

# INTEGRATED COHERENTISM

Jaap Hage

version: 11/03/2011

## 1 Introduction

As Raz [1994] pointed out, coherence theories of the law are popular. To define what coherence means in general, or in connection with the law, often three dimensions of coherence are mentioned. A coherent theory (in the broad sense of coherence) must be consistent, comprehensive and coherent in the narrow sense of coherence [Bracker 2000, p. 167]. At first sight, the notions of consistency and comprehensiveness are sufficiently clear. The third notion, coherence in the narrow sense, also described as mutual support, seems to be more recalcitrant. Alexy and Peczenik [1990], for instance, mention ten factors relevant for coherence, and at least six of them seem to deal with coherence in the narrow sense. These six include the number of supportive relations between elements of the theory, the length of the supportive chains, whether there exists a connection between the supportive chains, whether the elements of the theory reciprocally justify each other. Some of these factors contain even subfactors, and many of them merely have a prima facie status. It is not for no reason that Thagard complains that ‘the nature of coherence is usually left vague’ [Thagard e.a. 2002]. Coherence in the narrow sense appears to be a rather complex notion, complex to such a degree that coherentism loses much of its intuitive attractiveness.

This paper consists of two parts. In part I, I will propose a simple standard for coherence. This standard, called *integrated coherence*, differs from most other standards because it considers the real standards for coherence as integral parts of the coherent theory. A coherent theory in the sense of integrated coherence is a theory that satisfies its own standards. I discuss some demands that a suitable coherence theory must satisfy, and give an outline of the idea of integrated coherence. In part II, I will illustrate by means of an example what integrated coherence amounts to for an issue that is particularly important in connection with the law, namely the relation between a set of principles and the rules that should be adopted as means to realize these principles.

## Part I

### 2 Deductive support

Let us start with the hypothesis that the fashionable view is correct and that a theory is coherent if it is consistent and comprehensive, and if its elements mutually support each other. Let us, moreover, assume for a while that the notions of consistency and comprehensiveness are unproblematic, and focus on the idea that the elements of a comprehensive theory mutually support each other. The question that must be answered then is what this mutual support involves.

A simple view of support would be that an element of a theory is supported by the rest of the theory if it can be deduced from the rest. Let us call this view the deductive support theory. That the deductive support theory is unattractive becomes clear from a simple example:

#### Theory 1

1. The butler murdered Lord Hard.

2. The butler had a motive.
3. The butler murdered Lord Hard and the butler had a motive.

The elements 1 and 2 of this theory together deductively support element 3, while element 3 deductively supports both the elements 1 and 2. This small theory would therefore be coherent in the narrow sense (strong mutual support), but it is not a very interesting form of support, because element 3 merely repeats the elements 1 and 2.<sup>1</sup> Although the triviality of the support relation may be less plain if the deductive chains between the elements of a theory are longer, deductive support between elements of a theory will always be trivial in the sense illustrated by the example above, because deductively valid inferences are in general reformulations of information contained in the premises of the argument.<sup>2</sup>

Another problem with deductive support is that it can only be applied to theories that contain only elements with truth values. Deductive validity of arguments is defined in terms of the truth values of the premises and the conclusion. Although rule and principle applying arguments superficially seem to be of the same form as some kinds of deductively valid arguments, this appearance is deceptive, if only because rules and principles lack truth values.<sup>3</sup> Therefore, if coherentism is to be applied to legal theories too, the support relation must not be confined to deductive support only.

It turns out that the mutual support needed for a coherent theory cannot be deductive support.<sup>4</sup> But what else can it be? Let us look at a theory of coherence that was elaborated by Thagard *cum suis*, according to which coherence is a form of constraint satisfaction.

### 3 Coherence as constraint satisfaction

In a number of publications<sup>5</sup>, Thagard developed the theory of knowledge as constraint satisfaction. In Thagard and Verbeugt 1998, this theory of coherence is summarised as follows:

- a. Elements are representations such as concepts, propositions, parts of images, goals, actions, and so on.
- b. Elements can cohere (fit together) or incohere (resist fitting together). Coherence relations include explanation, deduction, facilitation, association, and so on. Incoherence relations include inconsistency, incompatibility, and negative association.
- c. If two elements cohere, there is a positive constraint between them. If two elements incohere, there is a negative constraint between them.
- d. Elements are to be divided into ones that are accepted and ones that are rejected.
- e. A positive constraint between two elements can be satisfied either by accepting both of the elements or by rejecting both of the elements.
- f. A negative constraint between two elements can be satisfied only by accepting one element and rejecting the other.
- g. The coherence problem consists of dividing a set of elements into accepted and rejected sets in a way that satisfies the most constraints.

---

<sup>1</sup> Cf. also Alexy and Peczenik 1990, note 5.

<sup>2</sup> This was already pointed out forcefully in Toulmin 1958, p. 123f. See also my discussion of the container metaphor of reasoning in Hage 1997, p. 245f. If the notion of a deductive argument is broadened to include arguments the conclusion of which must be true if the premises are true, even if this necessity is not based on the meanings of so-called 'logical words', the thesis that deductive arguments are based on reshuffling of information might be in need of amendment.

<sup>3</sup> This subject is too complex to go into details here. The interested reader is referred to Hage 1997, p. 78f.

<sup>4</sup> Other objections against what he calls 'coherence as implication' are formulated in Lehrer 2000, p. 100/101.

<sup>5</sup> Amongst others Thagard 1992, Thagard and Verbeugt 1998, Thagard 1999 and Thagard e.a., *Knowledge and coherence*.

Let me illustrate this theory by means of an example from the field of judicial proof. Suppose that Lord Hard was found in his room, murdered by means of a knife. The butler was seen entering Lord Hard’s room. Moreover, the butler had a motive to murder Lord Hard, because his Lordship had seduced the butler’s daughter Harriet. However, the butler has a phobia for knives, which makes it less probable that he killed the Lord with a knife. Lady Maureen, Lord Hard’s wife, had a motive for murder too, because knowing of the seduction, she suffered from heavy jealousy. The butler is accused of heaving murdered the Lord, and the issue at stake is whether he actually murdered the Lord.

In order to depict the constraints between the different beliefs that play a role in this case, I will number them:

1. The butler was seen entering Lord Hard’s room.
2. Lord Hard seduced the butler’s daughter.
3. The butler had a motive to murder Lord Hard.
4. The butler had a phobia for knives.
5. Lady Maureen was jealous with regard to the Lord.
6. Lady Maureen butler had a motive to murder Lord Hard.
7. Lady Maureen murdered Lord Hard with a knife.
8. The butler murdered Lord Hard with a knife.

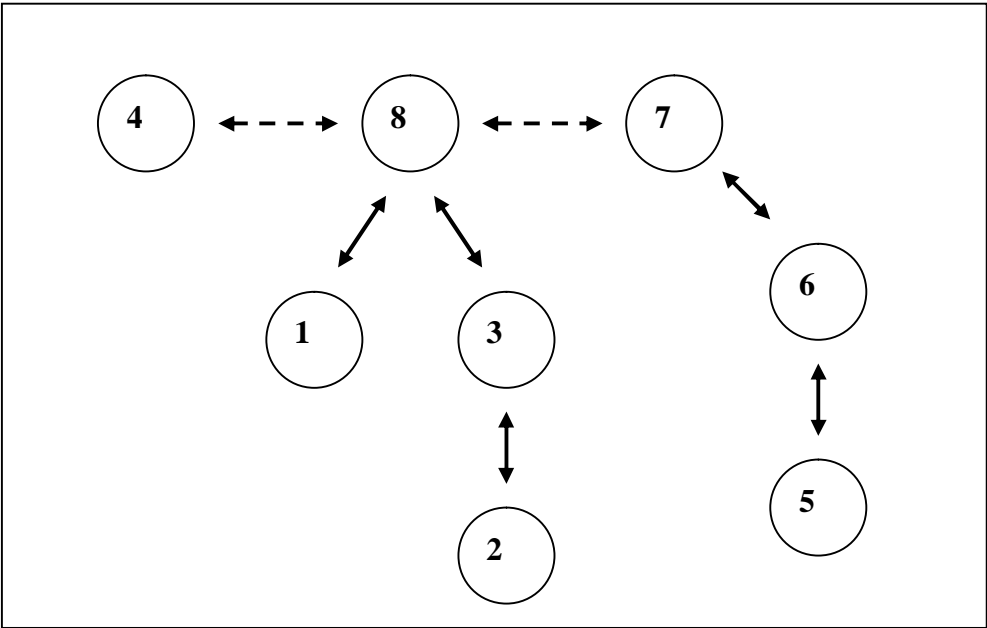


Figure 1

The circles in this picture represent the possible beliefs in a theory about the murder case. The double-headed arrows represent constraints between these beliefs. Arrows with a closed line represent positive constraints, arrows with a dotted line represent negative constraints. Initially the beliefs 1, 2, 4 and 5 have a positive status. By repeatedly increasing the status of the beliefs that are positively connected to another belief with a positive status, or negatively connected to a belief with a negative status, and decreasing the status of the other beliefs, in the end an equilibrium results.<sup>6</sup> This equilibrium divides the beliefs into two categories, beliefs with a positive status, which are accepted, and beliefs with a negative status, which are

<sup>6</sup> I am implicitly applying the connectionist treatment of the network of beliefs, that Thagard applies in his publications. More on this approach can be found in Rumelhart and McClelland 1986, or in modern introductions to artificial intelligence or cognitive science.

rejected. The resulting theory is coherent, because the beliefs and disbeliefs mutually support each other.

