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Fundamental Legal Concepts: A Formal and Teleological Characterisation

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ABSTRACT:
We shall introduce a set of fundamental legal concepts, providing a definition of each of them. This set will include, besides the usual deontic modalities (obligation, prohibition and permission), the following notions: obligative rights (rights related to others' obligations), permissive rights, *erga-omnes* rights, normative conditionals, liability rights, different kinds of legal powers, potestative rights (rights to produce legal results), resultive declarations (acts intended to produce legal determinations), and sources of the law.

KEYWORDS:
law, fundamental rights

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Fundamental Legal Concepts: A Formal and Teleological Characterisation*

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1 Introduction

In recent years, there has been a large amount of research on formal models of normative concepts. This is an interdisciplinary domain, where philosophical logicians (like von Wright 1951), legal theorists (like Alchourrón 1969), and computer scientists (like McCarty 1986) have merged their efforts.

Some contributions have focussed on the basic normative ideas of obligation (duty) and permission, and have characterised them by using different logical tools, most frequently related to the possible-worlds semantics of modal logic (see, for instance, McCarty 1986 and Jones and Pörn 1985). Many other contributions, however, have aimed at extending the basic deontic ideas with further notions. These extensions have taken two main directions.

On the one hand extending the logical analysis of deontic notions has meant considering the content, the subject matter of deontic qualifications. Accordingly, two kinds of ought (and permission) have been distinguished, the ought concerning states of affairs, also called *sein-sollen*, and the ought concerning actions, also called *tun-sollen* (on this distinction, see for instance von Wright 1983). Many authors have assumed that the latter kind of ought best captures the way in which deontic notions are used in law and morality. This has led to the attempt to merge deontic and action logics, an attempt first carried out in philosophical logic (see, for instance, von Wright 1963, Kanger 1971, Pörn 1977) and more recently also in research in artificial intelligence and law (see, for example, McCarty 1986, Meyer 1988, Sergot and Richards 2001).

On the other hand, the attempt to extend the logical analysis of normative notions has meant embedding deontic notions into more complex normative ideas, such as, in particular, the notions of a directed obligation and of a right. This second line of research, which was pioneered in legal theory by Hohfeld (1913; 1917), was started within philosophical logic (especially in the Scandinavian tradition; see, for instance, Kanger 1972 and Lindahl 1977), and was then developed within research in artificial intelligence and law (see, in particular, Herrestad and Krogh 1995; Herrestad 1995; Krogh 1997).[1]

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[1]Research on normative positions has found applications in various domains, like modelling and designing organisational structures (Santos et al. 1997), regulating access to personal data (Jones and Sergot 1992), representing agent-based interactions (Gelati et al. 2002, Artikis et al. 2003), and modelling electronic institutions.

Some authors, however, have soon observed that deontic notions, even when enriched with further ideas (such as the idea of an obligation being directed toward a particular person) were unable to capture certain normative notions, such as, in particular, the idea of a *power*. Expressing powers requires a different logical framework, one enabling us to express that certain agents have the normative possibility to create, under certain conditions, certain normative positions. The main inspiration in this regard is to be found in Hohfeld (1913; 1917), but formal analyses have been only recently provided (see, for instance, Makinson 1986, Allen and Saxon 1991, Jones and Sergot 1996, Sergot 1999).

In the present contributions we shall not attempt to provide an comprehensive account of the rich and diverse research projects on normative positions. Nor shall we try to provide a precise logical representation of a specific kind of normative position. Our aim is rather that of providing a general introduction to normative positions, namely, a broad characterisation of their logical structure, their role in legal reasoning, and their connections with other aspects of legal language and knowledge.[2]

2 Actions

In our analysis of normative concepts we need to start with the most basic notion, namely, the notion of an *action*. With regard to action we distinguish two characterisations:

- A *behavioural* characterisation, which consists in describing the type of behaviour that an agent is holding, abstracting from the consequences of such behaviour.
- A *productive* characterisation, which consists in describing the results which the agent's behaviour produces, abstracting from the behaviour which produced those results.

For example, ⌈Tony is smoking⌉ is a behavioural characterisation, while ⌈Tony causes damage to his health⌉ is a productive characterisation.

In representing behavioural actions, we use the $Does$ operator, followed by the indication of agent (subscript), and by the description of the action (between square brackets).

Here is an example:

$Does_{Tom}$[smoke]

to be read as "Tom does smoke" or "Tom is smoking" (our representation does not distinguish between simple and continuous verbal forms).

For result actions, we use the operator $Brings$, to be read as "brings it about that," "sees to it that," or "achieves." This operator is followed by the indication of the agent (subscript) and by the description of the state of affairs resulting from the action (between square brackets).

Thus, to express that Alex (who owns a powerful, but stinky, car) pollutes the air we can use the following sentence:

$Brings_{Alex}$ [the air is polluted]
($Alex$ brings it about that the air is polluted)

The action-operators we have just introduced can be combined with simple logical axioms, in order to obtain a basic action-logic.[3]

[2]For various developments of the ideas here presented, and for a discussion of their legal and philosophical background, see Sartor 2005.

[3]As far as the logic of action is concerned, the following ideas can suffice:

3 Obligations and Permissions

By applying to actions the usual basic deontic modalities, we obtain obligations and permissions.

We represent obligations by formulas having the following structure:

> ***Obl*** A
> (it is obligatory that A)

where A is any (positive or negative) action description, and ***Obl*** is the deontic operator for obligation, to be read as "it is obligatory that." Obligations can concern both behavioural and productive actions.[4] For instance, the following formula states that j has the behavioural obligation to take security measures (to protect the personal data j is processing):

> ***Obl*** $Does_j$[take security measures]
> (it is obligatory that j takes security measures)

while the following formula states that j has the productive obligation to cancel k's personal data (which were illegally stored):

> ***Obl*** $Brings_j$[k's personal data are cancelled]
> (it is obligatory that j brings it about that k's personal data are cancelled)

As usual, when one is obliged not to perform a certain action we can say that one is forbidden from doing that action. Here is an example:

> ***Forb*** $Does_j$[download copyrighted work]
> (it is forbidden that j downloads copyrighted work)

Finally, we need to express permissions, that is, to qualify an action as being not forbidden, which we do through the operator ***Perm***.[5] For example, to indicate that Tony is permitted to run the program MySoft we write:

> ***Perm*** $Does_{Tony}$[run MySoft]
> (it is permitted that $Tony$ runs MySoft)

Similarly, to affirm that Tony is permitted to have MySoft installed on three computers, we write:

- By doing two separate actions, we do their combination. If j does A and j does B, then j does the joint action A and B: IF ($Does_j A$ AND $Does_j B$) THEN $Does_j$(A AND B). The same also holds for result actions: IF ($Brings_j A$ AND $Brings_j B$) THEN $Brings_j$(A AND B).
- Result-actions are successful, which means that when a result-action is performed its outcome obtains. If j does A, then A is the case: IF $Brings_j A$ THEN A.

[4] As the following examples will show, by distinguishing behavioural and productive actions, we do not aim at distinguishing two mutually exclusive kinds of action, but rather at differentiating two different ways of describing actions. Thus, the same action (for instance, downloading a music track) can be viewed as a behavioural action (if we focus on the activity of downloading, namely, transferring a file by activating and maintaining a certain process on a computer), or as a result action (if we focus on the result of producing a new copy of that file).

[5] We use a strong notion of permission, which we view as equivalent to the negation of the corresponding obligation, rather than to the non-derivability of such an obligation (on strong and weak permission, see Alchourrón 1969 and Alchourrón and Bulygin 1971).

country	wearing the veil (V)	not wearing the veil (NON V)
France	***Forb*** V	***Obl*** NON V
Iran	***Obl*** V	***Forb*** NON V
UK	***Perm*** V	***Perm*** NON V

Table 1: *Complete deontic qualifications*

Perm $Brings_{Tony}$[MySoft is installed on three computers]
(it is permitted that Tony brings it about that MySoft is installed in three computers)

The deontic notions we have introduced can be accompanied by various axiomatisations, but for our purposes minimal logical properties will be sufficient.[6]

4 Facultativeness

The deontic qualifications "obligatory" and "forbidden" are complete, in the sense that they determine the deontic status of both the action they are concerned with and the complement of that action: to say that action A is obligatory is equivalent to saying that action NON A is forbidden, and to say that action A is forbidden is equivalent to say that action NON A is obligatory. For instance to say that it is obligatory to wear a tie means that it is forbidden not to wear it, and to say that it is forbidden to smoke means that it is obligatory not to smoke.

On the contrary, when we only know that an action is permitted, we do not know the status of its complement. In particular, when a positive action is permitted (namely, the action is not forbidden), then its omission can be either likewise permitted, or forbidden (this will be the case when the action, besides being permitted, also is obligatory).

Consider for example, the action of a girl wearing a veil at school, which we denote as V. Let us assume that action V is permitted in the UK, obligatory in Iran, and forbidden in France. Consider now the omission of the veil, namely, action NON V. Action NON V is permitted as well in the UK, but it is forbidden in Iran, and is obligatory in France.

From Table 1 it appears that to express the normative qualification of the action of wearing a veil by a girl at school in Iran or in France, it is sufficient to say that in Iran wearing the veil is obligatory while in France it is forbidden. In fact, the deontic propositions $\lceil$***Obl*** V in Iran$\rceil$ and $\lceil$***Forb*** V in France$\rceil$ entail respectively $\lceil$***Forb*** NON V in Iran$\rceil$ and $\lceil$***Obl*** NON V in France$\rceil$.

