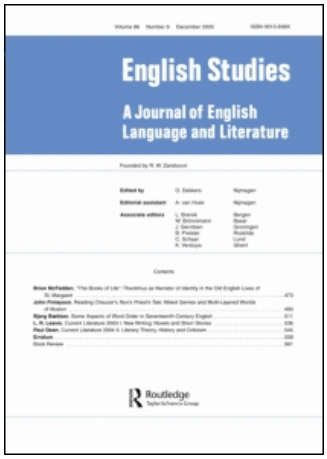
This article was downloaded by:[Van linden, An]
On: 16 April 2008
Access Details: [subscription number 791781647]
Publisher: Routledge
Informa Ltd Registered in England and Wales Registered Number: 1072954
Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



English Studies
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713634227

The Semantic Development of **Essential** and **Crucial**: Paths to Deontic Meaning

An Van linden; Jean-Christophe Verstraete; Hubert Cuyckens

Online Publication Date: 01 April 2008
To cite this Article: Van linden, An, Verstraete, Jean-Christophe and Cuyckens, Hubert (2008) 'The Semantic Development of **Essential** and **Crucial**: Paths to Deontic Meaning', English Studies, 89:2, 226 - 247
To link to this article: DOI: 10.1080/00138380801913089
URL: http://dx.doi.org/10.1080/00138380801913089

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: http://www.informaworld.com/terms-and-conditions-of-access.pdf

This article maybe used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

English Studies
Vol. 89, No. 2, April 2008, 226 – 247

Routledge
Taylor & Francis Group

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

The Semantic Development of *Essential* and *Crucial*: Paths to Deontic Meaning

An Van linden, Jean-Christophe Verstraete and Hubert Cuyckens

In the literature on modality, much attention has been devoted to modal auxiliaries,[1] whereas adjectival predicates have only rarely been discussed (some synchronic accounts are Riviere and Nuyts).[2] This study tries to fill a gap in the literature by presenting two case studies of English adjectives that have developed deontic meaning from various types of non-deontic meaning. More specifically, we will describe the semantic development of the adjectives *essential* and *crucial*, which can serve as templates for other adjectives that acquired deontic meaning, such as *vital* or *critical*. As a working definition, we take deontic modality to express the degree of desirability of a certain State of Affairs (SoA)[3]—a more detailed discussion of deontic meaning follows below. Examples of deontic utterances with the two adjectives are given in (1) and (2).

(1) However, before becoming too excited about such knowledge, it is **essential** to remember that most of the research has been conducted in one particular country, namely in the USA, (...). (CB)[4]
(2) In our view, it is **crucial** that family workers try to distinguish between the problems that society and its institutions induce and those that arise from within the family itself, (...). (CB)

The deontic readings in (1) – (2) have not always been available in the history of English. Both *essential* and *crucial* are loan words of Romance origin, and it was not possible to use them in deontic utterances at the time when they were borrowed into

An Van linden, Jean-Christophe Verstraete and Hubert Cuyckens are affiliated with the University of Leuven, Belgium. Jean-Christophe Verstraete is also affiliated with the Fund for Scientific Research, Flanders.

[1]For example, Lyons, 787 – 849; Palmer, *Modality*, 1st ed., 1 – 196; Coates, 1 – 259; Bybee, Perkins, and Pagliuca, 176 – 242.

[2]Riviere, 1 – 45; Nuyts, "Modality," 933 – 69; "Subjectivity," 383 – 400.

[3]Verstraete, 1401 – 18.

[4](CB) refers to the *Collins Cobuild Corpus*.

ISSN 0013-838X (print)/ISSN 1744-4217 (online) © 2008 Taylor & Francis
DOI: 10.1080/00138380801913089

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

English. For both adjectives, the earliest (non-modal) attestation in the *Oxford English Dictionary* (OED) is given in (3) and (4).

(3) þe **Escencyalle** Ioy es in þe lufe of Godd (...). (*The essential joy is in the love of God*) (OED 1340)

(4) **Crucial** Incision, the cutting or lancing of an Impostume or Swelling cross ~ wise. (*Crucial incision, the cutting or slitting of an abscess or swelling crosswise*) (OED 1706).

The literature on grammaticalization has devoted much attention to the question how verbs developed deontic meanings.[5] The modal auxiliary *may*, for instance, is known to derive from Old English *magan*, "to be strong", "to have the physical ability", and later developed the meaning of (moral) acceptability/permission (as in *you **may** voice criticism if things are not going as you would like them to*) and epistemic possibility (as in *I don't see his car. He **may** have left already*). More generally, it has been shown in these studies that a common path of development for modal verbs is from dynamic modality to deontic modality.