This theory of coherence as constraints satisfaction has several advantages. First it leaves the nature of the elements in a coherent set open. This makes it possible for the theory to deal with elements that have no truth value, such as rules, principles and values, and even concepts and parts of images. For legal application, it is crucial that a coherence theory can deal with elements that are not bearers of truth values.

Second the theory gives a precise specification of what counts as support. Support is a positive constraint, and negative support is a negative constraint. This would still be rather vague, were there not the third advantage of coherence as constraint satisfaction, namely that it can be interpreted in terms of neural nets (connectionism) and that there are algorithms available for computing coherence.

Coherence as constraint satisfaction is a promising version of a coherence theory. Nevertheless I think that the theory in the version presented above should be rejected as a theory of legal coherence, if only because an acceptable coherence theory should treat the support relations between the elements as elements of the theory.

Let me return to Lord Hard's case to illustrate what I mean and consider the relation between the belief that the butler was seen entering Lord Hard's room and the belief that the butler murdered Lord Hard. At first sight there is a positive constraint between these two beliefs. But what to think of the case in which one also believes that Harriet saw Lord Hard alive and well after her father, the butler, left his room? If Harriet saw Lord Hard after her father left the Lord's room, the link between the belief that the butler was seen entering Lord Hard's room and the belief that the butler murdered Lord Hard loses its force. So the presence of this link is negatively connected to the belief that Harriet saw Lord Hard alive, after her father left his room. This connection between the belief that Harriet saw the Lord, and the constraint between the beliefs about the butler entering the room and murdering the Lord, should be part of the theory.

More theoretically this means that one would like positive and negative constraints to be treated as elements of the theory. Moreover, it should be possible to have positive and negative constraints, not only between beliefs mutually, but also between beliefs and constraints. This is illustrated by the following figure in which constraints are depicted as boxes on lines and which illustrates how there can be a constraint between a belief and a constraint:

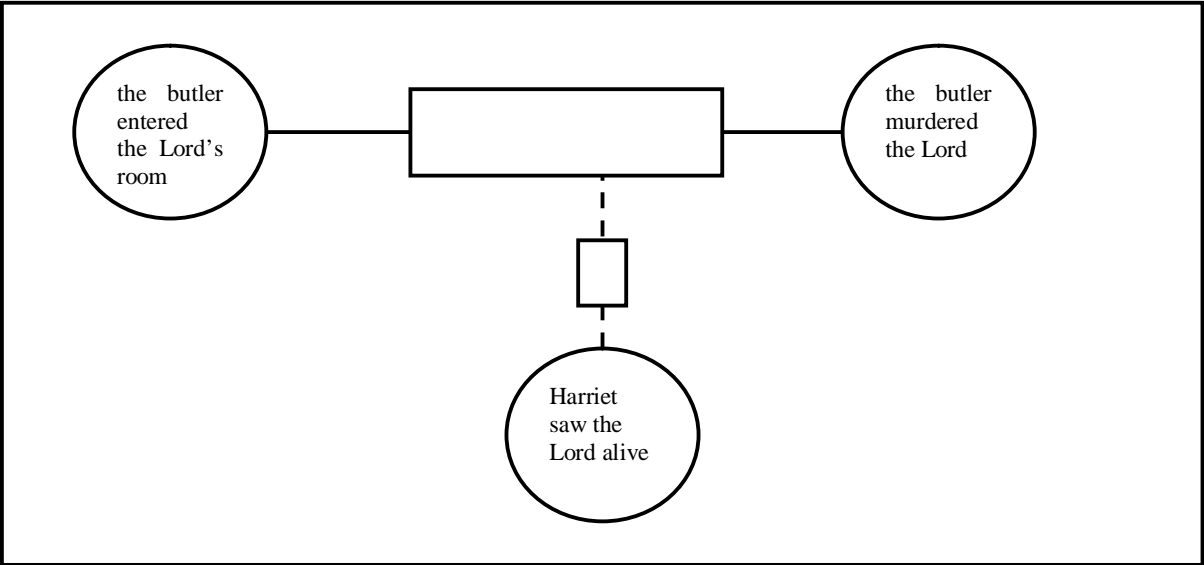


Figure 2

## 4 A case study

Before proposing an alternative for Thagard's theory of coherence as constraint satisfaction, I want to pay some more attention to the example of the murder upon Lord Hard. One of the things I want to illustrate is how the strive for coherence almost automatically leads to making the theory more and more comprehensive. That is why I will start with a very small theory:

### Theory 1

1. The butler had a motive to murder Lord Hard.
2. The butler was seen entering Lord Hard's room.
3. The butler murdered Lord Hard.

Let us assume that neither one of these sentences is above doubt. For instance, the person who was seen entering Lord Hard's room might have been somebody else. It is understandable that the butler had a motive (revenge for the seduction of his daughter by Lord Hard), but the butler might have been unmoved by such all too human passions. And finally, it is not certain that the butler murdered Lord Hard, although it is made probable by the evidence. Although none of the sentences is above doubt, they mutually support each other and together they seem to form a coherent theory.

### 4.1 Contributive reasons

The question that must be answered now is what the nature of this support is, since it is not deductive support. The support offered by deductively valid arguments is that the conclusion of such arguments must be true if the premises are true. A weaker notion of support is that of a contributive reason for (believing) a conclusion.<sup>7</sup> The presence of such a reason makes the conclusion more believable than it was without the reason. There is, however, no guarantee that the conclusion is true if a contributive reason for this conclusion obtains. A contributive reason may in itself be strong enough to justify belief in the conclusion if there are no counter reasons present, but this needs not be the case. For instance, the mere fact that the butler had a motive for murdering Lord Hard is not sufficient to believe that he actually did the murdering. The same counts for the contributive reason that the butler was seen entering Lord Hard's room. Let us assume, however, that taken together these two contributive reasons justify the conclusion that the butler murdered Lord Hard.

The presence of contributive reasons, no matter how many, does not guarantee the truth of the conclusion for which they plead. It does not even guarantee that the belief in the conclusion is justified, because whether such a belief would be justified does not only depend on the reasons pleading for the conclusion, but also on the reasons pleading against it. Suppose, for instance, that Lord Hard would have died soon anyway and that the butler would have inherited a pretty amount of money from the Lord, an inheritance which he would lose if it were discovered that he committed the murder. This would be a contributive reason against the conclusion that the butler murdered Lord Harding. There may be even more contributive reasons against this conclusion, for instance that the Lord was murdered by means of a knife and that the butler had a phobia for knives. Whether a conclusion is justified on the basis of contributive reasons depends on the balance of the contributive reasons for this conclusion and the contributive reasons against it.<sup>8</sup>

---

<sup>7</sup> Here I assume that the reasons are all reasons for believing a conclusion. The distinctions between reasons for belief, reasons for acting and constitutive reasons is discussed in Hage 1997, p. 59f.

<sup>8</sup> There are even more complications because some facts make that other facts that would normally be reasons for or against a conclusion lose their reason giving force, or change the relative weight of reasons. I will ignore these logical details here.

The relation between a contributive reason and its conclusion is comparable to one direction (from reason to conclusion, not the other way round) of a positive constraint in the sense of Thagard's theory. An important point in connection with legal theories of coherence is that contributive reasons are reasons and can as such be made explicit and adduced in an argument. Positive constraints are a much broader category, which contains also connections, such as association, that cannot be adduced in a rational discussion. All connections in a coherent legal theory must be on a level at which rationality plays a role, because it must be possible to adduce them in a legal argument.

#### 4.2 Missing links

Given the notions of contributive reasons for and against a conclusion, the second example can be given a more thorough analysis. The fact that the butler had a motive to murder Lord Hard is a contributive reason for the conclusion that he did the murdering.

