component of legal information derives from the value-oriented or teleological aspect of legal reasoning (this is the aspect addressed by most critiques against “logical” approaches to legal reasoning). In order to enable the relevant values and interests to be realised through the application of the law in different contexts and across different subject matters, we need to shape legal inferential links (legal norms) in the ways that best promote such values and interests. This may lead us to abandon terminological consistency, namely. to construct the relevant inferential links (to interpret legal norms) on the basis of a differentiated understanding of the same terms. For instance, we may need to understand causality in different ways in private and criminal law, or to conceive good faith differently with regard to customers and to professionals, to differentiate notions of fault and negligence, and so on. Hence, the teleological (and axiological) adequacy of inferential links may conflict with the terminological consistency of the language that expresses them, and thus with an ontology which provides a single position for the meaning corresponding to a certain legal term.

## **6 Reconciling inference and ontology**

According to the above criticisms any ontological representation of the law cannot provide an exhaustive and definitive representation of legal knowledge. However, such criticisms do not exclude the utility and the significance approaching the law from an ontological perspective. We need to be able to pack inferential information into legal terms, and to use this information according to terminological relationships. Without terminological information, we would not be able to make sense of the textual formulations of legal norms and of the connections between norms having different levels of abstraction. Without the inheritance across conceptual hierarchies, legal regulations would become a chaos of useless repetitions. And specifying the meaning of legal concepts and their relations helps us in better understanding legal norms and the commitments we implicitly undertake when representing legal information and addressing legal issues.

Thus we need to consider the conflict between inference and ontology as dialectical balance and co-evolution, rather than as a merely destructive confrontation. This requires that lawyers (and ontological engineers working with legal knowledge) have the ability to continuously adjust their onto-terminological constructions as the law evolves (taking into account the need to implement legal values), and at the same time to make conceptual analyses bear on the interpretation of legal norms and on the solution of legal cases.

Considering how this may take place will take me outside of the scope of the present contribution. Let me just point out an aspect of legal knowledge that may greatly facilitate the mutual



adjustment of inferential links and ontological representation. This is defeasibility, which I think applies both to legal inference and to the legal categories included in an ontology:

- legal inferential links are defeasible in the sense that we can justifiably derive the consequences of an inference link only so long as we do not have prevailing indications to the contrary;<sup>23</sup>
- legal categories are defeasible in the sense that a subcategory inherits features associated to a higher-level category only so long as there is no conflict with the information that directly concerns the subcategory.<sup>24</sup>

In particular, the defeasibility of legal categories plays an important role in enabling us to preserve a sufficient stability in legal terminology while allowing meaning to be continuously refined and adjusted through new inferential links, and by considering the argumentative dialectics of reasons for and against the application of the concept or the derivation of its normal consequences.<sup>25</sup> In fact legal categories have to be applied to such a wide variety of instances that their characterization of such instances (the objects to which the concepts apply) can at best be tentative and generic, and hence has to be supplemented with exceptions. Even the definitions of the legal concepts that can be found in statutes and codes reflect the stepwise defeasible process of establishing legal qualifications. First, a general regulation is established for a certain legal genus (for example, contract); then special exceptions are introduced for species of this genus (like the contract of sale); and finally further exceptions may be introduced for specific subspecies (like the sale of real estate). Consequently, when using conceptual hierarchies we must apply to a certain object the rules concerning the category in which the object is included, but we can do so only insofar as no exceptions emerge concerning a subcategory in which that object is also included.

General legal concepts presuppose defeasibility: the requirement of absolute rigour in defining and applying legal concepts—such that all features included in, or entailed by, a category apply to each of its subclasses and instances—would paradoxically foreclose the possibility of being “logical” in the sense of using general concepts. If we were to have indefeasible concepts, such concepts would become empty. If the notion of a contract were to include only those features that are necessarily present in every kind of contract (and in every instance of a contract, however defective it might be), then the concept of a contract would be deprived of any characterising feature. Thus, as Sacco (1982) argues, we cannot provide a notion of contract by listing the constitutive elements that necessarily characterise every single contract: we should rather focus on typical features that generally or normally characterise contracts, in default of different indications (a typical contract has two parties, it produces effects that correspond to the declarations of the parties, it generates obligations, and so on).