On the contrary, saying that V is permitted (namely, not prohibite) in the UK is not sufficient to fully specify V's normative status in that country: the permission to wear a veil (***Perm*** V) is

[6]Our minimal deontic logic can be limited to the following definitions and axioms:

- Being prohibited to perform an action means being obliged not to do it: ***Forb*** $A \equiv$ ***Obl*** NON A.
- Being permitted to perform an action means not being forbidden to do it: ***Perm*** $A \equiv$ NON ***Forb*** A.
- Being obliged to perform an action entails being permitted to perform it: IF ***Obl*** A THEN ***Perm*** A.
- Being both obliged to perform action A and obliged to perform action B entails being obliged to perform both actions: IF (***Obl*** A AND ***Obl*** B) THEN ***Obl*** (A AND B).

consistent both with the permission not to wear it (***Perm*** NON V) and with the prohibition not to wear it (with ***Forb*** NON V), that is, with the obligation to wear it (with ***Obl*** V).

Thus, to provide a complete deontic specification, we need to specify whether not wearing the veil is forbidden or permitted. In the UK, wearing a veil is permitted (as in Iran, and contrary to what is the case in France), but not wearing the veil is permitted too (as in France, and contrary to what is the case in Iran).

In conclusion, besides an action being obligatory (and its omission being forbidden), and besides an action being forbidden (and its omission being obligatory), there is a third way for the deontic status of an action to be fully specified: this consists in both the action being permitted and its negation being permitted.

In common parlance, when one says "permitted," one usually refers to this third option.[7] We prefer to use the specific term *facultative*—abbreviated as ***Facult***—to express this notion.

Definition 4.1 *Facultative. An action A is* facultative *when both A and A's omission are permitted:*

> ***Facult*** $A \equiv$ (***Perm*** A) AND (***Perm*** NON A)
> *(⌈it is facultative that A⌉ is equivalent to ⌈it is permitted that A AND it is permitted that NON A⌉)*

For example, saying that ⌈in the UK, for a girl going to school, it is facultative to wear the veil⌉ amounts to saying that ⌈she is is permitted both to wear it and to not wear it⌉. Note that a behaviour being facultative does not entail that others are forbidden to prevent it (or that other are forbidden to prevent its omission). In this sense, facultativeness is a weak notion of freedom. This is because in general, we need to distinguish the permission that j does A from the prohibition that another (or all others) prevents j from doing A: it is possible (and very common indeed) that one is permitted to do actions that others are permitted to prevent.

This distinction is significant since even mere permissions (that is, permissions which are not coupled with a prohibition to prevent the permitted action) are not useless: the very fact that an action is permitted is often sufficient to ensure a certain possibility of performing that action. This is because there are general prohibitions upon others that—by limiting in general their action—proscribe certain ways of interfering with the holder of the permission, and thus indirectly provide a certain legal protection for the holder's possibility of doing what he or she is merely permitted to do. As Hart (1982, 171) puts it:

> at least the cruder forms of interference, such as those involving physical assault or trespass, will be criminal or civil offences or both, and the duties or obligations not to engage in such modes of interference constitute a protective perimeter behind which liberties exist and may be exercised.

For instance, I have the faculty of smoking inside my house (I am neither obliged nor forbidden to smoke there). Such a faculty is indirectly protected by various legal provisions, like those entailing on the one hand the prohibition of assaulting me and on the other hand the obligation to respect my property right over my cigarettes. Notwithstanding such protection, others are permitted to use many means in order to prevent me from smoking inside my house. For instance,

[7] If one knew that the action was not only permitted but obligatory, one would use the latter qualification, according to the Grician principle of quantity, which requires that we provide all the relevant information we have (see Grice 1989).

they may buy all cigarette boxes available at the tobacco shop and destroy them, they may refuse to lend me their lighter, they may threaten to leave the room if I smoke, and so on.

However, there are also cases where one's permission (and, in particular, one's faculty, in the sense above specified, namely, as a permission to do and to not do) is coupled with another's prohibition from preventing exactly the permitted action, or at least with the prohibition from preventing it on purpose. Alexy (1985, 208ff.) refers to such faculties by speaking of *directly protected freedoms*, as opposed to *unprotected freedoms*, which are not accompanied by the prohibition on interference. Among such directly protected freedoms are the negative liberties one has towards the State in liberal countries (for instance, freedom of speech, of religion, and so on). Thus we would express a protected freedom, with regard to action A as:

Facult A AND ***Forb*** [prevent A] AND ***Forb*** [prevent NON A]

When a freedom is unprotected, the possibility of exercising that freedom (of performing the facultative action) depends upon the arbitrary choice of others, who could, if they wished, interfere, even if, as a matter of fact, they kindly abstain from doing so. On the contrary, when a liberty is protected, arbitrary inferences are prohibited (this may be linked to the republican idea of liberty as freedom from arbitrary interference; see Pettit 1997).

An even stronger notion of one's liberty to do A is obtained when the others' prohibition from interfering with A is coupled with the obligation (upon others or upon the government) to provide some means for performing A, namely, the obligation to ensure that the concerned agent has the effective capability of doing what he or she is permitted to do (in this way, the so-called negative freedom becomes as well a positive or substantive freedom; see Sen 1999).

5 Directed Obligations

More articulate normative notions and, in particular, the idea of a right, cannot be built on the basis of obligations and permissions alone. Such notions embed a *teleological* perspective, namely, a focus on purposes or interests (final or intermediate values, ends, objectives) which a normative proposition[8] is meant to serve: only when a such a proposition is concerned with the interests of certain individuals, can we view it as conferring rights upon these individuals.

The purpose of a normative proposition should not be mistaken for the aim (possibly a self-interested one, or also an illegal one) that is pursued by the individual members of the legislative body when voting for that proposition.[9] To establish what purposes are served by a proposition of law, besides considering the (legitimate) objectives of the historical legislator, we often need to engage in an exercise in rationalisation, aimed at establishing which ones, among the effects of the adoption of that proposition (that is, among the consequences ensuing from its use as a standard for acting and adjudicating), may represent valuable reasons for its communal adoption and its persistent endorsement.

[8]We use the expression *normative proposition* to mean any possible legal content: a rule, a principle, the connection between a factor and the outcome it favours, and so on.

[9]This issue has been famously addressed by von Jhering (1924, III, 35), who distinguished the purpose of a duty (the interest it is intended to serve, according to the point of view of the legal system, or of the legal community) from its various side effects (reflex-effects, *Reflexwirkungen*). Jhering considers, for instance, the case of law prohibiting the import of certain goods, which was enacted by politicians having the aim of favouring a particular domestic producer (who had lobbied for this result). He argues that the fact the individual lawmakers had this aim in mind does not imply that the law confers a right on that manufacturer: from a legal perspective the manufacturer's advantage is rather to be viewed as a side effect of that law.

Let us indicate in the following way how a certain normative proposition serves certain goals or purposes. We write:

$A \Uparrow^{G}$

to mean that the adoption of proposition A advances the goal (or the set of goals) G. This goal may be a collective interest, namely, the benefit of a collectivity viewed as a unit (economic development, national security, public health, technological advance, etc.), or an individual interest, namely, the benefit of certain individuals (like a creditor's interest in being paid, a worker's interest in a safe working environment, a sick person's interest in having medical care, etc.). Often the purpose for (the adoption of) a normative proposition is to protect the interests of certain persons, though these interests may take different contents (within certain ranges), according to the choices of the individuals concerned. In such cases, we write:

$A \Uparrow^{j}$
(A, in order to advance j's interests)

where j is the person whose interests are meant to be furthered by the adoption of the normative proposition A. Here is an example of such a proposition:

(***Obl*** $Does_{Tom}$[pay $Mary$ €1,000])$\Uparrow^{Mary}$
(it is obligatory that Tom pays Mary €1,000, in order to advance Mary's interests)

The person being directly touched by in an action is not always the beneficiary of that action. For instance Tom may have undertaken in Mary's behalf an obligation to pay €1,000 to Mary's father John. In such a case, Mary is the legally relevant beneficiary of Tom's action (the action is aimed at satisfying her filial interest that her old father receives the money he needs), though John is going to receive the money. In such a case, we shall write:

(***Obl*** $Does_{Tom}$[pay $John$ €1,000])$\Uparrow^{Mary}$
(it is obligatory that Tom pays John €1,000, in order to advance Mary's interests)

These considerations lead us to introduce the notion of an *other-directed obligation*.[10]

[10]On the idea of a directed obligation, see the seminal contribution by Krogh and Herrestad 1996, though their formalisation does not fully coincide with the one here proposed. In particular, Krogh and Herrestad 1996 distinguish between the author of an action and the person responsible for its performance, whom they view as the bearer of the obligation. This distinction does not seem useful since there are two alternative hypotheses:

- The obligation requires that the bearer performs an action directly, in which case bearer and agent necessarily coincide. This can be expressed as ***Obl*** $Does_j A$, where j is both the agent of the obligatory action and the bearer of the obligation.

- The obligation requires that the bearer makes it so that somebody else does an action. This can be expressed as ***Obl*** $Brings_j(Does_k A)$, where, again, the bearer of the obligation and the agent of the obligatory action coincide, though the bearer j of the obligation is the agent of the indirect action which consists in making it so that somebody else (agent k) does action A).

In none of these two hypotheses do we need to distinguish being the bearer of an obligation from being the agent of the obligatory action.

We may want to develop a notion of responsibility as distinct from the notion of agency (to express, for instance, that an employer is vicariously liable for the action of his or her employees, even though the employer did not perform such action in any possible sense), but this can be done without modifying the notion of an obligation.