The same holds for the relation between the fact that the butler was seen entering Lord Hard's room and the conclusion the butler murdered the Lord, but there are some complications here. The mere fact that the butler was *seen* entering Lord Hard's room is hardly a reason why the butler murdered Lord Hard. It is, however, a reason to believe that the butler in fact entered the room. And this fact is in turn a reason to believe that the butler had the occasion to murder the Lord. It is this last fact that is the immediate reason to believe that the butler murdered Lord Hard.<sup>9</sup>

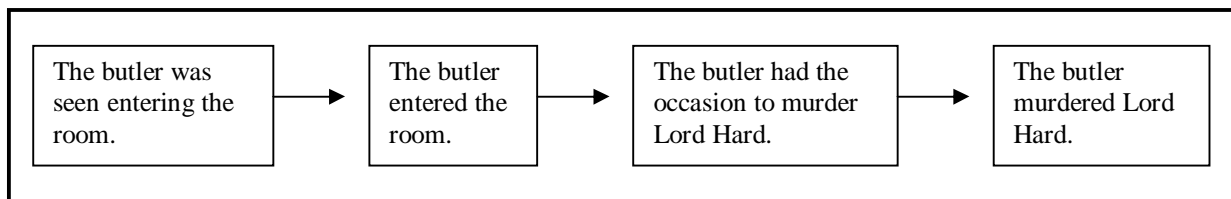


Figure 3

If we compare this chain with the small theory of our example, we find that the second and third link of the chain are missing in the theory. Suppose that somebody believes the theory, but suspends belief in the second and the third link of the chain, or - even worse - believes their negations. Would we then still say that the theory is coherent? The support relation between the second and the third sentence of the theory is lost, and with it the coherence of the theory. The lesson to draw from this is that theory 1 as such is not very coherent, but that it is part of a larger and more coherent theory that includes the second and the third link of the chain:

#### Theory 2

1. The butler had a motive to murder Lord Hard.
- 2a. The butler was seen entering Lord Hard's room.
- 2b. The butler entered the room.
- 2c. The butler had the occasion to murder Lord Hard.
3. The butler murdered Lord Hard.

#### 4.3 Connections as elements of the theory

This elaboration of theory 1 illustrates how a coherent set of beliefs has a tendency to become more comprehensive. But there is more to come. Suppose that somebody holds the beliefs of theory 2, but did not believe that there is any connection between the elements of this set.

<sup>9</sup> There are other ways to construct a chain of reasons leading to the conclusion that the butler murdered Lord Hard. The crucial point here is not *which* chain of chain is made but rather *that* a chain is made.

Would we then say that his belief set was coherent? Presumably not. The coherence of the set lies in the assumed connection between the elements. The belief in sentence 3 should be based on the beliefs in the sentences 1 and 2c. This assumption of relevance is not a factual belief as expressed in the sentences 1, 2a-c, and 3, but should nevertheless somehow be part of the coherent theory, because its denial or even suspension of the assumption makes the theory incoherent. Theory 2 therefore naturally expands to the more coherent

### **Theory 3**

1. The butler had a motive to murder Lord Hard.
- 2a. The butler was seen entering Lord Hard's room.
- 2b. The butler entered the room.
- 2c. The butler had the occasion to murder Lord Hard.
3. The butler murdered Lord Hard.
- 4a. 1 expresses a contributive reason for believing 3.
- 4b. 2a expresses a contributive reason for believing 2b.
- 4c. 2b expresses a contributive reason for believing 2c.
- 4d. 2c expresses a contributive reason for believing 3.
- 4e. 3 expresses a contributive reason for believing 1, (2a, 2b), and 2c.

This is the occasion to make an important observation, namely that a theory not only contains independent beliefs, but also the links between these beliefs. The theory itself indicates that some of its elements are supported by other elements and the other way round.<sup>10</sup> This observation is characteristic for the theory of integrated coherence. The relations between the elements of a theory are not determined by rules or standards outside the theory, but are parts of the theory itself.

#### **4.4 Principles as elements**

Theory 1 turns out to have been not so coherent after all, because it needed expansion to theory 3. However, even additional expansion is necessary, because reasons do not stand on their own. If some concrete fact is a reason for a particular conclusion, similar facts are normally reasons for similar conclusions. Another way to say the same thing is that reasons can be generalised. The result of such a generalisation is a principle that declares facts like the current reason are in general reasons for conclusions like the current conclusion. In the present case, for instance, one principle would run that if somebody has a motive for murdering somebody else, this is a reason to believe that the former person murdered the latter. Such a principle is not a statement which is true or false, but something which is accepted or not. Somebody who accepts such an epistemic principle will normally consider facts that satisfy the condition part of the principle as contributive reasons for conclusions that correspond to the conclusion part of the principle. In fact, accepting the principle and considering a particular kind of facts to be reasons for or against a particular kind of conclusion are two sides of the same medal.<sup>11</sup> Since reasons can be generalised into principles, and since it is incoherent to accept that a particular fact is a reason for accepting a

---

<sup>10</sup> It may seem that a theory need not specify the logical relations between its elements, and that this job can be left to logic. This overlooks, however, that logic is not something that is given independent of one's beliefs. Even a generally accepted form of logic, such as for instance predicate logic, presupposes a theory of what can validly be derived from what, and such a theory requires acceptance just like one's beliefs. See also section 5.

<sup>11</sup> Epistemic principles in the sense discussed here are different from (most) legal principles. In particular they are not ontologically prior to the recognition of certain facts as reasons to believe, while some legal principles are prior to the recognition of facts as legal reasons.

conclusion without accepting the principle underlying this reason<sup>12</sup>, theory 3 must be expanded to make it include the principles underlying the reasons expressed in the sentences 4a-4b:

**Theory 4:**

1. The butler had a motive to murder Lord Hard.
- 2a. The butler was seen entering Lord Hard's room.
- 2b. The butler entered the room.
- 2c. The butler had the occasion to murder Lord Hard.
3. The butler murdered Lord Hard.
- 4a. 1 expresses a contributive reason for believing 3.
- 4b. 2a expresses a contributive reason for believing 2b.
- 4c. 2b expresses a contributive reason for believing 2c.
- 4d. 2c expresses a contributive reason for believing 3.
- 4e. 3 expresses a contributive reason for believing 1, 2a, 2b, and 2c.
- 5a. If somebody has a motive to murder somebody else, this is a contributive reason to believe that the former person murdered the latter.
- 5b. If something was seen happening, this is a contributive reason to believe that this actually happened.
- 5c. If somebody entered the room of a murdered person, the former person had the occasion to murder the latter.<sup>13</sup>
- 5d. If somebody had the occasion to murder somebody else, this is a contributive reason to believe that the former person murdered the latter.
- 5e. If a conclusion of a reason to believe is true, this is a reason to believe the reason for this conclusion.

In particular the principle formulated in 5e is interesting, because it is the principle that underlies so-called abductive arguments.<sup>14</sup> If a fact would explain the occurrence of another fact, the occurrence of this other fact is in turn a reason to believe the explaining fact. The strength of this reason depends on the availability and the plausibility of other explanations. If the murdering of Lord Hard would be explained better by the theory that his wife murdered him out of jealousy, the fact that Lord Hard was murdered provides little support for the beliefs that the butler had a motive and that the butler was seen entering Lord Hard's room.<sup>15</sup> So the coherence of theory 4 presupposes a belief that there is no better explanation for the murdering of Lord Hard than the facts stated in the sentences 1 and 2a-2c. This belief in turn presupposes beliefs about other possible explanations of the murder of Lord Hard and standards for the comparison of the plausibility of different explanations.

The abduction principle formulated in 5e is also interesting because it represents the second direction of the bi-directional constraint in Thagard's sense. The relation of a reason to its conclusion represents the first direction, the abduction principle is, so to speak, the way

---

<sup>12</sup> That this is incoherent presupposes a theory about the 'logical' behaviour of principles, a theory that should be part of a larger coherent theory. For the purpose of the present example, I simply assume that such a theory is already accepted.

<sup>13</sup> This principle does not sound convincing, which illustrates that the argument needs to be elaborated further than this paper allows place for.

<sup>14</sup> Abductive arguments are arguments of the following form:  
Facts like P tend to cause facts like Q.  
A fact like Q occurred.

Therefore: a fact like P occurred.

<sup>15</sup> These two beliefs may nevertheless be true. In the indicated circumstances they only receive little support from the fact that Lord Hard was murdered.



back from the conclusion to the reason that pleads for it. Together they form a bi-directional constraint, in the sense that the presence of the one (normally) pleads for the presence of the other.

Clearly theory 4 is still in need of expansion. In particular it does not take possible reasons against the conclusion that the butler murdered Lord Hard into account. Drawing the conclusion that the butler committed the murder presupposes the balancing of reasons for and against this conclusion, which asks not only for a decision about the relative weight of the reasons, but also on an estimation about the presence of all reasons for and against the conclusion. Most notably it presupposes that one has not only balanced the reasons for a conclusion against the reasons against in ones theory, but also that all relevant reasons are already part of the theory. In other words, the theory must contain all the reasons concerning a conclusion, including their relevance and their relative weight.

However, further elaboration of the theory would require more space than this paper allows. Moreover, the elaboration would probably presuppose still other beliefs, principles or standards which should then be added to the theory, and which would in turn presuppose other beliefs, etc ....

## **5 Conclusions from the case study**

What does the above sequence of theories illustrate? First and foremost, I think, why coherent theories, in the mutual support sense of coherence, must be comprehensive.<sup>16</sup> The elements of a small theory can only support each other if other elements are also accepted. This means that these other elements should also be part of the total belief set. Moreover, the additional elements lead to again other elements, etc .... Comprehensiveness is not only an additional requirement for coherent theories in the broad sense next to coherence in the narrow sense, but rather a presupposition of coherence in the narrow sense. The support relation between the elements of a belief set is weakened, if not destroyed, if the belief set does not also contain additional elements.