The defeasibility of legal categories is also important in comparative analysis: only a defeasible legal prototype can cover different legal systems, enabling different inferences. Such a

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<sup>23</sup>On the debate on defeasibility in the law, see Prakken and Sartor 2003. However, we may find interesting antecedents of this idea both in legal theory (Hart 1951) and in legal doctrine (Sacco 1957).

<sup>24</sup>Hierarchies of legal categories represent defeasible hierarchies, namely, hierarchies in which subclasses only defeasibly inherit the properties of superclasses (see Horty et al. 1990).

<sup>25</sup>Defeasible inferences are required when discriminations have to be made on the basis of limited experience and bounded cognitive resources (see Pollock 1995). Interestingly, clusters of defeasible inferential links at different level of specificity emerge through evolutionary processes aimed at developing a best adapted cooperative set of rules. According to Holland 1992 the competitive evolution of systems of rules leads to the formation of defeasible rule-hierarchies: “The system develops a hierarchy: layers of exception rules at the lower levels handle most cases, but the default rules at the top level of the hierarchy come into play when none of the detailed rules has enough information to satisfy its conditions. Such default hierarchies bring relevant experience to bear on novel situations while preventing the system from becoming bogged down in the overly detailed options.”

prototype would offer a principled characterisation, allowing for specific inferential differences to override the prototypical characterisation in different legal systems.<sup>26</sup>

## 7 Inferences and concepts in the representation of legal knowledge

The above analysis of the connection between inferences and concepts in legal reasoning, by making concepts dependent on inferences, should not lead us to underestimate the role of concepts in legal reasoning.

Here is a list of some cognitive roles of concepts according to Thagard (1992, 22), who uses the concept *whale* as an example:

1. *Categorization*. Our concept *whale* enables us to recognize things as whales.
2. *Learning*. Our concept *whale* must be capable of being learned, perhaps from examples, or perhaps by combining other existing concepts.
3. *Memory*. Our concept *whale* should help us remember things about whales, either in general or from particular episodes that concern whales.
4. *Deductive inference*. Our concept *whale* should enable us to make deductive and inductive inferences about whales, for example, enabling us to infer that since Gracy is a whale she has fins.
5. *Explanation*. Our knowledge about whales should enable us to generate explanations, for example saying that Gracy swims *because* she is a whale.
6. *Problem solving*. Our knowledge about whales should enable us to solve problems, for example how to get an errant whale out of the harbour.
7. *Generalization*. Our concept *whale* should enable us to learn new facts about whales from additional examples, for example to form new general conclusions such as that whales have blubber under their skin.
8. *Analogical inference*. Our concept *whale* should help us to reason using similarities: If you know that dolphins are quite intelligent and are aquatic mammals like whales, then whales are perhaps intelligent too. The metaphor should also be supportable by the concept, as when we say that someone had a whale of an idea.

All such roles are played by legal concepts too, such as ownership, citizenship, or drunkenness (this being determined by having a certain level of alcohol in the blood, and determining such conclusions as being prohibited from driving). This is exemplified in the following list, where the conceptual roles identified by Thagard are applied to legal concepts:

1. *Categorisation*. Things are categorised according to who owns them (for instance, by tax officers), and people are categorised according to their citizenship (by immigration officers) or are qualified as being drunk or sober (by police officers).
2. *Learning*. We learn the concepts of ownership, citizenship, or drunkenness when we are children, and if we become lawyers we refine and expand our understanding in law school, where we merge our intuitive understanding with knowledge of how such properties are legally determined, what they determine, and for what purposes.

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<sup>26</sup>A prototypical conception of legal concepts can be compatible with the idea advanced by Scarpelli 1959 that legal concepts have a core meaning, corresponding to some, but not to all, of their inferential features (for a discussion, see Pintore 1990, 130ff.). This core however, should not be constituted by the inferences that characterise the concept in every possible context, but rather by the inferences that normally (*defeasibly*) characterise it, unless specific information to the contrary is available.