Definition 5.1 *Other-directed obligation. It is* obligatory, toward k, *that* j *does*[11] A *(***Obl**^{k} $Does_j A$*) iff it is obligatory that* j *does* A*, in order to advance the interest of* k *(***Obl** $Does_j A$*)*$\Uparrow^k$*):*

$$\textbf{\textit{Obl}}^k\, Does_j A \equiv (\textbf{\textit{Obl}}\ Does_j A)\Uparrow^k$$

The notion enables us to express normative propositions like the following ones:

$\textbf{\textit{Obl}}^{Mary}\, Does_{Tom}$[pay €1,000 to $Mary$]
(it is obligatory, toward Mary, that Tom pays €1,000 to Mary)
$\textbf{\textit{Obl}}^{Tom}$NON $Does_{Mary}$[communicate to others Tom's trade secrets]
(it is obligatory, toward Tom, that Mary does not communicate to others Tom's trade secrets)

By denying other-directed prohibitions, we get other-directed permissions. Thus the directed permission, toward k, that j does A only means that it is not obligatory, toward k, that j does not do A: there is no such obligation for the benefit of k (though A may be obligatory for j toward other people). For example, suppose that Mary and her neighbour Tom make an agreement according to which she is permitted to erect a building up to 15 meters high. We may then say that:

$\textbf{\textit{Perm}}^{Tom}\, Does_{Mary}$[erect a building up to 15 meters high]
(it is permitted, toward Tom, that Mary erects a building up to 15 meters high)

The fact that Mary is permitted toward Tom to erect the building does not exclude that she still is forbidden toward Ann, another of Mary's neighbours, who has not consented to the construction.

6 Obligative Rights

The notion of an other-directed obligation leads us to the idea of an *obligative right*. Whenever a person j has an obligation directed toward another person k (the obligation is intended to promote the interest or the benefit of k), we say that k has a *right* toward j. We call this kind of right an *obligative right*, to mean that it consists in the fact that the obligation has the purpose of satisfying an interest of the right holder.[12] This notion is intended to represent the idea of a right as the protection of an interest or a benefit through a corresponding duty, an idea going back to authors such as Bentham (1970) and von Jhering (1924).[13] Obligative rights can be defined as follows:

Definition 6.1 *Obligative right.* k *has the* obligative right *that* j *does* A *iff it is obligatory, toward* k*, that* j *does* A*:*

[11] Unless otherwise specified, when introducing general definitions we use the notation $Does_j A$ to cover all kinds of actions (positive and negative, behavioural and productive): j does A (properly expressed by $Does_j A$); j does NON A ($Does_j$NON A); j omits A (NON $Does_j A$); j omits NON A (NON $Does_j$NON A); j produces A ($Brings_j A$); j produces NON A ($Brings_j$NON A); j omits to produce A (NON $Brings_j A$); j omits to produce NON A (NON $Brings_j$NON A).

[12] We shall not discuss here what connection between obligation and interest is needed for a right to exist (and intend our analysis to be neutral with regard to different ways of characterising such a connection). A particularly strong connection is required, for instance, by Raz 1984, who views the right holder's interest as a sufficient reason for the corresponding duty.

[13] This idea does not compete against, but rather complements, the idea of a right as a power, as advanced, for example, by Kelsen (1967) and Hart (1982), an idea which we shall consider later, when introducing the notion of a potestative right.

$$\textbf{\textit{OblRight}}_k Does_j A \equiv \textbf{\textit{Obl}}^k Does_j A$$

For example, to say that

$$\textbf{\textit{OblRight}}_{Tom} Does_{Mary}[\text{pay €1,000 to } John]$$
(Tom has the obligative right that $Mary$ pays € 1,000 to $John$)

means that

$$\textbf{\textit{Obl}}^{Tom}(Does_{Mary}[\text{pay €1,000 to John}]$$
(it is obligatory, toward Tom, that $Mary$ pays € 1,000 to $John$)

7 The First Hohfeldian Square

Besides establishing an equivalence between a directed obligation and an obligative right, we can also characterise the Hohfedian notions of a *noright* and a *privilege*. A noright of a person k towards a person j with regard to an action A simply is the negation that k has the right that j does A, namely, it is a permission for j, toward k, to omit A, which corresponds to j having a privilege, toward k with regard to A.

Definition 7.1 *Noright. k has a* noright *that j does A iff j is permitted, toward k, to omit A:*

$$\textbf{\textit{NoRight}}^k(Does_j A) \equiv \textbf{\textit{Perm}}^k(\text{NON } Does_j A)$$
(⌈k has a noright *that j does A⌉ is equivalent by definition to ⌈it is permitted, toward k, that j does not do A⌉)*

Definition 7.2 *Privilege. j has a* privilege *toward k, with regard to action A iff it is permitted toward k that j omits to do A:*

$$\textbf{\textit{Privilege}}^k(Does_j A) \equiv \textbf{\textit{Perm}}^k(\text{NON } Does_j A)$$
(⌈j has, toward k, a privilege with regard to doing A⌉—literally, ⌈there is a privilege toward k, that j does A⌉—is equivalent by definition to ⌈it is permitted, toward k, that j omits to do A⌉)

The concepts just specified allow us to build the first square of legal concepts proposed by Hohfeld (1913; 1917), the *obligative concepts*. In Figure 1 and in Figure 2 you can see respectively the original square of the first four Hohfeldian concepts and our formalisation of such concepts.[14]

[14]For an introduction to the Hohfeldian concepts and a discussion of the literature, see, among the others, Ross 1968, 118ff. and Alexy 1985, 185ff. On their formalisation, see: Lindahl 1977, 25ff.; Makinson 1986; Allen and Saxon 1991; Sergot 2001.

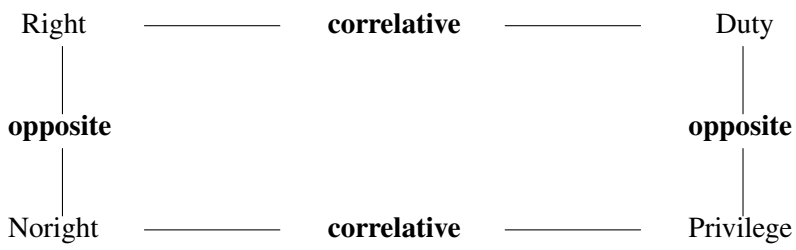

Figure 1: *The Hohfeldian obligative square*

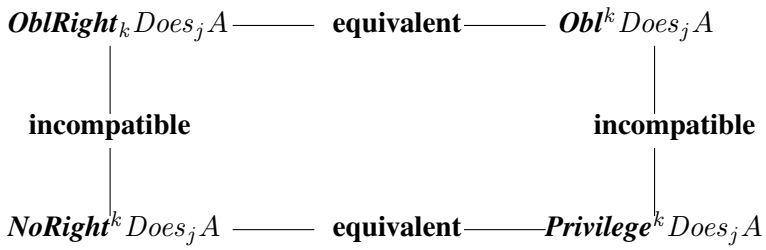

Figure 2: *The Hohfeldian obligative square formalised*

8 Permissive Rights and Liberties

The idea of a directed permission offers a basis for providing a notion of a *permissive right*, which is a directed permission aimed at satisfying an interest of the person being permitted.

Definition 8.1 *Permissive right. A person j has, toward a person k, the* permissive right *to do A (***PermRight**$^k\, Does_j\, A$*) iff it is permitted toward k, in the interest of j, that j does A:*

$$\textbf{\textit{PermRight}}^k\, Does_j\, A \equiv (\textbf{\textit{Perm}}^k\, Does_j\, A)\Uparrow^j$$

Note that our notion of a permissive right is not reducible to the idea of an obligation, and neither to the idea of a directed obligation: though the negation of a directed obligation occurs within the permissive right, a further element is necessary to characterise the latter notion: the finalisation of such a normative position to the advancement of the interest of the right holder. Consider, for instance, the situation of a person j who has legally purchased a CD containing a computer program. According to art. 5 of Directive 91/250/EEC of 14 May 1991 (on the legal protection of computer programs), j has indeed a permissive right to use (run) the program MySoft:

$$\textbf{\textit{PermRight}}^j\, Does_j[\text{use MySoft}]$$

However, it is not the case that this permissive right also covers the use of the program by other people. In other words, whenever $k \neq j$:

$$\text{NON}\ \textbf{\textit{PermRight}}^j\, Does_k[\text{use MySoft}]$$

When, for the benefit of a person, this person is both permitted to perform and to omit an action—that is, when the action is facultative—we can say that he or she has a *liberty right* with regard

to that action, a notion can be further developed according to the lines indicated above, namely, with regard to the fact that others (or the government) may have, always in the interest of that person, a prohibition to prevent the facultative action, and they may even have the obligation to provide means for its performance. This will lead us to distinguish three kinds of liberty rights: a *mere* liberty right, a *negatively protected* liberty right, and a *positively protected* liberty right.

9 *Erga-omnes* Rights

So far we have only considered obligations (and obligative rights) toward a determined person. However, the notions we have so far provided also allow us to specify rights toward all persons (*erga-omnes* rights).

Definition 9.1 Erga-omnes *obligative right. k has the* erga-omnes obligative right *that A is done iff k has, toward any x, the obligative right that x does A:*

$$\textbf{\textit{ErgaOmnesOblRight}}_k Done\ A \equiv \mathsf{FORANY}\,(x)\ \textbf{\textit{OblRight}}_k Does_x A$$

We know that k's obligative right that x does A is the other face of x's directed obligation to do A for the benefit of k. By substituting the obligative right with the corresponding directed obligation in the last formula we obtain:

$$\textbf{\textit{ErgaOmnesOblRight}}_k Done\ A \equiv \mathsf{FORANY}\,(x)\ \textbf{\textit{Obl}}^k Does_x A$$

($\lceil k$ has the erga-omnes obligative right that A is done$\rceil$ is equivalent to $\lceil$for any x, x is obliged, toward k, to do $A\rceil$)

For example, Mary, who is the author of a novel, has as copyright over it, namely, an erga-omnes obligative right that nobody copies it (for the sake of simplicity we will not consider free uses). This means that, toward every person x, she has the obligative right that x does not copy her novel, which means that any person x has the obligation, toward Mary, not to copy her novel. The same holds for other erga-omnes rights Mary has, such as her right to life (that nobody takes her life), to privacy (that nobody interferes with her privacy), to personal integrity (that nobody harms her), and her property rights.