For adjectives, on the other hand, the diachrony of deontic meaning has not been investigated in any detail. Adjectives that may have a deontic reading are, for instance, *essential*, *crucial*, *critical*, *vital*.[6] In what follows, we will take a closer look at the development of the adjectives *essential* and *crucial*, and propose a diachronic pathway to deontic meaning for each of them. We will show that, as with modal verbs, (i) the deontic modal meanings of these adjectives follow the commonly observed path of development from dynamic (in particular, SoA-internal necessity) to deontic meaning, and involve a process of subjectification;[7] (ii) their lexical source meaning is, or becomes, commensurate with the dynamic modal meaning. Unlike with verbs, however, we will show that the development up to dynamic modal meaning in adjectives crucially involves (the emerging of) two semantic properties in their semantic makeup, which we will call "relationality" and "potentiality".

The structure of this paper is as follows. Section 1 deals with the semantic domain of modality in general, and will provide working definitions of the modal notions investigated here. Sections 2 and 3 treat the semantic development of *essential* and *crucial* respectively. In these sections, we will focus on the semantic properties of relationality, potentiality, and desirability in order to explain the change from non-deontic to deontic meaning. We will also discuss the factors that drive the various semantic changes. In section 4, finally, we present our conclusions and formulate some questions for further research.

[5]For example, Traugott, 31–55; Sweetser, 49–75; Bybee, Perkins, and Pagliuca, 176–242; Traugott and Dasher, 105–51; Loureiro-Porto, CD-rom.

[6]Cf. Quirk et al., 1224.

[7]Traugott, 31–55.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

1. The Semantic Domain of Modality

Traditionally, modality has been described in terms of epistemic, deontic and dynamic categories.[8] For the description of these categories, it is useful to make a distinction between two basic concepts, which are called *modal source* and *modal agent* in Verstraete (building on Davies).[9] The modal source is the person (or other entity) who is "responsible for making the assessment encoded by the modal expression", and the modal agent[10] is the person who is expected, willing or able to carry out the action in question.[11] In this section, we will describe each of the three modal domains in terms of the notions of modal source and modal agent, focusing specifically on how deontic modality relates to the other two types.

Dynamic modality involves indications of abilities/possibilities or needs/necessities inherent in agents of actions or in situations.[12] Typically both agent-internal and situation-internal dynamic expressions involve a modal agent, as in (5) and (6) respectively.

(5) Some athletes are able to run many miles at a time. (CB)
    modal source:—
    modal agent: some athletes

(6) We must persuade our MPs to support the Bill—it's a Private Member's Bill, and so it is **essential** that at least 100 MPs support it, or it will get thrown out without a second reading. (CB)
    modal source:—
    modal agent: at least 100 MPs

In (5), the speaker describes the ability of athletes to run many miles at a time. The function of the modal expression *be able to* in this case is to ascribe the predicate *run* as an ability to the modal agent *some athletes*. In (6), the speaker describes the need to get the support of 100 MPs in order to give the bill a second reading, a necessity which is inherent in or imposed by the British parliamentary system (or, more generally, an SoA-internal necessity). The action of supporting also implies a modal agent, in this case at least 100 MPs. Typically, expressions like (6) can be paraphrased in terms of a necessary condition for a certain goal (100 MPs must support the bill in order to give it a second reading). However, neither of the examples involves a modal source who expresses its commitment to the situation on the basis of SoA-external (moral) reasons.

[8]Palmer, *Modality*, 1st ed., 1–196; *Mood*, 2d ed., 1–236; Van der Auwera and Plungian, 79–124.
[9]Verstraete, 1401–18; Davies, 81–104.
[10]It should be noted that we do not understand "agent" in terms of the thematic role of agent , i.e., as characterized by its degree of agentivity, but rather as the entity that has the responsibility to carry out a particular action or to maintain a particular state.
[11]Verstraete, 1409.
[12]Palmer, *Modality*, 1st ed., 71–8; Nuyts, Byloo, and Diepeveen, 8.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

Whereas dynamic modality typically has a modal agent, but never has a modal source, epistemic modality can be characterized by the reverse configuration of modal roles. As epistemic utterances estimate the likelihood or probability of a proposition, they express the speaker's degree of commitment to the truth of that proposition, and thus rely on the speaker as a modal source. Because the speaker judges the proposition as a whole,[13] however, epistemic expressions do not link the predicate with a modal agent. An example is given in (7).