This is especially clear from the abduction principle which will be part of most theories. The abduction principle depends for its application on the absence of other, more plausible explanations of the phenomenon that is explained by some reason. Application of the induction principle therefore requires a view of which alternative explanations are available, and a theory of what makes one explanation more plausible than another explanation. Effectively this means that application of the abduction principle presupposes a theory about the nature of explanation and a theory about all facts that would provide possible alternative explanations, and about their relevance.

The second point illustrated by the above sequence of theories is that the strive for a coherent theory is a never-ending enterprise. Every addition to an existing theory is a potential occasion to make new additions. In the end, a coherent theory would be a theory of 'everything'. Theories of everything are not realistic, and the same counts for ideal coherent theories. In the practice of real life reasoning, the strive for coherence functions as a device for local belief revision. By pointing out that a theory in its present version is not coherent, one can move the holder of the theory to amend it, either by deleting elements from it, or by adding new elements. The result of such a change will never be a complete coherent theory, but if everything goes well, it is a more coherent theory. Coherence is not a characteristic that

---

<sup>16</sup> This point was also stressed by Sosa 1989, where he argues that narrow reflective equilibrium, restricted to coherence within a particular domain, 'must be supplemented by wider reflection, at least to the point where we are satisfied that there is no other domain relevant to the topic under consideration' and to which he adds in a footnote that a domain could rarely, if ever, lie in total epistemic isolation.

real theories can possess, but rather a *correctional device* to be used in the never-ending process of updating and (hopefully) improving existing theories.<sup>17</sup>

The insight that coherence is a correctional device is also important for another reason. A common objection to coherence theories is that they cut knowledge off from reality. If beliefs are only tested against other beliefs, the influence of reality on our beliefs would be lost.<sup>18</sup> This objection would be effective if all beliefs in one's stock of beliefs were there on a voluntary basis. However, we hold many of our beliefs spontaneously, and sometimes even unconsciously. Think for instance of beliefs based on sensory perception. If one sees a chair, this will normally lead to the belief that there is a chair. This belief is presumably the direct consequence of seeing the chair, but it is not based on some reason, such as the reason that one believes to see a chair.

These spontaneous beliefs play a role in the construction of a coherent belief set. On the assumption that they somehow derive from reality, they guarantee that the contact between a coherent set of beliefs and reality is not completely lost.<sup>19</sup> It should be noted, however, that the assumption that spontaneous beliefs 'somehow' derive from reality does not imply that these spontaneous beliefs are always true, or even that they are justified. Spontaneous beliefs are merely 'there' and play a role in the construction of a coherent theory. It will often occur that they are abandoned during the process of construction.

In this connection the famous metaphor of Neurath [1932/3] gives a good indication of the role of coherence. According to this metaphor, 'we are like sailors who must rebuild their ship upon the open sea'. We start with a pre-existing body of spontaneous beliefs that is modified in order to make it coherent. Moreover, the process of modification never ends, if only because the entrance of new spontaneous beliefs never ends so long one is able to perceive.<sup>20</sup> Coherence is a correctional device, a goal pursued in the process of processing the body of our beliefs.

The third point that I want to emphasise, and which I already mentioned in connection with Thagard's theory of coherence as constraint satisfaction, is that the connections between the elements of a theory, the constraints in Thagard's theory, are themselves part of the theory in question. A coherent theory is in accordance with constraints that are part of the theory themselves.<sup>21</sup>

This third point is the crucial one for the theory of integrated coherence: the support relations between the elements of a theory are not defined outside the theory, but are part of the very theory. It can also be made by stating that in integrated coherence, logic is part of the coherent theory, and not something outside of it. In this way, a kind of Quinean holism [Quine 1953, 1960, 1986] is incorporated into the theory of integrated coherence.

In a traditional coherence theory, the real theory consists of beliefs about the world and possibly rules and principles. Next to this theory there is a logic that defines which logical relations exist between the elements of the theory, what follows from the theory and what is inconsistent with it. And finally there is a substantive set of standards that define what a good theory is, and, if these standards refer to coherence, what coherence in a theory amounts to. In integrated coherence the logic and the standards for a good theory are considered to be part of

---

<sup>17</sup> This dynamic aspect of the strive for coherence is also mentioned by Bender in his 1989, p. 8.

<sup>18</sup> Discussions of this objection can be found in Moser 1989 and Pollock and Cruz 1999, p. 74/5.

<sup>19</sup> If one does not assume that spontaneous beliefs do not somehow derive from reality, it is unclear how any epistemological theory might salvage the relation between one's beliefs and reality.

<sup>20</sup> Probably the process of modification would even continue if there were no new input, but this remains a matter of speculation because we do continuously receive input of new beliefs.

<sup>21</sup> The idea that a theory sets itself the standards that it must satisfy is an extrapolation of the idea that a belief set also contains metabeliefs. Cf. the discussion of metabeliefs in Bender 1989.

the theory itself. Outside the theory is only the minimal standard that a good theory satisfies its own standards.<sup>22</sup>