3. *Memory*. We use these legal concepts for storing and synthesising information, which may have been extracted from specific authoritative sources, though we cannot tell which ones.
4. *Inference*. We use the information that is linked to legal concepts for drawing inferences, for example, about the rights and duties of owners, citizens, and drunk people.
5. *Explanation*. We make explanations according to our conceptual model of the law. For instance, we may explain judicial decisions concerning certain people by pointing out the fact that these people were owners, citizens, or drunk drivers.
6. *Problem solving*. Our knowledge of what it means (for the law) to own something, to be a citizen, or to be drunk provides us with clues on how to approach situations where ownership, citizenship, or drunkenness are at issue.
7. *Generalisation*. Our notions of ownership, citizenship, or drunkenness, enable us to consider at a glance all different situations falling under such concepts, perceiving their commonalities and differences.
8. *Analogical inference*. Our notions of ownership, citizenship, or drunkenness, enable us to make analogies. For instance, they enable us to speculate whether intellectual property or privacy rights over one's data are so similar to ownership that some of the ownership-related normative positions can be extended to them, or whether drug addiction may be likened to drunkenness.

A legal concept—such as ownership, tort or contract, or even drunkenness—is not fully reducible to its separate inferential functions, as established by the inferential links related to this concept, since our understanding of it requires that we integrate such links and make sense of their combination.

In fact, the study of a legal concept—or rather the study of the legal regime identified by a certain concept, what the Germans call a *Rechtsinstitut* (legal institute, see von Savigny 1981, sec. 5)—consists in bringing together not only the inferential links directly pertaining to the concept (the links determining qualification according to the concept, or establishing consequences of this qualification), but also in further normative, empirical and evaluative knowledge concerning the application of these links. We build theories of *Rechtsinstitute* and these theories need to be as good as possible (as a cognitive and decisional tool), given the input materials at our disposal. These materials may include conflicting rules, factors, and values: this does not exclude that when organising such materials we should aim at coherence, that is, at shaping them in such a way to make them usable in legal problem-solving.

Lawyers approaching the study of particular legal concepts and institutes (*Rechtsinstitute*) engage in *local theory-construction*, namely, they try to build legal theories of the particular domains of their inquiry, theories that—despite having their starting point in norms which appear to be binding in a certain domain, and cases where they have been applied—end up with broader claims, concerning the contents of such norms, the values to which they are related, and the ways in which such values may be achieved within legal practice.

Thus, besides collecting sets of inferential links having the same qualification as a consequence or as an antecedent, the study of legal concepts will also have us consider how such links are to be understood, and whether they are liable to exception, and it may even have us consider whether we need to expand the available link-set with new links, as required by analogy with existing material, by values deemed worthy of pursuit, or by existing socioeconomic conditions. Rather than only listing the available links, we need to restate and articulate the information according to which it may be possible to identify, understand, use, integrate such links. Such information also comprises the fact that the concept includes certain typical subclasses (we know that a sale or a loan is a contract before knowing the definition of a contract), possibly on the

basis of their “family resemblance”, and it is instantiated by certain particular instances (which we can found, in particular, in judicial cases).

In carrying this task out, a doctrinal lawyer needs to take into account the multiple and often conflicting needs of legal practice. Moreover, he or she is constrained by the existing conceptual framework (as provided by legislative language, and by prevailing judicial and doctrinal conceptions), on pain of being ignored by the legal community. Thus, the a doctrinal lawyer will take into account the inferential function of the concepts being considered: his or her characterisation of such concepts will make so that the inferences leading to the concepts or departing from it will usually correspond to legal practice, but the lawyer will also propose a characterisation which entails departures from the current inferential practice, when he or she believes that such a departure is justified by the need to provide correct legal conclusion, or by the need to obtain such conclusions through a simpler and more controllable reasoning process. With the latter considerations, the justification of conceptual constructions in the legal domain seems to take a pragmatic, or pragmatist turn: legal concepts are justified by their function in (theoretical and practical) legal reasoning, their justification consists in their utility to the lawyer. However I am not considering here utility for the particular (economical, political, etc.) interests of a lawyer or of his or her client, but rather utility for legal cognition, namely, for coming to correct legal conclusions, being aware of all the legal sources, facts, values, and interests involved.<sup>27</sup>

Haack (2003) has argued that scientific concepts aim at capturing reality, in the sense that general scientific terms should approximate *generals* or *real types*, intended as “clusters of properties co-occurring because they are lawfully connected” (consider the properties we associate to the concept of gold, which can be explained by the physical laws related to the gold’s atomic structure). Thus such terms cannot have only a descriptive meaning (for classical critiques of descriptivism, see Kripke 1980 and Putnam 1975), given by indicating what properties an object needs to satisfy in order to be covered by the concept: the description of the objects to which a term refers can be substituted by a better one as knowledge progresses. However, according to Haack, such terms cannot have a purely referential meaning either, given by their fixed connection to determined objects, since as knowledge develops, reference may need to be adjusted splitting what seemed to be a unique cluster of properties, or aggregating what seemed to pertain to different clusters.