(7) The value of units can go down as well as up and it is **possible** that you may not get back the full amount invested. (CB)
modal source: speaker
modal agent:—

In (7), the speaker (modal source) assesses the proposition "you may not get back the full amount invested" as possible,[14] as opposed to necessary (which can be expressed by adjectives like *sure* or *certain*). Clearly, the estimation of possibility is not tied to an agent participant, but affects the proposition as a whole.

What defines deontic modality, finally, is that it has a modal source, like epistemic modality, as well as a modal agent, like dynamic modality. As mentioned above, we take deontic modality to express the degree of desirability of a certain SoA. More specifically, in deontic utterances a modal source assesses the desirability or (moral) acceptability/necessity for an agent to carry out a certain action.[15] The modal source thus expresses its commitment to the SoA on the basis of moral principles that are external to that SoA. Examples were given in (1) and (2); example (8) repeats (2).

(8) In our view, it is **crucial** that family workers try to distinguish between the problems that society and its institutions induce and those that arise from within the family itself (...). (CB)
modal source: the speaker (and his associates "we")
modal agent: family workers
(modal action: try to distinguish between the two types of problems)

The nature of deontic modality is a matter of continuous linguistic discussion. In most accounts, it is defined in terms of permission (deontic possibility) and

[13]Hengeveld, 227–69.

[14]In this example, it is left unclear on what basis the speaker makes this assessment. When the source of information on which the judgement is based is expressed (e.g., hearsay, inference, or sensory evidence), the type of modal meaning involved is often called evidential instead of epistemic. However, a discussion of the question whether evidentiality is a type of modality on its own (cf. Nuyts, "Subjectivity", 386–97), or whether it should be subsumed under epistemic modality (cf. Palmer, *Mood*, 1st ed., 51) is beyond the scope of this paper.

[15]Deontic expressions in which the modal source assesses the desirability of a state rather than an action may pose a problem for the notion of "modal agent". In these cases, the modal agent can be seen as the person who is in charge of bringing about the state involved, and not literally as an agent carrying out a certain action. In order to cover both states and actions, we use the term SoA.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

obligation (deontic necessity).[16] This traditional characterization, however, carries assumptions about both the source and the agent. More precisely, the modal source is assumed to have some authority over the agent,[17] and the agent is assumed to be willing to carry out the modal action in the case of permission, but unwilling to do so in the case of obligation.[18] In line with Jan Nuyts, Pieter Byloo and Janneke Diepeveen,[19] we adopt a broader definition of deontic modality, which also includes utterances that express someone's assessment of an action in terms of desirability or moral acceptability/necessity, but that do not involve an obligation or permission. An example of such an utterance is given in (9).

(9) The government **must** act. It **must** make up its mind about priorities—offices or houses, housing estates or luxury buildings. (Palmer, *Modality*, 1st ed., 152, W.15.1.48–3)

Indeed in (9), the modal source (i.e., the speaker) does not impose an obligation on the agent (i.e., the government), but only states what he thinks is most reasonable, or morally necessary for them to do.[20] It will become clear that the adjectives studied in this paper typically express moral necessity rather than obligation.

In conclusion, the three different types of modal meaning distinguished above, i.e. dynamic, epistemic, and deontic, can be characterized in terms of different combinations of modal source and modal agent. Table 1 summarizes the discussion.

Most importantly, in deontic expressions a modal source (the speaker or another entity) assesses the desirability of a certain action to be carried out by an agent. With modal verbs, the feature of desirability on SoA-external grounds is the result of a process of subjectification of earlier dynamic meanings.[21] In the following sections, we will argue that modal adjectives are similar to modal verbs like *must*, *can*, and *may*

Table 1 The Configuration of Modal Roles within the Modal Domain (based on Verstraete, 1410)

Types of modality / Modal roles	Dynamic		Epistemic (7)	Deontic (8), (9)
	agent-internal (5)	situational (6)		
Modal source	−	−	+	+
Modal agent	+	+	−	+

[16]Von Wright, *Essay*, 1–90; *Norm and Action*, 1–214; Lyons, 787–849; Palmer, *Modality*, 1st ed., 58–63; *Mood*, 1st ed., 96–115; Van der Auwera and Plungian, 79–124.
[17]Lyons, 824.
[18]Verstraete, 1409.
[19]Nuyts, Byloo, and Diepeveen, 5–53.
[20]Frank R. Palmer uses the term rational necessity as opposed to deontic necessity for this type of modal meaning (Palmer, *Modality*, 1st ed., 152).
[21]Traugott, 31–55; Traugott and Dasher, 105–51.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

in that their deontic interpretations are based on earlier dynamic meanings, but that the adjectives under discussion develop a specific dynamic meaning crucially involving the properties of ''relationality'' and ''potentiality''.