Besides *erga-omnes* obligative rights there may be erga-omnes permissive rights, which we define similarly:

Definition 9.2 Erga-omnes *permissive right. k has the erga-omnes* permissive right *of doing A iff k has toward any x the permissive right of doing A:*

$$\textbf{\textit{ErgaOmnesPermRight}}_k ToDo\ A \equiv \mathsf{FORANY}\,(x)\ \textbf{\textit{PermRight}}^x Does_k A$$

For instance, we may assume that Mary, who is living in a liberal country, has *erga-omnes* permissive rights to express her opinion, to have the private life she chooses to have, to use her property as she wishes, to belong to a union, to use contraception, and so on.

10 Exclusionary Rights

The idea of an obligative right takes a peculiar shape when it concerns the prohibition against performing certain inferences (against reasoning in certain ways), or against using certain kinds of premises for certain purposes, in the interest of a particular person.

This is especially the case with anti-discrimination rules. These rules establish no unconditioned prohibition against performing certain actions (like dismissing an employee or refusing to appoint somebody), but rather prohibit deciding for a certain course of action on the basis of certain reasons (a certain mental content): they prohibit the process which concerns (*a*) forming the intention to act in a certain way on the basis of such reasons and (*b*) implementing that intention.

For instance, in many legal systems employers are prohibited from adopting any decision having a negative impact on their employees on the basis of race or sex, and this prohibition—though also serving some collective purposes—is primarily aimed at promoting the interest of the employees in question. Thus we may express this rule as concerning an obligative right.

FORANY (x, y)
IF [y is x's employee]
THEN^n ***OblRight***$_y$
[x DOES NOT adopt any decision impairing y's employment situation on the basis of y's race or sex]
(if y is x's employee, then y has an obligative right that x does not adopt any decision impairing y's employment situation on the basis of y's race or sex)

There may be similar exclusionary rights with regard to religious beliefs: One has a right that one's position is not impaired on the basis of the fact that one does or does not share a certain religious faith.

It may be wondered whether there is a more content-general exclusionary right concerning religious matters, namely, the right that no political decision is taken on religious grounds (on premises which partake to the dogmas of a certain religious persuasion).

FORANY (x)
OblRight$_x$ [political decisions impacting on x are NOT adopted on the basis of religious grounds]

We shall not consider whether this rule is, or should be, valid in certain legal systems, since we do not want to enter into the difficult debate on neutrality, tolerance, and public reason. For our purposes, it suffices to have shown that this rule has the logical form we have just analysed.

11 Normative Conditionals

Normative conditionals represent a fundamental, through often misunderstood, construct of legal knowledge. We view normative conditionals as expressing a determinative connection between an antecedent and a consequent. Our canonical representation of a normative conditional is the following:

IF A THEN^n B

where the superscript n expresses the idea of normative determination, namely the idea the conditional's antecedent causes or at least enables the verification of the consequent.[15] For example, the following rule:

Anyone below 18 years of age is forbidden to buy alcoholic drinks

can be conditionally represented as:

FORANY (x)
IF [x is below 18 years of age]
THEN^n ***Forb*** $Does_x$[buy alcoholic drinks]
(for any x, if x is below 18 years of age, then it is forbidden that x buys alcoholic drinks)

I shall not develop here an account of the logical properties of normative conditionals (see Sartor 2005, chap. 20), nor shall I commit to a specific formalisation. Let us just observe that a normative conditional IF A THEN^n B must at least provide for *defeasible normative detachment*: the antecedent precondition A licenses the derivation of conclusion B, unless there are prevailing reasons against this conclusion or against making this inference.[16]

Though normative conditionals are always concerned with the determination of normative results, they can take different forms, according to both the nature of these results and their temporal characterisation. Let us analyse the conditional propositions listed in Table 2 on the next page:

1. The first proposition expresses *deontic initiation*. An event determines the initiation of a certain deontic position (the obligation to pay the penalty), which continues after the event that has started it.
2. The second proposition expresses *negative deontic initiation* or *deontic termination*.[17] An event determines the termination of a deontic position (the obligation to pay the penalty), namely, it makes it so that this position does not hold any longer, and its absence continues after the terminating event.
3. The third proposition expresses *deontic emergence*. The holding of the antecedent state of affairs (Tom being inside the mosque), determines the co-occurrence of a deontic position (his being under the obligation not to wear shoes). As soon as the antecedent state of affairs ceases, so does the consequent deontic position.
4. The fourth proposition expresses *constitutive initiation*. An event (being born in Italy) generates the initiation of a non-deontic state of affairs (Tom's citizenship). As in the first case (deontic initiation), this state is assumed to persist after the event that has started it.
5. The fifth proposition expresses *constitutive negative initiation* or *constitutive termination*. An event (obtaining a different nationality) makes it so that a non-deontic state of affairs does not hold any longer (Tom is no longer an Italian citizen). As in the previous case, this state is assumed to persist after the terminating event.

[15] A representation of legal conditionality as a kind of determination or causation (intended in a broad sense, not restricted to natural causation) has been recently advanced by Artikis et al. 2002, who use the causal language proposed by Giunchiglia et al. 2004. The idea that legal conditionality is a kind of causality was famously expressed by Zitelmann 1879. For some critical remarks against the full assimilation of legal conditionality and natural causality, see Engisch 1968, cap. 2.

[16] There is a vast literature on defeasibile legal inference. See, for instance: Hart 1951, Gordon 1988, MacCormick 1995, Prakken and Sartor 1996, Prakken and Vreeswijk 2002, Hage 2005.

[17] By the termination of A, we mean in general the start of NON A.

(1) IF [Tom does not deliver the merchandise on time]
THEN^n Tom becomes obliged to pay a penalty of €1,000 (deontic initiation)]
(2) IF [Mary renounces the payment of the penalty]
THEN^n [Tom ceases to be obliged to pay it]
(3) IF [Tom is inside a mosque]
THEN^n [Tom is forbidden to wear shoes (deontic emergence)]
(4) IF [Tom was born in Italy]
THEN^n [Tom becomes an Italian citizen (constitutive initiation)]
(5) IF [Tom acquires another citizenship]
THEN^n [Tom ceases to be an Italian citizen (constitutive initiation)]
(6) IF [Tom and Lisa agree to create company LegalSoft]
THEN^n [the company LegalSoft comes into existence] (existential initiation)
(7) IF [Tom and Lisa agree to terminate company LegalSoft]
THEN^n [company Softlex ceases to exist] (existential termination)
(8) IF [an object is permanently attached to the soil]
THEN^n [the object is an immovable good (constitutive state-mergence)]
(9) IF [Tom drives while intoxicated]
THEN^n [Tom commits a criminal offence (constitutive event-emergence)]

Table 2: *Examples of normative conditionals*

6. The sixth proposition expresses *existential initiation*. A certain event (the agreement to create a company) determines the existence of an entity that did not exist before (the company, as a legal person).
7. The seventh proposition expresses *existential termination*. A certain event (the agreement to terminate a company) determines the termination of the existence of an entity that existed before the event (the company, as a legal subject, does not exist any longer).
8. The eighth proposition expresses *constitutive state-emergence*. The persistence of the antecedent state of affairs (being attached to the soil) determines, for as long as it holds, the persistence a certain non-deontic qualification (being an immovable object).
9. The ninth proposition expresses *constitutive event-emergence*. The happening of a certain event determines contemporary happening of another event.

These different types of normative conditionals do not differ in the notion of conditionality they express, but rather in the nature of their preconditions and their consequents, which include a temporal reference.[18] Let us shortly consider some examples. Here is a rule expressing deontic

[18]To express these temporal element, we use some temporal predicates, like *happens*, *holds*, *starts* , and *finishes* which we shall not discuss here (for an analysis of these notions, see Sartor 2005, sec. 20.4, which uses a slightly different terminology, for a formalisation see Governatori et al. 2005). Let us just observe that our interpretation of these predicates corresponds, to a certain extent, to their use in the event calculus of Kowalski and Sergot (1986). In particular, *happens* denotes the taking place of an event, and *holds* denotes the subsistence of a state of affairs (without a commitment to its persistence), *starts* denotes the initiations of a state of affairs which then persists indefinitely (until a terminating event takes place), *finishes* denotes the end of a state of affairs (namely, the termination of A is the beginning of NON A).

initiation:

FORANY (x, y, w)
IF *it happens that*
[x causes against y an illegal damage worth w]
THEN^n *it starts that*
Obl [x pays compensation w to y]
(for any persons x and y, and amount w, if x causes against y, an illegal damage worth w, then the obligation that x pays compensation w to y starts)

The following rule expresses non-deontic state-emergency:

FORANY (x)
IF *it holds that*
[x is a piece of land, water source, a tree, a building, or is anyway permanently attached to the land]
THEN^n *it holds that* [x is an immovable good]

Our representation of Art. 1136 of the Italian civil code views it as an instance of event-emergence:

FORANY (x, t)
IF *it happens that*
[x makes an offer to the public, containing all terms of the contract it concerns]
THEN^n *it happens that* [x makes a contractual offer]

12 Constitutive Rules and Counting-as

Our categorisation can be connected to some notions which have been much discussed in recent literature, like those of constitutive rules and of counts-as rules.[19]

In particular, the notion of a *constitutive rule*[20] may be viewed as referring to any kind of non-deontic conditional (all items from 4 to 9 in our list): all such conditionals determine the supervenience (and thus the constitution) of certain non-natural entities (states of affairs, events, objects).

On the other hand, the notion of counting-as can to be more specific, namely, it may be viewed as subsuming only our notions of non-deontic state and event emergence: by saying that a state of affairs (or event) counts as another state of affairs (event) under certain conditions, we mean that the second emerges over the first (for a certain purpose and within a certain context). For instance by saying that, in a certain context (in an auction room), the action of rising one's hand counts as making a bid, we mean the following: in that context whenever an act consists in raising one's hand, then it also consists in making a bid, namely, raising one's hand normatively determines making a bid. We can indeed introduce the notion of counting-as through the following definitions, based upon the ideas of state emergence and event emergence. For state emergence:

[19]With regard to the analysis of normative conditionals provided in Sartor 2005, sec. 20.1, we have introduced the further notions of existential initiation and existential termination.