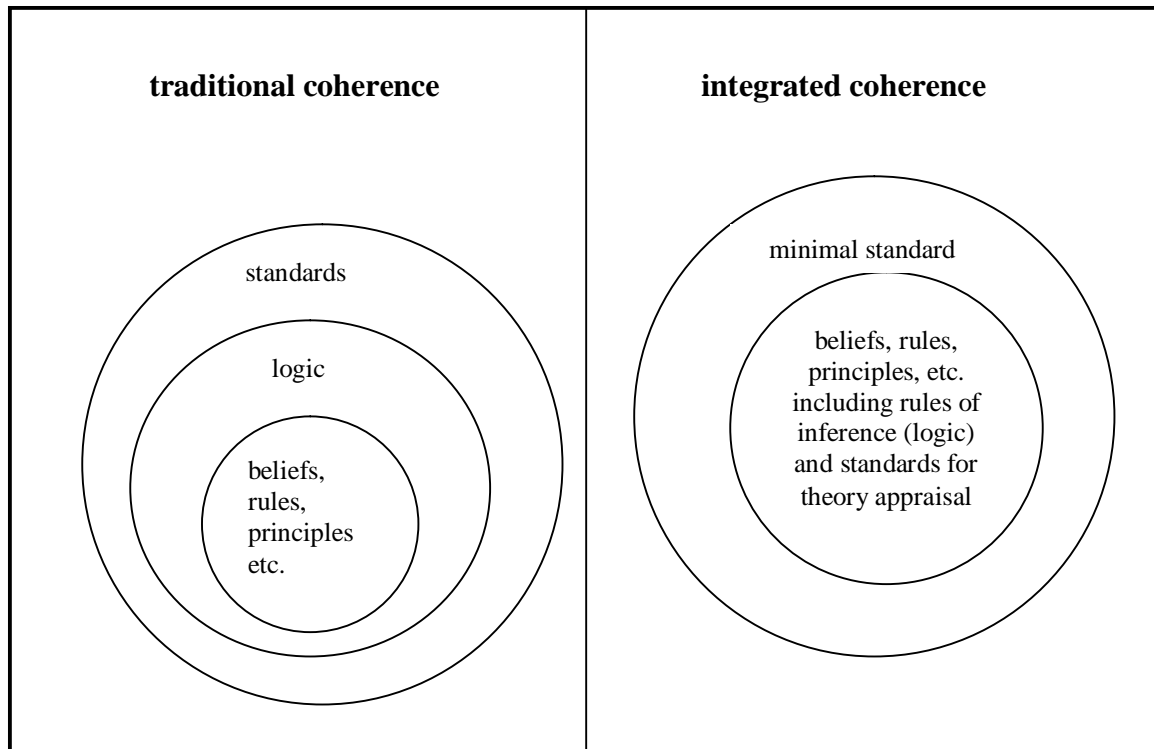


Figure 4

## 6 Integrated coherence

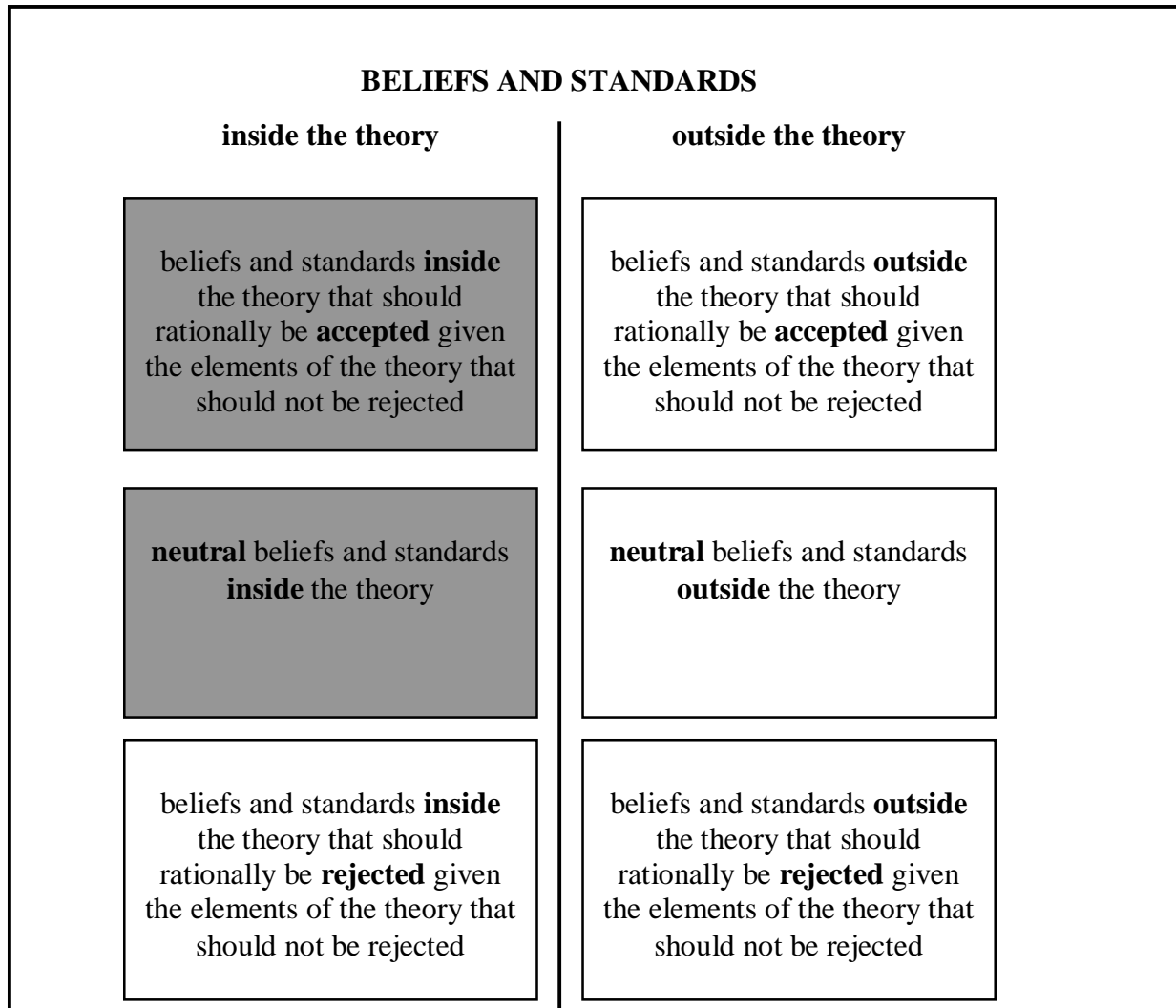
After the preparatory work of the previous sections, I will use this section to sketch the outlines of the theory of integrated coherence.<sup>23</sup> The most basic notion is that of a theory. A theory a set of beliefs and standards. In this connection I use the expression 'standard' as a catch-all for rules, principles, values, goals, interests, etc., in short for everything that is relevant for what somebody should believe or do, and what is not a belief about the world. I assume that these standards, in combination with the beliefs in a theory, determine what it is rational to believe, what standards should rationally be accepted, what it is rational to reject, and about which potential elements of the theory one should suspend one's judgment because it is neither rational to accept them, nor rational to reject them.

At some moment in time, a theory might contain elements of all three categories, that is elements that should rationally be accepted, elements that should rationally be rejected, and 'neutral' elements. The idea of integrated coherence is that the theory should be modified such that the elements that, according to the theory itself, should rationally be rejected are removed from it (the counterpart of the traditional demand of consistency), while elements that rationally should be accepted, but which are not yet part of the theory, should be added to it (the counterpart of traditional comprehensiveness). Neutral elements that are part of the theory remain in it, while neutral elements that are not part of the theory remain outside. In

<sup>22</sup> Notice, by the way, that this opens the possibility that the standards that a theory contains for good theories do not refer to coherence. In that case, a 'coherent' theory in the sense of this paper would not be coherent. This possibility does not worry me, because, given the nature of the human cognitive apparatus, it would surprise me if some actual 'coherent' theory would not also include some version of a coherence theory of knowledge.

<sup>23</sup> The theory of integrated coherence as sketched in this section has parallels with argument-based semantics as discussed in Dung 1995, Verheij, *Deflog*, and Prakken and Vreeswijk, *Logics for defeasible argumentation*.

this connection the question which (potential) elements should rationally be accepted or rejected is answered solely on the basis of those elements of the theory that should not rationally be rejected. *A coherent theory is then a theory that contains all potential elements that should rationally be accepted according to its own elements and that does not contain any elements that should rationally be rejected according to its own elements.*



**Figure 5**

In figure 5, the greyed boxes show which elements of a theory play a role in determining which elements should rationally be accepted or rejected, and which ones are neutral. The bottom left box contains the elements that should be removed from the theory. The upper right box contains elements that should be added. Addition of these last elements makes that the elements of the theory that determine what should rationally be accepted change. Theoretically it is therefore possible that there will be new elements in the bottom left box that should be removed and in the upper right box that should be added. This process of removing and adding elements should go on until the bottom left box and the upper right box remain empty. The result is then a coherent theory. Notice that there is no guarantee that the process of modifying the theory will ever end.<sup>24</sup> Moreover, in a realistic case the contents of

<sup>24</sup> It is possible to say quite a bit more about what can happen in this connection, but this is not the place to engage in this logical research. The interested reader is referred to the discussion in Prakken and Vreeswijk, *Logics for defeasible argumentation*. What is written there about the relation between arguments can be translated into a similar account about the relation between elements of a theory.

the boxes will also change because of new spontaneous beliefs and principles. This is not relevant for the characterization of coherence as a theoretical notion, but it is crucial for the construction of coherent theories.

A theory specifies which elements should be accepted or rejected relative to its own elements. To this extent the standard for coherence is integrated in the theory. A minimal standard must be external, however, namely the standards that a coherent theory should satisfy its own standard for a good theory, and that those elements should be accepted tout court, that is without relativisation to a theory, that are element of a coherent theory (and should – by definition – be accepted relative to this theory).

Integrated coherentism does not refer to mutual support as a standard for coherence. What counts as mutual support and the extent to which this kind of mutual support increases the quality of a theory are issues that are left to the theory itself. In theory, it might therefore be the case that an integratedly coherent theory consists of elements that lend little mutual support to each other. However, the demands that a coherent theory contains all those elements that should rationally be accepted according to itself and should not contain any elements that should rationally be rejected according to the theory itself almost certainly guarantee a substantial degree of mutual support, because all elements that are part of the theory because of these demands will be supported by other elements. Moreover, if the theory contains something like the abduction principle<sup>25</sup>, which is very plausible if the theory is the outgrowth of a spontaneous human belief set, many supported elements of the theory will in turn support the elements that support them.

## **7 Foundherentism and simplicity**

To give an indication of the flexibility of integrated coherence, I will briefly discuss two issues that have arisen in modern discussions about coherence. One is the view proposed by Haack, which combines elements of foundationalism in a framework of coherentism. The other one is the idea that a normative theory is more coherent if it assumes fewer basic principles.

In her *Evidence and Inquiry*, Haack proposes an alternative for both foundationalism, the view that there is a privileged part of knowledge that does not need further justification and that forms the basis of the justification of all other knowledge, and for coherentism, the view that there is no such set of privileged knowledge and that all knowledge is justified by its belonging to a coherent set. This alternative, foundherentism, might be described as a version of coherentism, with the proviso that knowledge based on experience takes a particularly relevant place within the set of coherent knowledge. In Haack's own words [Haack 1993, p. 19]:

- (FH1) A subject's experience is relevant to the justification of his empirical beliefs, but there need not be a privileged class of empirical beliefs justified exclusively by the support of experience, independently of the support of other beliefs.
- (FH2) Justification is not exclusively one-directional, but involves pervasive relations of mutual support.

Foundherentism is an attractive version of a coherence theory. However, in my opinion this does not imply that it should be adopted as the one theory about the justification of knowledge, as a standard outside the set of knowledge, to evaluate this set. It implies that we should include (some version of) foundherentism in our complete set of knowledge, and adapt the rest of the set to this inclusion.

---

<sup>25</sup> What holds for the abduction principle also holds for a principle that allows induction. I will leave induction outside the scope of this paper, however.

Less committedly one might say that integrated coherentism is compatible with both foundationalism, foundherentism, and traditional coherentism in the sense that it allows the inclusion of either one of these epistemic views into one's full set of knowledge, as long as one is prepared to modify the rest of this set to make it coherent with the adopted epistemological standard.

In connection with normative theories, the issue concerning simplicity is an interesting one. At first sight it might seem that a normative theory based on one of only a few fundamental principles is more coherent than a theory that counts a larger number of independent principles. For instance, utilitarianism, as a one criterion theory, seems to be more coherent than a theory that counts, say, five hundred basic principles that need to be weighed against each other. However, as Raz [1994] pointed out, the law is based on a number of authoritative decisions that are themselves not based on one underlying principle. It seems, therefore, that a more coherent version of the law may not be the most faithful rendering of the law as it actually is.