Before going into the details of the adjectives, we will first briefly discuss the database on which this study is based. We relied extensively on the electronic version of the *Oxford English Dictionary* (OED), especially the etymological information provided for each lemma and the general quotation database. As nearly all quotations are precisely dated, they can help us to track the semantic development of the adjectives in question. Apart from the OED, we also used a number of diachronic and synchronic corpora to corroborate the findings. Historical data were drawn from the *Helsinki Corpus* (HC), ranging from 750 until 1710, and the *Corpus of Late Modern English Texts* (CLMET),[22] covering the eighteenth and nineteenth centuries. Synchronic data were extracted from the *Collins Cobuild Corpus* (CB).

2. The Semantic Development of *Essential*

This section describes the semantic development of *essential*, in which four stages can be distinguished as the result of three semantic changes. The first change is that from its original meaning to a relational type of meaning (discussed in section 3.1). The second change is that to (situational) dynamic modal meaning, for which the development of potentiality is crucial (discussed in section 3.2). The third and final change involves the development of the property of desirability on SoA-external grounds, and gives rise to deontic modal meaning (discussed in section 3.3). We will also argue that the main driving factors of these semantic changes are patterns of co-occurrence and subjectification.

2.1 From ''Being Such by its True Nature'' to ''Constituting the True Nature Of''

Essential is not a Germanic word, but was borrowed into English from Latin in the fourteenth century. According to the OED, *essential* is an adaptation of the Latin word *essentialis*, which in turn derives from the noun *essentia* ''essence''.[23] The original meaning of *essential* can be paraphrased as ''being such by its true nature'', or ''being such in the true sense of the word''. The OED gives ''that is such by essence, or in the absolute or highest sense''.[24]

(10) For þe souerayne and þe **Escencyalle** Ioy es in þe lufe of Godd by hym-selfe and for hym-selfe, and þe secundarye es in comonynge and byhaldynge of Aungells and gastely creaturs. (*For the sovereign and the essential joy is in the love of God by himself and for himself, and the secondary [joy] is in the*

[22]De Smet, 69–82.
[23]OED, s.v. *essential*.
[24]OED, s.v. *essential*.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

commoning [intercourse] and beholding of Angels and ghostly creatures) (OED 1340; HC 1420–1500)

In this example, the adjective *essential*, like *secondary*, indicates a type of joy. As such, it functions as a classifier[25] and not as an attribute of the noun *joy*. Semantically, classifiers denote a subtype of the more general type referred to by the head noun, and "tend to be organized in mutually exclusive and exhaustive sets" of that general type.[26] Indeed, the two types of joy in (10) are opposed to each other, and thus presented as mutually exclusive and exhaustive sets of joy: *essential joy* (meaning "true", "basic", "substantial" or "primary" joy) versus *secondary joy* (meaning "derived", "accidental" joy). This original sense of *essential* is clearly not deontic. In its pathway to deontic meaning, the first semantic extension involves the development of relational meaning. This type of meaning is illustrated in (11) below.

(11) Sensibility and a locomotive faculty are **essentiall** to every living creature. (OED 1656)

In (11), sensibility and a locomotive faculty are said to constitute the essence of every living creature. This use of *essential* is relational because it does not indicate a type of something (e.g., a type of joy as in [10]), but serves to relate two concepts, viz. sensibility/locomotion and life. Whereas the original sense of *essential* is still taxonomic, in that it applies to types, the relational meaning is clearly partonomic, in that it applies to parts in relation to a whole. This change is also reflected in the syntactic potential of the adjective: it is not a classifier, but now functions as an attribute in predicative function, with a prepositional complement.

If we look at the relative timing of these two uses, we can find the diachronic bridge between the original classifier use in (10) and the later relational use in (11) in structures in which the classifier co-occurs with relational nouns like *property*, *attribute*, or *part*. The earliest instance of this pattern dates from 1596 and is given in (12). Examples (13) and (14) appear about twenty years later, but are clearer examples. The earliest attestation of *essential* with relational meaning in non-classifier use dates from 1628 (*Such arguments as be* ***essentiall*** *vnto the thing, of which they are predicated* [OED 1628]).