[20]The fundamental references on constitutive rules and counts-as connections are Searle 1969 and Searle 1995. For a logical analysis, see Jones and Sergot 1996.

state A COUNTS-AS *state* $B \equiv$ IF *it holds that* A THEN^n *it holds that* B
($\lceil$state A counts as state $B\rceil$ is equivalent to $\lceil$the holding of state A determines the holding of state $B\rceil$)

For event-emergence:

event A COUNTS-AS *event* $B \equiv$ IF *it happens that* A THEN^n *it happens that* B
($\lceil$event A counts as event $B\rceil$ is equivalent to $\lceil$the happening of event A determines the happening of event $B\rceil$)

For example, suppose that Tom owns an e-business company and has put on line a sale offer for a set of CDs, indicating all terms of the contract, among which a very low price, which he now thinks was too low. Unfortunately, offers to the public which contain all terms of the contract to be concluded constitute (determine, generate) contractual offers—in other terms, they, "count as" contractual offers. Thus Tom will be bound toward those who accept his offer. We can express the rule giving this legal significance to offers to the public in two ways. The first way uses explicitly a normative conditional (as applied to the happening of events):

FORANY (x)
IF *it happens that*
[x makes an offer to the public, containing all the terms of the contract]
THEN^n *it happens that* [x makes a contractual offer]

The second way uses the counts-as terminology (as applied to events):

FORANY (x)
event [x makes an offer to the public, containing all terms of the contract]
COUNTS-AS
event [x makes a contractual offer]

As another example of a counts-as connection, consider the rule (now generally included in all copyright laws) that software is to be considered as a literary work. We can expresses this idea by saying that being a software determines (counts-as) being a literary work.

13 Must and Relative Necessity

In many cases, when a legal text uses the words *must*, *ought*, *may*, or *can*, it does not express obligations or permissions in the sense discussed above, but it conveys a completely different notion, which is parasitical on the idea of a normative conditional. Consider those cases in which, for example, the law says that a petition or contract must or must not be done in a certain ways, or that it can or cannot contain certain terms.

In these cases, the law establishes what we may call a *relative necessity*: it establishes that certain requirements have (or don't have not) be satisfied for a certain legal result to be obtained in a certain way, namely, through the realisation of a certain normative precondition. Often, the specification of this result is left to further normative propositions.

For instance, suppose that in a text of law, after the rule that whoever appropriates the property of others is going to be punished as a thief, there is the statement that the appropriator *must*

have the intention of getting permanent possession of the stolen object. Clearly, there is no legal obligation to have such intention. The *must* signals a necessity, relative to the normative antecedent which determines subjection to punishment for theft. It indicates that the elements explicitly contained in the antecedent of the rule on theft are not really sufficient to produce the effect indicated in that rule: a further element, namely, the intention to appropriate, is also required to provide the full antecedent (to instantiate the precondition of the rule).

We may use the term *anancastic*—from the Greek word *ananke*, necessity—to characterise the (anancastic) propositions expressing this kind of necessity.[21]

As we may have normative propositions expressing anancastic connections, we may also have propositions denying (excluding) such connections. For instance, suppose that a text states the following proposition: ⌈a thief *does not have to* intend (or *needs not* intend) to appropriate the stolen object directly; the thief *can* also have the intention to provide possession to another⌉. In this context, the locution *does not have to* (or *may not*) does not express lack of obligation, but the lack of the indicated necessity, and *can* does not express permission, but rather signals an alternative possibility: the intention to give possession to another is also a sufficient way to satisfy the intention requirement for theft. As a result of the enactment of this text of law, the intention to appropriate something for oneself is no longer a necessary element of the precondition of theft: it may be substituted with the intention to provide possession to another (it is now only necessary that there is either the intention to appropriate for oneself or the intention to appropriate for another).

The word *must* is most frequently used in an anancastic sense when:

- the condition to be realised is dependent upon the action of a person, and
- the satisfaction of the condition contributes to determining an entitlement of this person, or in any case a result that the person normally would like to produce.[22]

Consider, for example, the case in which a statute or a contract says that a certain act must be done in writing, or that a certain notice must be given before a certain date.

When the two conditions above are satisfied, must-statements—besides stating the relative necessity of a certain condition, and indeed on the basis of this necessity—may be viewed as implying a *technical* or *hypothetical imperative*: given that the realisation of the condition is necessary for determining an advantageous result (according to a certain rule), we may say that ⌈If one wants to achieve the conditioned legal result, one must realise the condition⌉.

When the action to be performed has a cost for the agent, though the latter would benefit from the realisation of the conditioned legal result, we may also say that the must-proposition places a *burden* or an *onus* upon the agent. In order words, given that the realisation of the condition represents a necessary cost (burden or onus) to be sustained for producing the result in a certain way, we may say that: ⌈If one wants to achieve the conditioned legal result in that way (that is, as resulting from a certain normative antecedent), one must bear the cost (burden or onus) of realising the additional condition⌉.

However, the basic and constant meaning of the anancastic *must* consists in what we called *relative necessity*, which can possibly be characterised by saying that the combination of the following propositions (1) and (2):

[21] On anancastic rules, see Conte 1985, 360ff., and Azzoni 1992; 1997. This terminology was anticipated by von Wright (1963, 10), who defines an *anakastic statement* as a "statement to the effect that something is (or is not) a necessary condition of something." The *anancastic* use of the word *must* is also is discussed in legislative technique, though under other descriptions (see, for instance, Haggard 1996, 239).

[22] Note that these conditions, though usually satisfied, are not necessary for the occurrence of this kind of *must*. For instance the second condition is not satisfied in the theft example just presented.

(1) if A then B
(2) C *must* be realised for B to be determined according to (1)

may be considered equivalent to the following proposition (3):

(3) IF A AND C THEN^n B

Similarly, the combination of the following propositions (1) and (2):

(1) if A and C then B
(2) for obtaining B according to (1), D *can* be realised instead of C

may be assumed to be equivalent to:

(3) IF A AND (C OR D) THEN^n B

Finally, when saying that certain circumstances "must" occur with regard to a certain result, we sometimes mean that they consist in the absence of facts that would make that result unsafe (voidable). For instance, when saying that a contract must not come into being through duress or deceit, we may imply (though somewhat improperly) that duress or deceit would determine the voidability of the contract.

14 Higher-level Normative Constructs

By using the notion of a normative conditional we can build further normative notions and, in particular, the notion of a *legal power*. This notion needs to be clearly distinguished from the idea of permission: a legal power does not consist in being permitted to perform an action, but in having the ability to determine certain legal results, through one's action. Here is how Alois Brinz (a German jurist of the 19th century) traces this distinction:

Legal permission and legal ability (*licere*, *posse*), though linguistically indistinct, are different from each other. Permission, or licence, is something that occurs in both kinds of acts, ordinary acts and acts-in-the law (*Rechtsgeschäfte*); legal ability, or legal power, on the other hand, occurs only in acts-in-the-law, i.e., in the widest sense of the word, only in such acts which are imposed or adopted by the law for achieving its invisible legal effects. Where the legal power exists for an act-in-the-law, there usually is also a licence for it, yet, sometimes the former exists where the latter is missing. Physical ability is different both from permission and from ability in our sense, though neither the latter nor the former can be made use of without permission (*vi, clam facere, delict*); acts-in-the-law without legal power are null and void. " (Brinz 1873, 211, as translated in Lindahl 1977, 211)

In fact, lawyers know well that one may have the power to achieve a certain result through a certain action though one is forbidden from performing that action. For instance, one may have the power to transfer to another a thing through a sales contract, despite being forbidden to make such a contract (for instance, in consequence of undertaking, toward a third party, an obligation not to sell that thing).

Since the determination of legal results (as produced by certain preconditions) is the task of normative conditionals, the notion of power can be seen as dependent on the notion of a normative conditional, and even as a mere epiphenomenon of normative conditionality. We can indeed distinguish different notions of a power, according to the nature of the normative conditional upon which the power supervenes.

- A generic power consists in mere fact that a certain event determines a legal effect to happen (so that by causing the event one can determine its legal effect)
- An action-power consists in a generic power to produce a legal effect through an action determining it.
- An enabling-power is an action-power intended to enable the normative result of the action.
- A potestative-right is an enabling power intended to further the interests of the power holder.
- A declarative-power is an action-power consisting in the fact that one's declaration of a certain legal result determines that result.

We do not need to worry about generic powers, which only are epiphenomena of normative connections: for any normative conditional, we can say that we have the power to realise its effect by realising its antecedent condition. For instance, given a conditional saying that if a person k dies, k's children inherit his or her goods, we can say that any other person j has the generic power to make k's children inherit from k, just by having k die (by killing k).

The notion of an action-power is more interesting. It concerns those cases where a normative effect is produced through an action. Thus we can say that an action power supervenes on any normative conditional whose antecedent is represented by an action.

Definition 14.1 *Action power. We say that j has the* action power *to achieve B by doing A, and we write* **ActionPower**$_j(B \text{ VIA } A)$ *whenever B is normatively determined by j's doing A:*

$$\textbf{\textit{ActionPower}}_j(B \text{ VIA } A) \equiv \text{IF } Does_j A \text{ THEN}^n B$$

For instance, in Roman law, the following rule holds:

Wild beasts, birds, fish, that is, all animals, which live either in the sea, the air, or on the earth, so soon as they are taken by any one, immediately become by the law of nations the property of their captor; for natural reason gives to the first occupant that which had no previous owner. (*Institutes of Justinian*, 2.1)

A simplified version of this rule (if one captures an animal that does not belong to anybody, then one becomes the owner of that animal) can be formalised as follows:

FORANY (x, y)
  IF [animal y does not belong to anybody]
  THEN^n IF $Does_x$ [capture y]
    THEN^n *it starts that* [x is the owner of y]

We can rephrase the last rule on the basis of the above definition of an action-power: when an animal does not belong to anybody, then one has the action-power to start one's own ownership of the animal, by capturing it:[23]

[23]For the sake of readability, we take the liberty of substituting sometimes the bare infinitive (like "capture") with the gerund ("capturing"), assuming that the expressed propositional component remains the same. Said otherwise, we will take [capture y] and [capturing y] as synonymous ways of expressing the same meaning. Similarly, we abbreviate the temporal predicate *it starts that* as *to start*: rather than saying that one has the power that *it starts that* A, we shall say that one has the power *to start* A.