Integrated coherentism makes it possible to leave this discussion out of the definition of coherence. The question whether a theory that contains a large number of independent principles is, *prima facie*, less coherent than a theory that makes use of only one or a few independent principles needs not be decided a priori. Instead, integrated coherentism as such leaves this question open and merely demands that if one adopts a point of view on this issue, one should adapt the rest of one's theory of the law (or morality) accordingly. Integrated coherentism does not ask for a simple theory – but it does not reject it either – but rather asks for a deeper form of coherence, according to which one's views of the law as a whole cohere with, on the one side, the way in which one constructs the law for the purpose of, for instance, adjudication, and, on the other side, with one's views of the world as a whole and of the ways in which we can achieve justifiable knowledge of it.

## Part II<sup>26</sup>

### 8 Coherence between goals and solutions

The theory of integrated coherence as presented above is rather abstract. To make it more concrete I will illustrate it by means of an example, inspired by Dworkin's coherence theory and Alexy's theory about the logic of legal principles.

In a series of papers<sup>27</sup>, culminating in his book *Law's Empire*, Dworkin has developed a coherence theory of the law. This theory, called *The Model of Principles*, recognises three stages in constructing the law [Dworkin 1986, p. 65f]. The first stage, the so-called pre-interpretative stage, consists of a preliminary identification of the rules, standards, and (generalised) decisions that make up the law. In this connection one might think of an inventory of the rules and standards that can be found in statutes, cases, and doctrinal literature. The second, interpretative, stage consists of an identification of the principles (in this connection including values and policies) that underlie (in the sense of explain), or are part of the legal phenomena identified in the first stage. The rules etc. identified in the first stage are to be seen as means to realise the principles identified in the second stage.

The rules identified in the first stage are often not the best way to realise the principles identified in the second stage. The purpose of the third, reforming, stage is to formulate

---

<sup>26</sup> The second part of this paper is a re-working in the light of integrated coherence of parts of Hage 2000 and 2001.

<sup>27</sup> The papers in question are in particular the paper 'Hard Cases', included in Dworkin 1978, and the papers in part two (Law as interpretation) of Dworkin 1985.

(relevant parts of) the set of rules, including (generalised) decisions of cases, that best realises the principles identified in the second stage.<sup>28</sup>

The Model of Principles counts two steps. In the first, constructive, step, the raw legal materials identified in the pre-interpretative stage are used to formulate a set of principles that explains them. In the second, reconstructive step the raw materials are replaced by the set of rules that provides the best realisation of the formulated principles. In this paper I will only pay attention to this second step, and even only to a part of it. I will not concern myself with the formulation of sets of rules that realise sets of principles<sup>29</sup>, but will restrict myself to the formulation of standards that can be used in evaluating competing sets of rules (including abstract case decisions) in the light of the principles that they aim to realise. These standards specify which rules ought to be accepted, given the principles and facts that are already part of the theory.

Alexy [1979, 1985, 2000] developed the view that legal principles are ‘Optimierungsgebote’. With this he meant that legal principles are a kind of goals which are to be realized as much as possible. There is, however, a tension between goals, because the realization of the one goal may detract from the realization of another goal. Take for instance the question how strict ecological rules should be. The stricter the rules, the more the goal to protect the environment is realized. Weaker ecological rules contribute less to the environment, but may contribute more to economic prosperity, which is another goal. The choice which ecological rules should be adopted, depends on the balance between, amongst others, these two goals.

In general it may be said that if (the adoption of) a regulation<sup>30</sup> contributes to a goal that is accepted in the legal system at issue, this fact is a reason that pleads for this regulation. This reason is the stronger, the more important the goal and the contribution of the regulation to the goal are. Analogously, if a regulation detracts from a goal, this is a reason that pleads against the regulation. Again it holds that this reason is the stronger, the more important the goal is and the more the regulation detracts from the goal. On the basis of a set of goals and a regulation one can therefore construct a set of reasons that plead for the regulation, and a set of reasons that plead against it.<sup>31</sup>

Often there will be different ways in which a subject can be regulated. The different possible regulations for the same subject can be competitors in the sense that adoption of one of them precludes adoption of the other ones. If this is the case, a strong reason against accepting a regulation is that there is a better regulation which is incompatible with the former. For this reason, regulations should not be considered on their own, but always in relation to its competitors.

The question whether some set of reasons outweighs another set is not always easy to answer. Reasons usually do not come labelled with a weight, and neither is it the case that a set of reasons with more elements always outweighs sets of reasons with less elements. In

---

<sup>28</sup> From a logical point of view, there need not be one single set of best rules. Dworkin, however, has gone to some length in arguing that every case has one right answer, thereby implicitly assuming that there is one best set of rules.

<sup>29</sup> This subject is addressed by Sartor and Bench-Capon in Bench-Capon and Sartor 2000 and 2001 and in Sartor submitted.

<sup>30</sup> In this connection I take a regulation to be the set of legal solutions for all types of cases. At first sight it seems more natural to take a regulation to be the solution for one type of case. As Alexander Boer pointed out to me, this would lead to a complication if the ‘best’ solution of one case would combine badly with the ‘best’ solution for another case, with a suboptimal result for both cases. The best solution for a case is therefore the solution for that case that fits in the best solution for all cases. For that reason I take a regulation to be the set of solutions for all (types of) cases.

<sup>31</sup> I assume here that the goals are independent. It is for instance not the case that one goal is (merely) a subgoal of another goal.

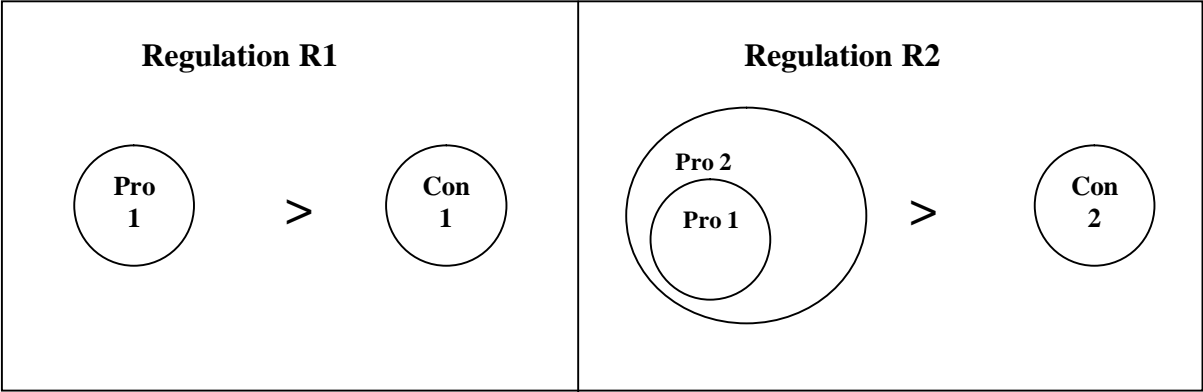
general it depends on contingent additional information which set of reasons outweighs which other sets. I call this kind of information *weighing knowledge*.

There are a few exceptions to the general observation that it depends on contingent information which set of reasons outweighs which other sets. One is that an empty set of reasons is outweighed by any non-empty set. So if there are only reasons that plead for a regulation, and no reasons pleading against it, the regulation is acceptable. Similarly, if there are only reasons that plead against a regulation, and no reasons pleading for it, the regulation is unacceptable.

Other exceptions to the observation that the relative weight of sets of reasons is contingent information depend on a fortiori reasoning with respect to already available weighing knowledge. The best way to explain these exceptions is by means of examples. I will use variations on the so-called Lebach-case, which was made familiar by Alexy [1979, 1985].

The standard case runs as follows: A person, let us call him E, who was condemned for abduction and subsequent murder of his victim is released from prison after ten years. A tabloid journal uses the occasion to publish an article on the dangers of abduction in general. The article is illustrated with a photograph of E just after his release. E attempts to prevent circulation of the journal. The judge who must decide on this case should balance two principles (goals). One is the principle of freedom of the press, the other one is the principle that one should respect other persons' privacy. Let us assume that the judge decides that in cases like this, (the reason based upon) privacy protection outweighs (the reason based upon) freedom of the press. This decision amounts to the adoption of certain weighing knowledge.

As yet, the question whether the released prisoner objects against the publication has not been taken into consideration. It was tacitly assumed that he did object, but this need not be the case, in particular not if he were to be compensated financially for the publication. A regulation to the effect that publication is only allowed with explicit consent of the person concerned would take a new principle into consideration, namely the principle of autonomy. This regulation would have the pro- and the con-reason of the first case, presumably with the same weights, but would have an additional pro-reason in that it is supported by the principle of autonomy. Moreover, this last regulation is a competitor for the first proposed regulation which amounts to a blunt prohibition of the publication. As a consequence, the last regulation is better than the first one.