(12) those **essentiall** parts of his [refers to God's], His truth, his love, his wisedom, and his blis. (OED 1596)

[25]Classifiers can be opposed to attributes, which assign a (typically gradable) quality to the instance referred to by the NP, as in *new* in *a new car*, or *beautiful* in *a beautiful car* (Bolinger, 14–20; Teyssier, 225–49; Halliday, 184–6). Unlike attributes, classifiers can only occur in prenominal position and never appear predicatively. Further, since classifiers do not attribute a quality to the referent of the NP, but rather modify the reference of the head noun (Bolinger, 14–15), they are not gradable, i.e., they "do not accept degrees of comparison or intensity" (Halliday, 185).

[26]Halliday, 185.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

(13) Heate is the **essentiall** propertie of fire (OED 1620)
(14) Mercy as it is Radically in God and an **essentiall** attribute of his. (OED 1624)

In these three examples, *essential* functions as a classifier with the relational nouns *part*, *property* and *attribute*, which denote a part within a larger whole. Relational nouns like these are different from other nouns in that they make schematic reference to another thing (the whole), and have the conception of a relationship with this other thing as a background (the part-whole relationship), just like the noun *father* (the male parent) makes schematic reference to offspring on the basis of the parent-offspring relationship.[27] This is what makes co-occurrence with relational nouns critical to the development of relational meaning of the adjective itself. With relational nouns, the paraphrase proposed for the original use of *essential* in (10) cannot be applied anymore. In (13), for instance, *essentiall propertie* does not mean ''that is a property in the true sense of the word'', or ''that is a property by its true nature''. Rather, the inclusion relationship in the background of *property* provides a better paraphrase: ''a property of the essence of fire'', or ''a property constituting the essence of fire''. Schematically, ''an essential property of Y'' corresponds semantically to ''a property of the essence of Y''. In this sense, it can be argued that relational nouns like *property* or *attribute*, which are based on a part-whole or inclusion relationship, are semantically permeable and therefore able to transfer their relational property to the adjectives that classify them.

Analogous examples can illustrate the semantic correspondence between the two paraphrases given above and the proposed semantic permeability of relational nouns such as *property* and *feature*. The following expressions have the same internal structure as (12) – (14) (classifier[28] + relational noun + *of*-PP postmodifier).

(15) His argument was that religion is a structural as well as a cultural feature of all societies and that its ''invisible'' functions are no less important for not being empirically available for observation and measurement. (CB)
(16) The other most notable architectural feature of the town is the castle, situated on a promontory surrounded by a path, and overlooking a steep descent to the river and the weir. (CB)

In (15), for instance, religion is said to be a feature of the structure and culture of all societies. In (16), the castle is presented as one of the most notable features of the architecture of the town. In both paraphrases, the classifying adjectives permeate, as it

[27]Cf. Langacker, 38 – 9.
[28]Evidence for the argument that the semantic correspondence only applies to NPs with a classifier can easily be found in trying to paraphrase NPs in which the prenominal adjective does not function as a classifier, but rather as an attribute. Consider the following expression: *Another important feature of the hangover is the reduction in blood sugar level (hypoglycaemia)* (CB). It is clear that *another important feature of the hangover* can hardly be paraphrased as ''another feature of the importance of the hangover,'' and consequently, that there is no semantic correspondence.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

were, the relational noun (*feature*) and enter into the latter's inclusion relationship with the head noun of the NP of the *of*-PP, i.e. *societies* in (15) and *town* in (16).

The semantic permeability of the relational nouns actually implies that the meaning of *essential* in expressions such as (13) and (14) is relational as well. In (13), for instance, *essential* links *heat* with *fire*, as heat is said to constitute the essence of fire, and in (14), it links *mercy* with *God*, as mercifulness is argued to constitute the essence of God. Thus, heat is essential to fire, and mercy is essential to God. In (13) and (14), then, *essential* establishes a relation of inclusion between two concepts, which is not the case in (10), in which it denotes a sub-class of the non-relational noun *joy* (*joy* cannot be paraphrased as being essential to something else). This is why we call the use of *essential* in the first stage of its semantic development non-relational (as in [10]) and in the second stage relational (as in [11]–[14]). As can be seen in (11), later relational uses of *essential* do not necessarily involve relational nouns: we have merely argued that co-occurrence with relational nouns is a facilitating factor that forms a diachronic bridge between classifier non-relational uses and non-classifier relational uses.