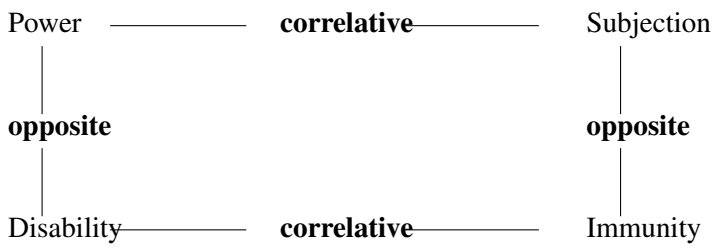

Figure 3: *Hohfeldian potestative square*

FORANY (x, y)
IF [animal y does not belong to anybody]
THEN^n ***ActionPower***$_x$
to start [x is the owner of y]
VIA [capturing y]
(for any person x and any animal y, if y does not belong to anybody, then x has the action-power to start x's ownership of the animal, by capturing y)

Another interesting example of an action power can be found in copyright law. Since one acquires copyright over a literary or artistic work by mere fact of creating that work, we may say that one has the power to become the copyright holder of a work, by creating that work:

FORANY (x, y)
IF [y is an original work]
THEN^n ***ActionPower***$_x$
to start [x is the copyright holder of y]
VIA [creating y]
(for any person x and any object y, if y is an original work, then x has the action-power to start x's copyright over y, by creating y)

15 The Second Hohfeldian Square

The notion of an action power enables us to provide an analysis of the second square of Hohfeldian concepts, the *potestative square*.

The set of concepts in Figure 3 can be represented in the manner indicated in Figure 4, where j's power to determine a normative position ***Pos*** involving a person k (***Pos***$_k$) amounts to k's subjection to j with regard to ***Pos***, and j's disability (non-power) to determine a normative position ***Pos*** concerning k amounts to k's immunity (non-subjection) toward j with regard to ***Pos***.

16 Enabling Powers

The idea of an action-power, as described above, is still too general to be useful in legal contexts. We tend to use the notion of a power only to cover those cases where the law, by linking a certain result to one's action, aims at enabling one to achieve that result. Consequently, we do not speak of a "power" in reference to cases where the law links a disadvantageous outcome (a sanction)

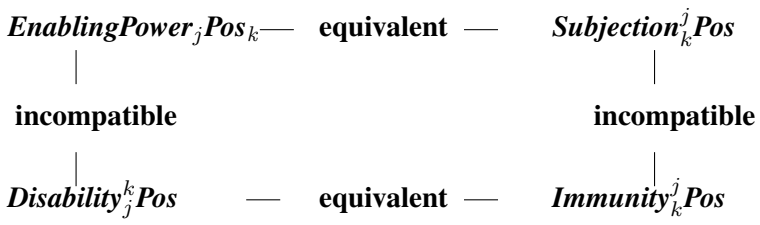

Figure 4: *Formalisation of the Hohfeldian potestative square*

to a certain action in order to deter or punish its performance: we would not say that we have the power to acquire the obligation to compensate a damage, by causing it through our own tortious action.

To appropriately circumscribe the notion of a power—so that it matches our linguistic intuitions—we need to refer to a teleological view of the corresponding normative connection: a normative connection between one's action and a normative result can be said to create one's legal power to achieve that result only when such a connection has the purpose of enabling one to achieve that result by performing the indicated action (if one so decides). In this case we speak of an *enabling power*.

Definition 16.1 *Enabling Power. We say that j has the* enabling-power *to achieve B by doing A, and we write* **EnablingPower**$_j(B$ VIA $A)$ *to mean that j's performance of A normatively determines B, in order to enable j to achieve B through A:*[24]

$$\textbf{\textit{EnablingPower}}_j(B \ \ \mathsf{VIA} \ \ A) \equiv (\mathsf{IF}\ Does_j A\ \mathsf{THEN}^n\ B)\Uparrow^{[j \text{ can achieve } B \text{ through } A]}$$

17 Potestative Rights

Through a further specification of the idea of an enabling power we get to the idea of a *potestative right*, which is an enabling power that is intended to further the interest of the power holder (it does not include those cases in which one's power is aimed at satisfying a public interest or the interest of other persons, like children or tutees).

Definition 17.1 *Potestative right. We say that agent j has the* potestative right *to achieve B by doing A, and we write* **PotestativeRight**$_j$*(B* VIA *A) to express that j has the enabling power to achieve B by doing A, in order to further j's own interests:*[25]

$$\textbf{\textit{PotestativeRight}}_j(B \ \ \mathsf{VIA}\ A) \equiv (\textbf{\textit{EnablingPower}}_j B \ \ \mathsf{VIA} \ \ A)\Uparrow^j$$

In such a case, therefore, the normative connection IF $Does_j A$ THEN^n B is intended to enable j to achieve B (***EnablingPower***$_j B$ VIA A), but this enablement, in its turn, has the function of enabling j to pursue his or her own interests. Let us assume, for instance, that our Roman rule on wild animals is based upon the following teleological assumption: a hunter is enabled to become the owner of the game in order favour his or her interests. If this is the law's attitude,

[24] We use the upward arrow to express the purpose of the preceding normative proposition.

[25] As before, the upward arrow to expresses the purpose of the preceding normative entitlement, but we abbreviate as j the proposition $\lceil j$ better pursues j's own interests$\rceil$. Note that by interest we mean whatever (legitimate) goals j may choose to pursue, not only j's egoistic goals.

then we may say that the hunter does indeed have a potestative right to become a game owner by capturing that game.

FORANY (x, y)
WHEN [animal y does not belong to anybody]
THEN^n ***PotestativeRight***$_x$
to start [x is the owner of y]
VIA [capturing y]

(for any person x and any animal y, if y does not belong to anybody, then x has the potestative-right to start x's ownership of the animal, by capturing y)

Similarly, let us assume that the author's entitlement to copyright has the function of enabling the author to become the copyright holder, in order to advance the interest of the author. We can then say that one has a potestative right to become a copyright holder over a work by creating that work.

FORANY (x, y)
IF [y is an original work]
THEN^n ***PotestativeRight***$_x$
it starts that [x is the copyright holder over y]
VIA [creating y]

(for any person x and any work y, if y is an original work, then x has the potestative-right to start x's copyright over y by creating it)

On the contrary, according to our definitions, a parent does not have the potestative right to execute a contract in the name of his or her child (though having an enabling power to this effect), since the parent is enabled to execute the contract only for the benefit of the child (and not for the parent's benefit).

18 The Connection Between Obligative and Potestative Rights

We have devised two notions of a right: the *obligative right*, consisting in the fact that another's obligation is intended to satisfy one's interest, and the *potestative right*, consisting in the ability to determine a new normative effect, an ability which is also intended to satisfy one's interest. The connection between these ideas is provided by the fact that usually one's obligative right that another does A is protected through one's potestative right to activate the corresponding sanction, namely, to activate judicial proceedings which (if everything is properly done) will lead to the sanction for the non-performance of A. As Windscheid (1887, par. 37) has said:

> The legal system . . . has emitted the command to a behaviour of a certain kind, and has left this command to the free disposal of the person on whose benefit it has emitted this command. It leaves to this person to establish whether to make use of this command and, in particular whether to apply the means that are granted by the legal system against those making resistance. (my translation)

We can express this idea through a defeasible connection:

IF ***Obl***^{j} A THEN^n ***PotestativeRight***$_j$[activate sanction for NON A]

(if j has an obligative right to an action A then j has the potestative right to activate a sanction for the non-performance of A)

We cannot here specify the content of the right to activate a sanction for certain behaviour: this is the power to make so that judicial proceedings are started which (if that behaviour has taken place and everything elso goes as it should) will terminate with the sanction being ordered.

This connection is defeasible since there are exceptional cases where one, despite having an obligative right, does not have the corresponding potestative right to activate the sanction. The most significant exception concerns children, who have to rely on their parents and guardians for the protection of their rights (see MacCormick 1976).

The consideration of such exceptions should confirm the idea that obligations rights are conceptually independent of (though defeasibly connected to) the corresponding potestative rights, and thus enables us to reject Kelsen's (1960) view that the notion of a right can be reduced to the possibility of activating a sanction.

19 Liability Rights

The literature on law and economics (see Calabresi and Malamed 1972) uses the notion of a liability rule for expressing the idea that in certain cases one cannot enjoin another not to interfere with one's entitlements, but one has the right to obtain a compensation for such an interference. Consider for instance a regime where one is permitted to engage in dangerous activities, but one has to pay compensation if somebody is damaged, or consider a copyright regime when one is permitted to reproduce a protected work, but the author is entitled to a royalty for the reproduction of his or her work. In all such cases we have a normative connection between a permitted action and an obligation of the agent, to the benefit of another:

$\textbf{\textit{LiabilityRight}}_j(Does_k A) \equiv$
$\textbf{\textit{Perm}}\ Does_k A$ AND (IF $Does_k A$ THEN^n $\textbf{\textit{Obl}}\ Does_k B \Uparrow^j$)
(that j has a liability right concerning k's action A means that if k performs the permitted action A then k will have to perform another action B for the benefit of j)

The idea of a liability right could be further specified by requiring that the normative connection above haa the function of ensuring the compensation of the rightholder (or that action B consists in providing such a compensation), but we shall not pursue this further.