**Figure 6**

Suppose, in general, that we have two sets of reasons, PRO<sub>1</sub> and CON<sub>1</sub> pleading respectively for and against a regulation R1. Suppose moreover that we have another regulation R2, with as pro- and con-reasons respectively PRO<sub>2</sub> and CON<sub>2</sub>. CON<sub>1</sub> and CON<sub>2</sub> are identical, meaning that the regulations subtract from the same goals in the same degree. PRO<sub>1</sub> and PRO<sub>2</sub> differ from each other, however. PRO<sub>2</sub> contains the same reasons as PRO<sub>1</sub>, with the same weight, but it also contains one or more other reasons that plead for R2. The set of pro-reasons has consequently become stronger in comparison to the reasons for R1, while the set



of con-reasons has remained the same. So, R2 will be a better regulation than R1, and the conclusion must be that R1 should rationally be rejected. Whether R2 should rationally be accepted depends on the availability of other regulations which might be even better than R2.

A similar argument can be made for the case that PRO<sub>1</sub> and PRO<sub>2</sub> are identical, and that CON<sub>2</sub> is a strict subset of CON<sub>1</sub>. Then the reasons against R2 are weaker than those against R1, while the pro-reasons have remained the same. Again one can conclude that the reasons PRO<sub>2</sub> outweigh the reasons CON<sub>2</sub> and that R2 is a better regulation than R1.

This would be illustrated by the case in which the tabloid journal has contracted with E that no publication of his photograph would be made. It is arguable that the freedom of the press is not infringed by a prohibition that was voluntarily undertaken by the journal. Since the freedom of the press was a reason against the prohibition, the balance of reasons is moved towards the prohibition if this con-reason is taken away. As a consequence the regulation that publication is prohibited if the potential publisher has voluntarily undertaken the obligation not to publish, has even stronger support than the original prohibition.

It is possible that a set of reasons is strengthened by adding new reasons to it, but also by strengthening the reasons that occur in it. Suppose that the sets of reasons PRO<sub>2</sub> and CON<sub>2</sub> that plead for, respectively against R2, contain the same reasons as the PRO<sub>1</sub> and CON<sub>1</sub> that plead for, respectively against R1. In other words, the regulations R1 and R2 contribute to and detract from the same goals. However, the contribution of R2 to one or more of the goals is bigger than that of R1, while R1 does not contribute more to any goal than R2 does. Again we can conclude that the set of pro-reasons has become stronger in comparison to the reasons for R1, while the set of con-reasons has remained the same. So R2 is a better regulation than R1, and R1 should rationally be rejected. This is illustrated by the regulation that not only forbids publication of the photograph, but also prescribes that the photograph is destroyed. This regulation provides better protection of privacy, and is therefore better than the simple prohibition.<sup>32</sup>

A similar argument can be made for the case that PRO<sub>1</sub> and PRO<sub>2</sub> are identical, and that one or more of the reasons in CON<sub>2</sub> are weaker than the corresponding reasons in CON<sub>1</sub>. Then the reasons against R2 are weaker than those against R1, while the pro-reasons have remained the same. Again one can conclude R2 is a better regulation than R1 and that R1 should be rejected. For instance, a regulation that allows photographs, as long as the persons on the photographs are not recognizable, makes a smaller infringement on the freedom of the press, while the protection of the privacy remains the same. Such a regulation would therefore be better than a mere prohibition of publishing photographs.

The two kinds of argument, based on changes in the sets of reasons and on the weights of the reasons, can be combined. If a set of reasons R<sub>1a</sub> is strengthened both by adding new reasons and by increasing the weight of the existing reasons, the resulting set R<sub>1b</sub> will be 'better' than R<sub>1a</sub>. If a set of reasons R<sub>2a</sub> is weakened both by removing one or more reasons from it and by decreasing the weight of the existing reasons, the resulting set R<sub>2b</sub> will be 'worse' than the set R<sub>2a</sub>.

## 9 Part of an integratedly coherent theory

The ideas about the relation between goals and regulations presented in the previous section can be made more precise. In this section I offer a number of definitions and rules that might be part of an integratedly coherent theory, and that indicate how such a part influences what else will be part of the theory.<sup>33</sup> It should be noted, however, that this can not be more than an

---

<sup>32</sup> Arguably this regulation would infringe the property right of the journal, but for the sake of the example, this complication is ignored.

<sup>33</sup> A formalised presentation of these definitions and rules can be found in Hage 2001.

example, because it is crucial for the theory of integrated coherence that it does not specify standards itself.

The part of a possible theory that I describe is the part that deals with the question whether a regulation should be accepted given a set of goals that are adopted by the theory in question. In main lines, it boils down to the view that a regulation should be accepted given a set of goals if no other regulation is a Pareto improvement to it, in the light of the issue how well the regulations realise the goals. In this connection, I take a regulation to be a set of solutions for all (types of) cases, for the reasons mentioned in the previous section.

rule 1.

A regulation ought rationally to be accepted if there is no better regulation.

rule 2.

A regulation ought to be rejected if there is a better regulation.

rule 3.

One regulation is better than a second regulation if:

- the first regulation is stronger in pro-reasons than the second, while it is equal or weaker in the con-reasons, or
- the first regulation is weaker in con-reasons than the second, while it is equal in the pro-reasons, or
- the second regulation is weaker in pro-reasons than the first, while it is equal or stronger in the con-reasons, or
- the second regulation is stronger in con-reasons than the second, while it is equal in the pro-reasons.

definition 1

The relation stronger in pro-reasons holds between two regulations if and only if either:

- the set of reasons pleading for the first regulation is a proper superset of the set of reasons pleading for the second regulation, and the set of reasons pleading for the first regulation is equal to or stronger in individual weight than the set of reasons pleading for the second regulation, or
- the set of reasons pleading for the first regulation is identical to the set of reasons pleading for the second regulation, while the set of reasons pleading for the first regulation is stronger in individual weight than the set of reasons pleading for the second regulation.

definition 2

The relation weaker in pro-reasons holds between two regulations if and only if either:

- the set of reasons pleading for the first regulation is a proper subset of the set of reasons pleading for the second regulation, and the set of reasons pleading for the first regulation is equal to or weaker in individual weight than the set of reasons pleading for the second regulation, or
- the set of reasons pleading for the first regulation is identical to the set of reasons pleading for the second regulation, while the set of reasons pleading for the first regulation is weaker in individual weight than the set of reasons pleading for the second regulation.

### definition 3

The relation equal in pro-reasons holds between two regulations if and only if both:

- the set of reasons pleading for the first regulation is identical to the set of reasons pleading for the second regulation, and
- the set of reasons pleading for the first regulation is equal in individual weight to the set of reasons pleading for the second regulation.

### definition 4

The relation stronger in con-reasons holds between two regulations if and only if either:

- the set of reasons pleading against the first regulation is a proper superset of the set of reasons pleading against the second regulation, and the set of reasons pleading against the first regulation is equal to or stronger in individual weight than the set of reasons pleading against the second regulation, or
- the set of reasons pleading against the first regulation is identical to the set of reasons pleading against the second regulation, while the set of reasons pleading against the first regulation is stronger in individual weight than the set of reasons pleading against the second regulation.

### definition 5

The relation weaker in con-reasons holds between two regulations if and only if either:

- the set of reasons pleading against the first regulation is a proper subset of the set of reasons pleading against the second regulation, and the set of reasons pleading against the first regulation is equal to or weaker in individual weight than the set of reasons pleading against the second regulation, or
- the set of reasons pleading against the first regulation is identical to the set of reasons pleading against the second regulation, while the set of reasons pleading against the first regulation is weaker in individual weight than the set of reasons pleading against the second regulation.

### definition 6

The relation equal in con-reasons holds between two regulations if and only if both:

- the set of reasons pleading against the first regulation is identical to the set of reasons pleading against the second regulation, and
- the set of reasons pleading against the first regulation is equal in individual weight to the set of reasons pleading against the second regulation.

### definition 7

Stronger in individual weight is an a-symmetric, a-reflexive relation on *sets* of reasons that plead for or against the same conclusion. This relation holds between two sets of reasons for or against the same conclusion, if and only if from the reasons which the two sets *have in common* at least one reason of the first set weighs more than the corresponding reason from the second set, while the opposite is not the case.

### definition 8

Weaker in individual weight is an a-symmetric, a-reflexive relation on *sets* of reasons that plead for or against the same conclusion. This relation holds between two sets of reasons for or against the same conclusion, if and only if from the reasons which the two sets *have in*

*common* at least one reason of the first set weighs less than the corresponding reason from the second set, while the opposite is not the case.

definition 9

Equal in individual weight is a symmetric and reflexive relation on *sets* of reasons that plead for or against the same conclusion. This relation holds between two sets of reasons if the reasons *which the two sets have in common*, pair wise have the same weights.<sup>34</sup>

rule 4.

If *g* is a goal, and if regulation *r* contributes to *g* to some degree *d*, then this last fact is normally<sup>35</sup> a reason why *r* ought to be accepted.

rule 5.