Similar considerations seem to apply to legal concepts, where (following Ross’s idea) the cluster of co-occurring properties can be viewed as a joined set of normative consequences (e.g., the rights, duties and powers of an owner) defeasibly connected to alternative antecedent conditions (e.g., the alternative conditions for acquiring or losing ownership) in order to implement a set of joined purposes (e.g., enabling individuals to appropriate things and transfer such appropriations, without interference from others, without imposing on others undue negative externalities, etc.): legal concepts can indeed be viewed as ways of structuring legal inferences in clusters corresponding to the “nature” of such inferences. Thus, alternative legal ontologies (besides reflecting different views on what the relevant legal inferences are) also reflect different views on how we shall best identify and characterise the existing clusters of legal inferences, by organising them into bundles connected by common legal consequences and teleological justifications. These alternative conceptualisations, however, also reflect different views on “legal reference”, namely, different views on what relevant inference (and clusters of them) exists<sup>28</sup> or

<sup>27</sup>Lindahl (2003; 2004) has recently affirmed that legal concepts, or at least some of them, should be constructed not arbitrarily, but bearing in mind their cognitive function in legal reasoning, and particularly the need to use them in coherent justifications.

<sup>28</sup>For instance, it has been argued that a general concept of a legal transaction or *Rechtsgeschäft*—unifying such diverse things as contracts, wills, marriages, etc.—is useless since there is no common cluster of legal inferences

on the boundaries of the relevant inferential clusters.<sup>29</sup> Finally, change in legal concepts is not determined only by a different understanding of the same legal material, but also by the changes in the legal material itself, where new relevant clusters of inferences may emerge (or old clusters may be split up) as a result of legal evolution.

Thus, I may conclude my analysis of legal concepts by saying that though legal concepts are constituted and justified by their use in legal inference, our understanding of legal concepts contributes to framing such inferences: though the meaning of a legal concept is given by the inferential links in which it can occur, these very links are identified and justified on the basis of a certain conceptual (ontological) apparatus. The oft-ridiculed pretension of conceptualist lawyers that they can turn concepts into binding rules probably has more truth than it is usually assumed to have.<sup>30</sup>

## 8 Conclusion

There is an inferential dimension to legal concepts, making it so that their meaning cannot be fully captured by any terminology or ontology, but rather evolves along with the associated inferential links.

Even so, an ontological approach—based on the explicit characterisation of legal concepts and of their relations—can contribute to our ability of understanding and expressing legal contents. Emphasising the defeasibility of legal concepts may contribute to providing them with sufficient flexibility, and may thus give them sufficient stability, and facilitate their use in legal comparison.

Finally, while the meaning of legal concepts is dependant on inference, there is a sense in which inferences are dependant on concepts: conceptual definitions and relations offer viewpoints from which we can look at a set of legal materials and integrate them into a coherent model for legal problem-solving, a model which clusters and merges around conceptual nodes cognate inferential patterns, enabling us to grasp the joint significance of such patterns, and to revise them accordingly.

The representation of legal concepts in formal (and computable) ontologies usually has a more limited scope than the doctrinal analysis of such concepts. However, the ontological research can help legal studies, especially in comparative analysis. It can provide new models and techniques for understanding and clarifying the conceptual structures of the law, which supplement the traditional tools of legal doctrine. Thus will enable legal doctrine to resume its traditional mission to clarify and articulate legal concepts, in ways that are compatible with the accelerated dynamics and diversity of legal inferences, ways that, besides contributing to the lawyer's understanding, can also provide support to the application of information technologies in the legal domain.

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applying to all such acts.

<sup>29</sup>Consider for instance how the concept of a liability right by Calabresi and Malamed (1972) covers a larger set of objects than the usual concept of (tortious) liability, including compulsory licensing and other cases where one's entitlement is only protected through an objectively determined compensation.

<sup>30</sup>For an extreme statement of this pretension see von Jhering (1857), though in later writings Jhering would satirise his own views from this earlier period (see von Jhering 1964).

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