20 Resultive Declarations

A most important legal notion is provided by the idea a *resultive declaration*, by which we mean a statements of a legal outcome, which is intended to produce that very outcome. This idea, to which we shall also refer by using the term *declaration* without further specifications, is a very general one, which can take different forms according to the content of the declaration, and to the nature of its authors.[26] The outcome may consist in a particular legal determination, like the determination by a police officer that Tom is obliged to stop his car, or the contractual determination by Tom and Mary that Mary acquires the property of Tom's car and has to pay Tom a price of €20,000. It may also consist in a general determination, like a teacher's statement that

[26]This idea corresponds to the traditional notion of a legal transaction or act of the law (in German *Rechtsgeschäft*), a notion which has played an important role in continental legal doctrine, though we would expand its scope to public law, so as to include administrative and legislative acts. For a formal characterisation of the notion of a declaration, see Gelati et al. 2002, for a discussion of its legal significance, see Sartor 2005, chapter 23, where this notion is expressed though the term "proclamation".

students are forbidden from looking at each other's essays. It may be a conditional determination, like a legislator's determination that when one is in a public space one is forbidden to smoke.

Our definition of a resultive declaration abstracts from every particular content and author, being centred upon the functional link between a statement and its intended normative effect. It is also independent of the way in which we construct the intended effect of a statement, since by "intended effect" we can mean the real intention of the author of the declaration (a psychological attitude of the author), but also the meaning ascribed to it by the counterpart (a psychological attitude of the counterpart), or even the meaning that is or should be ascribed to it according to linguistic or social conventions (a social fact).[27]

Definition 20.1 *Resultive declaration. We say that* j declares A*, and we write* $Does_j$*[declare* A*], abbreviated as* $Decl_j A$ *to mean the following:*

1. j *states a normative determination* A*, and*
2. *this statement has the function to realise* A *through the very action of stating* A*.*

The declaration of A may be viewed as an *attempt* to achieve A, an attempt which will not necessarily be successful. For the declaration to be successful (for it to produce its result), it is necessary that the normative system *recognises* the declaration, namely, that the declared result takes place, as a normative outcome of the declaration. As we shall see in the following paragraph, this requires an appropriate normative conditional, namely, a *declaration rule*, giving effect to the declaration.

We can distinguish different kinds of declarations according to their particular content (the kind of normative proposition which is proclaimed), and in particular according to the temporal characterisation of the declaration's content. In this way, through the unique concept of a declaration, we can model speech acts having different functions:

1. $Decl_j$(*it starts that* [***Obl*** $Does_j A$]): j declares that j's obligation to do A starts (promise).
2. $Decl_j$(*it starts that* [***Obl*** $Does_k A$]): j declares that k's obligation to do A starts (command).
3. $Decl_j$(*it finishes that* [***Obl*** $Does_j A$]): j declares that j's obligation to do A terminates (withdrawal of a promise).
4. $Decl_j$(*it finishes that* [***Obl*** $Does_k A$]): j declares that k's obligation to do A terminates (withdrawal of a command).
5. $Decl_j$(*it finishes that* [j owns o] AND *it starts that* [k owns o]): j declares that j's ownership of o terminates while k's starts (transferral of ownership, donation).

An analysis of the temporal aspects of declarations goes beyond the purpose of the present work. In fact, to model such aspects we need to integrate the explicit content of a declaration with various default assumptions. First of all, when a declaration concerns a certain normative state of affairs ("this is yours", "you shall pay a price of €1000"), this state of affairs is usually meant to start at the time of the declaration. Similarly, when a declaration concerns an action or an event, this is usually meant to take place at the time of the declaration ("I donate you this book"). However, such times can also be procrastinated according to a specific indication (internal to the

[27]Thus, we take a neutral position with regard to the issue of whether the meaning of a declarative speech is psycho-interactively (through the mutual recognition of intentions) or institutionally established. As a matter of fact, we believe that both aspects may be present, in different proportions, in different circumstances and kinds of declarations (see Strawson 1964).

declaration or external to it) or according to general rules, like the norm that Italian law texts enter into force 20 days after their promulgation. Different temporal assumptions may govern different contents of a complex declaration. Consider for instance a piece of Italian legislation containing (among other things) the following sentences: (*a*) telephone companies are obliged to keep a log of any telephone call for at least 6 months, (*b*) the new telecommunication authority is instituted, (*c*) Section 2.1 of the telecommunication statute is abrogated from 2 June 2006. Clearly, as a result of this piece of legislation, telephone providers will initiate to have such an obligation (20 days after promulgation), the institution of the telephone authority will happen (20 days after promulgation), and the abrogation of section 2.1 of the telecommunication statute will happen (on 2 June 2006).

21 The Logic of Declarations and the Representation of Declaration Rules

The normative recognition of a declaration consists in the fact that declaration's content gets realised, as a normative effect of the declaration itself:[28]

- if the content is an event-description (a seller and a buyer: "through this contact, j's house is transferred to k for the price of €1,000,000"), then this event takes place ;
- if this content is a state-description (a creditor to her debtor: "you are free from your obligation to me"), then this state is realised.
- if this content is a normative conditional (a father to his child: "whenever you get a good mark, I will be obliged to give you €10"), then the conditional holds, determining the consequent effect whenever the antecedent is verified.

Thus, the inference that needs to be performed with regard to a declarations consist in endorsing the content of the declaration, on the basis of the fact that the declaration was performed and of a declaration rule giving effect to the declaration. This requires a declaration rule, namely, a normative conditional according to which the declaration determines its intended normative effect.

Such rules can be represented in different ways. Let us consider the simplest and most wide-scope instance of a declaration rule, namely a rule conferring a general normative power to a Parliament: "whatever normative proposition is stated by the Parliament has the force of law" (for the sake of simplicity we do not consider various procedural and substantive requirements and constraints Parliament needs to comply with).[29]

The most immediate way to express such a rule is the following (we assume that variable φ ranges over normative propositions):

[28]The analysis of declarations needs to include an additional level, if we consider that a declaration primarily consists in the utterance of certain words, which need to be interpreted, according to various criteria, in order to determine the normative content declaration. Thus we may want to characterise a declaration as the production of a binding text, namely, a text whose correct interpretation determines its normative content. Though the discussion of the link between the textual content of a declaration (the text of a contract, or of a law) and its normative content is a fundamental aspect of legal reasoning (the issue of legal interpretation), I shall not pursue this idea further (see Sartor 2005, chap. 25).

[29]An autocratic parallel to the parliamentary rule would be:"that which seems good to the emperor has [. . .] the force of law" ([Q]uod principi placuit legis habet vigorem, Justinian's Digest, 1.2).

FORANY (φ) IF $Decl_{\{Parliament\}}\varphi$ THEN^n φ
(for any φ, if the Parliament declares φ, then φ)

Then, given that the Parliament made the following statement:

$Decl_{\{Parliament\}}$[it is forbidden to smoke in public spaces]

we can immediately detach the declaration's content, namely, we can conclude that [it is forbidden to smoke in public spaces].

This representation of such declarations unfortunately incurs in the problem that the quantified variable φ in a declaration rule, besides being an argument of the predicate $Decl$, also is a constituent propositions, tied to the propositional connective THEN . This is questionable not only with regard to logical semantics (where usually variables only refer to objects in the domain of the discourse, while connectives only apply to propositions), but also with regard to linguistic intuition: the literal translation of the absolutist rule would provide quite an inelegant sentence: "for everything, if the Parliament declares it, then it."[30]

One solution this problem consist in using a meta-linguistic predicate like "it is binding" (as in Sartor 2005) or "it is valid", and assuming that a proposition applying this predicate to a normative proposition φ is equivalent to φ itself, namely, in assuming that for any (non paradoxical)[31] normative proposition φ it holds that:

it is valid that $\varphi \equiv \varphi$

so that *it is valid that* φ and φ can be derived one from the other.[32] According to this strategy, the general rule giving effect to any declaration of Parliament, would be expressed as

FORANY (φ) IF $Decl_{\{Parliament\}}\varphi$ THEN^n *it is valid that* φ
(for any φ, if Parliament declares φ, then *it is valid that* φ)

Thus from the Parliament's statement that "it is forbidden to smoke in public spaces" we would first infer that the normative proposition "it is forbidden to smoke in public spaces" is legally valid, which would lead us to conclude that indeed "it is forbidden to smoke in public spaces".

A weaker version of this idea consists in assuming that there is no equivalence, but rather an implication between the legal validity (bindingness) of a proposition φ and the fact that it holds according to the law:

[30]The same problems also occur with regard to non-normative propositions. It would be odd to express that idea that Einstein was always right by saying: "for every proposition ψ, if Einstein said ψ then ψ", that is, "for any proposition, if Einstein stated it, than it". We usually avoid this by using the predicate "true" (or another similar expression, like "it is the case"), which transforms propositions into objects we can speak about: we transform "for any proposition, if Einstein stated it, than it" into "for any proposition, if Einstein stated it, than it is true (it is the case)". Such a representation needs to be combined with an inference rule, or an axiom schema, which enables us to infer ψ from "ψ is true (is the case)". This function of the "true" predicate is stressed by prosentential or minimalist approaches (see Horwich 1998).

[31]I add this specification, since a self-referring proposition, namely a proposition "p: proposition p is not valid" would determine the well know liar's paradox: if it is valid that p then p is not valid (from left to right); if p is not valid, then it is valid that p (from right to left).

[32]This usage of the term "valid" corresponds to the abstract way in which this term is sometimes employed in legal theory, namely, just to qualify a normative proposition as holding from the legal perspective. Such usage does not entail (nor contradicts) any ontological or other assumptions concerning the existence of valid norms as ideal, social, or institutional objects.

IF *it is valid that* φ THEN φ

This corresponds to the assumption that the sources of the law produce valid norms, which in their turn, determine what is the case according to the law (see Kelsen 1967, Hart 1961).