If regulation *r* detracts from *g* to some degree *d*, then this fact is normally a reason why *r* ought to be rejected.

rule 6.

A regulation cannot contribute in different degrees to one and the same goal, and it cannot both contribute to, and detract from one and the same goal.

rule 7.

If two regulations contribute to equally important goals in the same degree, these facts are normally reasons why these two regulations ought to be accepted with the same weight.

rule 8.

If two regulations detract from equally important goals in the same degree, these facts are normally reasons why these two regulations ought to be rejected with the same weight.

rule 9.

If regulation *r1* contributes to a larger degree to goal *g1* than *r2* contributes to goal *g2*, and if *g1* is equally or more important than *g2*, then the contribution by *r1* to *g1* is normally a stronger reason why *r1* ought to be accepted, than the contribution by *r2* to *g2* is a reason why *r2* ought to be accepted.

rule 10.

If regulation *r1* detracts from *g1* to a larger degree than *r2* detracts from *g2*, and if *g1* is equally or more important than *g2*, then the detraction by *r1* from *g1* is normally a stronger reason why *r1* ought to be rejected, than the detraction by *r2* from *g2* is a reason why *r2* ought to be rejected.

---

<sup>34</sup> Notice that two sets that either plead for or against the same conclusion will often *not* stand in one of the relations stronger, weaker or equal in individual weight to each other. Instead they will be incommensurable in this respect. This is the case if both sets contain a reason that also occurs in the other set, while the reason in the one set has a bigger weight than its counterpart in the other set. For this reason, the three relations cannot be defined in terms of each other, and are they not (weakly) transitive.

<sup>35</sup> The word 'normally' is used here to indicate that the logical effects of goals are defeasible. I will ignore this for of defeasibility here to avoid complications that are not relevant for the issues at stake.

rule 11.

If g1 is a more important goal than g2, and if regulation r1 contributes to g1 to the same or a larger degree than r2 contributes to g2, then the contribution by r1 is normally a stronger reason why r1 ought to be accepted, than the contribution by r2 to g2 is a reason why r2 ought to be accepted.

rule 12.

If g1 is a more important goal than g2, and if regulation r1 detracts from g1 to the same or a larger degree than r2 detracts from g2, then the detraction by r1 is normally a stronger reason why r1 ought to be rejected, than the detraction by r2 from g2 is a reason why r2 ought to be rejected.

## 10 Conclusion

As a coherence theory of knowledge, legal knowledge included, integrated coherentism is on the one hand less, and on the other hand more satisfactory than traditional forms of coherentism. It is less attractive, because it seems to abstain from all interesting questions, referring them and their answers to part of the theory that must be coherent.

It is more interesting, because it recognizes that there is no sharp demarcation between on the one hand knowledge and on the other hand logic and theories about what counts as knowledge. This recognition has as immediate consequence that the discussion about the nature and justification of our knowledge is a discussion about the contents of our knowledge and should be treated as such. Our knowledge is self-referential and a satisfactory theory of it should be self-referential too. Integrated coherentism is a minimal theory, because it specifies as little as possible what counts as justified knowledge and moves as much criteria as possible to the domain of knowledge, that is to the theory that must be integratedly coherent. It is also a maximal theory, because it does not only deal with empirical knowledge or normative knowledge, but also with theories about the nature (and possibility) of empirical and normative knowledge. This minimality and maximality are two sides of the same medal, because integrated coherentism is itself minimal for the reason that it makes the object of knowledge maximal.

Integrated coherentism is a complex subject, that needs much more elaboration than it was possible to present in this paper. All I could do here is to expose the basic ideas and give a brief indication of the relation between integrated coherentism and more traditional theories of knowledge. Much still needs to be done, but I expect the line of research to be worth pursuing.

## References

- Alexy, R. (1979). Zum Begriff des Rechtsprinzips, *Rechtstheorie*, Beiheft 1, pp. 59-87.
- Alexy, R. (1985). *Theorie der Grundrechten*, Nomos Verlagsgesellschaft, Baden-Baden.
- Alexy, R. (2000). On the Structure of Legal Principles, *Ratio Juris* 13, nr. 3, p. 294-304.
- Alexy, R. and A. Peczenik (1990). The Concept of Coherence and Its Significance for Discursive Rationality. *Ratio Juris* 3, no. 1, p. 130-147.
- Bench-Capon T. and G. Sartor (2000), Using Values and Theories To Resolve Disagreement in Law. Proceedings Jurix 2000, p. 73-84.
- Bench-Capon T. and G. Sartor (2001), *Theory based explanation of case law domains*. Proceedings of the 8<sup>th</sup> International Conference on Artificial Intelligence and Law., p. 12-21.
- Bender, J.W. (1989). Coherence, Justification, and Knowledge: The Current Debate. In J.W. Bender (ed.), *The Current State of the Coherence Theory*, Kluwer Dordrecht 1989, p. 1-14.
- Bracker, S. (2000). *Kohärenz und juristische Interpretation*. Nomos, Baden-Baden.

- Dworkin, R. (1978). *Taking Rights Seriously*, 2nd ed., Duckworth, London.
- Dworkin, R. (1985). *A matter of principle*. Clarendon Press, Oxford.
- Dworkin, R. (1986). *Laws Empire*, Fontana, London.
- Dung, P.M. (1995). On the acceptability of arguments and its fundamental role in nonmonotonic reasoning, logic programming and n-person games. *Artificial Intelligence* 77, number 2, pp. 321-357.
- Hage, J.C. (1997). *Reasoning with rules*, Kluwer Academic Publishers, Dordrecht.
- Hage, J.C. (2000). Goal-based Theory Evaluation. J. Breuker e.a. (eds.), *Proceedings of the Thirteenth Jurix Conference*, IOS Press, Amsterdam, p. 59-72.
- Hage, J.C. (2001). *Formalizing legal coherence*. Proceedings of the 8th International Conference on Artificial Intelligence and Law, ACM, New York, p. 22-31.
- Lehrer, K. (2000). *Theory of Knowledge*. 2nd ed. Routledge, London.
- Moser, P. K. (1989). Lehrer's Coherentism and the Isolation Objection. In J.W. Bender (ed.), *The Current State of the Coherence Theory*, Kluwer Dordrecht 1989, p. 29-37.
- Neurath, O. (1932/3), Protocol Sentences. originally in German in *Erkenntnis* 1932/3, p. 204-214. Also in A.J. Ayer (ed.), *Logical Positivism*, Free Press, New York 1959, p. 199-208.
- Pollock, J.L. and J. Cruz (1999), *Contemporary theories of knowledge*, 2nd. ed., Rowman and Littlefield, Lanham.
- Prakken, H. and G. Vreeswijk (forthcoming). *Logics for defeasible argumentation*. To appear in D. Gabbay and F. Guentner (eds.), *Handbook of Philosophical Logic*, second edition, Vol 4, 2001. Kluwer Academic Publishers, Dordrecht etc.
- Quine, W.V. (1953). *From a Logical Point of View*. Harper & Row, New York e.a.
- Quine, W.V.O. (1960). *Word & Object*. M.I.T. Press, Cambridge.
- Quine, W.V. (1986). *Philosophy of Logic*, 2nd ed., Harvard University Press, Cambridge Mass, London.
- Raz, J. (1994). The relevance of coherence, in *Ethics in the public domain*. Clarendon Press, Oxford, p. 277-327.
- Rumelhart, D.E., J.L. McClelland and the PDP Research Group (1986). *Parallel Distributed Processing. Explorations in the Microstructure of Cognition. Volume 1: Foundations*. MIT Press, Cambridge Mass. and London.
- Sartor, G. Teleological Arguments and Theory Based Dialectics. Submitted to *Artificial Intelligence and Law*.
- Sosa, E. (1989). Equilibrium in Coherence? In J.W. Bender (ed.), *The Current State of the Coherence Theory*, Kluwer Dordrecht 1989, p. 242-250.
- Thagard, P. (1992). *Conceptual revolutions*, Princeton University Press.
- Thagard, P., Eliasmith, C., Rusnock, P., & Shelley, C. P. (2002). [Knowledge and coherence](#). In R. Elio (Ed.), *Common sense, reasoning, and rationality* (Vol. 11, 104-131). New York: Oxford University Press. See also <http://cogsci.uwaterloo.ca/Articles/Pages/epistemic.html>.
- Thagard, P. and Verbeurgt, K. (1998). [Coherence as constraint satisfaction](#). *Cognitive Science*, 22: 1-24. See also <http://cogsci.uwaterloo.ca/Articles/Pages/Cohere.Constrain.html>.
- Thagard, P. (1999). [Ethical coherence](#). *Philosophical Psychology*, 11: 405-422. See also <http://cogsci.uwaterloo.ca/Articles/Pages/ethical.html>.
- Toulmin, S.E. (1958). *The Uses of Argument*, Cambridge University Press, London, New York.
- Verheij, Bart (2000), DefLog - a logic of dialectical justification and defeat, <http://www.metajur.unimaas.nl/~bart/papers/DefLog15.htm>