A less committed way of expressing the connection between the content of a declaration and the resulting normative state of affairs could consist in making the idea of causality explicit which is implicit in normative conditionals, namely, in splitting, within a normative conditional, the IF ... THEN component (to be understood as expressing a general idea of defeasible conditionality) and a causal or resultive component *it is determined that* (such that *it is determined that* φ entails φ). Then the above declaration rule becomes:

FORANY (φ) IF $Decl_{\{Parliament\}}\varphi$ THEN *it is determined that* φ
(for any φ, if Parliament declares φ, then it is legally determined that φ)

Another strategy consists in introducing dummy actions, rather then dummy predicates. For instance, according to Jones and Sergot (1996), declaration rules state that the declaration of φ counts as the action of realising φ:

FORANY (φ)
$Decl_{\{Parliament\}}\varphi$ COUNTS-AS $Brings_{\{Parliament\}}\varphi$
(for any φ, if $Parliament$ declares φ, then $Parliament$ brings it about that φ)

According to the latter representation, given that the Parliament has declared that "it is forbidden to smoke in public spaces" we conclude that the Parliament has brought it about that it is forbidden to smoke in public spaces, and that therefore it is forbidden to smoke in public spaces (given that $Brings_j\varphi$ entails φ). We would reason in a similar way if productive agency was attributed to the institution to which the norm belongs (the Italian state or the Italian legal systems) rather then to the norm-producing organ (the Italian Parliament).

In the following, we shall follow the first strategy for representing declaration rules, namely, we shall assume that effective declarations determine the validity of their content. However, in the analysis of legal language and knowledge we do not need to commit ourselves to a particular representation of declaration rules as being the only theoretically correct choice. As legal language expresses such rules in different ways, according to simplicity and opportunity, so we may provide different formal representations for different purposes and applications.

22 Declarative Powers

As we have seen above, normative conditionals having an action-precondition can be viewed as establishing legal powers. In particular, whenever a normative conditional enables a declaration to produce its intended effects, there is a *declarative power*.

Definition 22.1 *Declarative power. We say that j has the* declarative power *to realize A to mean that if j declares A, then it is legally valid that A.*

DeclPow$_j A \equiv$ IF $Decl_j A$ THEN^n *it is valid that* A

For instance, the following declaration rule expresses the principle that one can free one's debtors from their obligations toward oneself:

FORANY (x, y, φ)
DeclPow$_x$ (*it finishes that* ***Obl***$^x\, Does_y \varphi$)
(for any persons x and y, and any action φ, x has the declarative power to terminate y's obligation toward x to do φ)

This expression can be unpacked in the conditional statement that if one makes the terminating declaration, then according to the law the obligation ends:

FORANY (x, y, φ)
IF $Decl_x$ (*it finishes that* ***Obl***$^x\, Does_y \varphi$)
THEN^n *it is valid that* (*it finishes that* ***Obl***$^x\, Does_y \varphi$)
(for any persons x and y, and any action φ, if x declares that y's obligation toward x finishes, then it is legally valid that this obligation finishes)

Thus, when creditor j declares that debtor k is no longer obliged toward j, we can conclude that it holds for the law (it is legally valid) that there is no longer such obligation and that therefore k is no longer obliged toward j.

Our notion of a declaration does not determine what actions count as a declarations to a certain effect, namely as statements intended to produce a certain legal result via the very declaration of that result. This issue needs primarily to be answered by referring to what appears to be the intention of the author of the declaration, according to the context in which the declaration has taken place (and the way in which the declaration and its context have, and should have been, perceived by the addressee of the declaration, and the way in which the author has, should have, anticipated such perception). It can also to be answered also by referring to the meaning that is usually given, in a certain social context, to declarations of a certain kind. Finally, it can be answered according to specific legal or contractual rules, which state that an action of a certain type counts as (signals) a declaration having a certain content. Since such rules attribute to certain actions the meaning of being a certain kind of declaration (or being a certain component of a declaration, like the acceptance of a contractual offer), we can say that they make those actions (possibly regardless of the intention of the agent) into a signal having a certain legal meaning.[33]

As an example of legal rules to this effect, consider the rule contained in the Italian Civil Code (Art. 1926) saying that when an insurer proposes a modification of an insurance contract, the silence of the insuree counts as acceptance of such a modification, or the rule (Art. 1336) saying that an offer to the public, containing all the elements of a contract, counts as a contractual proposal (which can thus be accepted by any member of the public, producing a valid contract). Similarly, as far as contractual rules are concerned, consider the statement that "use of this Web site constitutes acceptance of our Agreement and Privacy Policy" (as indicated in many commercial Web sites), or the statement that "by breaking the seal on this disk envelope you accept all the terms of the following licence ..." (as indicated in the so-called shrink-wrap licences). We can represent such statements as count-as (emergence) rules, as indicated above. For instance, the latter rules can be represented as follows:

[33]On institutional signalling, see Jones and Parent (2003). A detailed examination of this phenomenon in the law would require us to draw various specification and distinctions: sometimes an action signals a certain meaning regardless of the intention of its author and of the interpretation of its addressees; in other cases an action has a certain meaning unless it is proved that the author had a different intention (which was perceivable to the addressee); in some cases such a proof needs to be provided in particular ways; and so on. As an example of such complexity, consider the rule of the Italian Civil Code (Art. 684) saying that "a handwritten will (*testamento olografo*) which has been destroyed, torn, or cancelled, wholly or partly is considered to have been wholly or partly revoked, unless it is proved that the will was destroyed, torn, or cancelled by a person different from the testator, or it is proved that the testator did not have the intention to revoke the will."

FORANY (x)
  $Does_x$ [use this Web site]
  COUNTS-AS
  $Does_x$ [accept our Agreement and Privacy Policy]
FORANY (x)
  $Does_x$ [break the seal of this disk envelope]
  COUNTS-AS
  $Does_x$ [accept all the terms of the following licence]

23 Sources of Law

The notion of a declaration does not cover all facts producing legally valid normative propositions. To capture all such facts, we need the more general concepts of a *source of law*.

Definition 23.1 *Source of law. By a* source of law *we mean any fact that embeds normative propositions and makes them legally valid by virtue of such an embedment.*

Obviously, for a fact to be a source of law, there must be a source-norm to this effect, that is, a normative conditional according to which the fact in question determines the legal effectiveness of the proposition it embeds. Here are a few possible examples of such rules (it is a contingent aspect of normative systems whether they contain such rules, and thus whether they recognise certain sources of law).

FORANY (φ)
  IF [φ is practised as a local custom]
  THEN^n *it is valid that* φ
FORANY (φ)
  IF [φ is practised as an international custom]
  THEN^n *it is valid that* φ
FORANY (φ)
  IF *it happens that* [a high court has decided a case according to ratio decidendi φ]
  THEN^n *it is valid that* φ
FORANY (φ)
  IF [φ represents the unanimous opinion of all jurisconsults]
  THEN^n *it is valid that* φ

As an example of a legal inference based upon a source of the law, suppose that the rule that chemical weapons are forbidden is practised as an international custom (as many believe). Then, according to the our second source-norms, we can conclude that the rule that chemical weapons are forbidden is legally valid, so that chemical weapons are indeed forbidden.

For the sake of simplicity we have not explicitly represented the temporal aspects of the above source-rules. However, we can observe that some sources of the law are events (like the issuing of a high court decision), while others are state of affairs (like the practice of a custom).

Source-events usually determine constitutive or deontic initiation: the embedded normative state of affairs starts to hold when the source-event happens (and continues until a terminating event takes place). For instance, in common-law jurisdictions a *ratio-decidendi* continues to hold

(as a valid normative proposition) after the judicial decision stating it has taken place, until that decision is overruled by a subsequent precedent.

Source-states usually determine constitutive or deontic emergence: the embedded normative state of affairs holds as long as the source-event continues. For instance the normative proposition embedded in a custom continues to hold (to be valid) only as long as the custom continues to be practised.

24 Conclusion

We hope that this overview of basic normative concepts may convince the reader to accept some the following statements.

First of all, that it is useful to go beyond the usual ideas of obligation and permission, and provide legal reasoning with a larger set of normative positions.

Secondly, that it is possible to provide a coherent and integrated account of the different normative modalities.

Thirdly, that this account cannot be fully grounded on the ideas of obligation and permission. A different set of foundations is required for the notion of power, which needs to be connected to legal dynamics, as grounded on conditionality.

Our analysis only provides a starting point, a preliminary analysis and discussion that may be useful for more accurate and formally defined representations of normative modalities. There are indeed many further aspects that need to be addressed.

We need to consider the possibility of reifying normative modalities, positions, relations, propositions (on reification of normative ideas, see for instance McCarty 1989 and Hage 1997). Reification should allows us to individualise instances of legal concepts: not only can s we ay say that it is obligatory that j does A, but we can also speak of an obligation of j to do A, which is an object having a particular source, particular warranties, and particular limitations, which can distinguished from other obligations of j (possibly having the same content A), can be transferred to others, and so on. Similarly, we say not only that precondition P determines conclusion C, but also that there is a rule to this effect, having being issued by a particular authority, with a certain procedure, having been modified at a certain time, and so on.

We need also to better understand the process through which normative positions start to hold (exist) and terminate their existence, and the connection between the positions themselves and the events and acts originating them. This requires finding a precise characterisation of various originating events and acts, and a characterisation of their impact on the corresponding normative positions. In particular, it may be useful to cluster legal knowledge around certain abstract features of the concerned acts and facts (being effective or ineffective, voidable or voided, opposable or not to certain parties or in certain contexts, and so on), and to associate normative effects to the fact that an act is so qualified. For instance, (Artikis et al. 2003) rather then making the effects of an act depend from the performance of the act in the presence of certain conditions, make such conditions determine the "validity" of the act, and link the act's effects to its valid performance.

Finally, we need to consider the role of normative positions within legal institutions. In particular the current discussion on institutions, and particularly of electronic (virtual, computational) institutions, could profit considerably from an adequate theory of normative positions, capable of supporting the representation of normative relations and of the allocation of powers (on electronic institutions, see, for instance, Esteva et al. 2001). At the same time, only the abil-

ity to provide the basic building blocks of an institution can prove the adequacy of a theory of normative positions.

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