From the perspective of deontic meaning, relationality as such does not yet imply deontic interpretation: (11) is no more deontic than (10). It does, however, form an enabling factor for the next step, the development of potentiality. As will be shown in the following section, once *essential* can establish links between concepts, these concepts need not be restricted to things and the type of relationship need not be restricted to inclusion.

2.2 From "Constituting the True Nature Of" to "Indispensable For"

Even if they are not deontic, the relational uses do involve some sense of necessity. If certain properties or attributes are said to constitute the essence of something, they are necessary to it, for otherwise we might be dealing with just something else. However, this type of necessity differs from the classic dynamic-modal type of necessity, i.e. the necessity we experience when something is needed for a certain purpose. In what follows, we would like to propose the terms *defining necessity* for the first type of necessity and *dynamic necessity* for the second. We will argue that we can posit an extension from the sense of *defining necessity* to that of *dynamic necessity* in the semantic development of *essential*, in which the property of potentiality plays a key role.

What crucially distinguishes the two types of necessity proposed here is the notion of definition. The first type of necessity obviously is defining in nature, whereas the second type is not. Example (13), for instance, can be paraphrased as "fire is (necessarily) hot", and (14) as "God is (necessarily) merciful". In these paraphrases, the predicates do not add any new information to the subject, but rather define it. Being hot, for example, is a defining feature of fire. As such, the paraphrases are analytical propositions, in which subject and predicate are linked by virtue of their intension. Further, what is regarded as necessary in a defining way (e.g., *mercy* as

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

necessary to *God* in [14]) is intrinsically present in it.[29] Finally, defining necessity applies to all instances of the type designated by the head noun to which something is said to be necessary: all fires, for instance, are hot.

Dynamic (modal) necessity, on the other hand, has very different semantic characteristics. Example (17) is the earliest instance found in the OED; (18) dates to a later period, but is a clearer example.

(17) I tell you my Tale and my *Tale-master, which is **essential** to the begetting of credit to any Relation. (OED 1661)

(18) When a philosopher (...) is obliged to have recourse to some very intricate and refined reflections, and to suppose them **essential** to the production of any passion or emotion, we have reason to be extremely on our guard against so fallacious an hypothesis. (CLMET 1710–80)

In (18), "some very intricate and refined reflections" are not defining of "the production of any passion or emotion". As such, (18) is a synthetic proposition, like *the fires are small*, in which the predicate is not linked to the subject by virtue of its intension, but adds new information about the subject. Further, dynamic necessity does not really signal an inherent presence, such as the presence of mercy in God in (14), but rather the absence of something that is desirable, such as "some very intricate and refined reflections" in (18). When something is regarded as necessary in a dynamic way to someone or something, it is needed or cannot be missed by or for that person or thing. Thus, it is possibly absent, but indispensable for a particular purpose, such as "the production of any passion or emotion". Finally, as this type of necessity is not defining in nature, it does not necessarily apply to all instances of the type designated by the head noun to which something is said to be essential.

In this section, we will argue that the semantic extension of *essential* from the sense of defining necessity to that of dynamic necessity can be attributed to the emergence of an element of potentiality. The corpus examples show that the origin of the potential element that gives *essential* a dynamic meaning is twofold: either the element to which something is said to be essential is modified by an evaluative adjective, or it is a potential action. In section 2.2.1, we will investigate the effect of evaluative adjectives on the interpretation of *essential*, and in 2.2.2 we will discuss the case of potential actions. It will be shown that in co-occurrence with a potential element in general, the relationship that *essential* establishes is not one of intrinsic inclusion (as in the second stage of its development), but rather one of indispensability. In terms of the types of modal meaning introduced in section 1, it will become clear that *essential* with potential meaning typically expresses situation-internal necessity, which is of a dynamic type. In this sense, the development of potential meaning implies a semantic extension from non-modal to modal meaning.

[29]Note that this is highly determined by the speaker's *Weltanschauung*. An ancient Greek speaker, for example, would not see mercy as an essential attribute of god (e.g., Zeus).

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

2.2.1 Evaluation. The earliest constructions in which *essential* is used with a meaning of dynamic necessity involve evaluative elements and appear in the early seventeenth century, not much later than its first relational (but non-potential) uses (1596). Examples are given below; example (19) is the first attestation in the OED.

(19) It is an **essentiall** property of a man truly wise, not to open all the boxes of his bosome. (OED 1618)
(20) Government is **essential** to formed and regular Societies. (OED 1681–86)

In these examples, the nouns to which a particular feature is said to be essential (*man* in [19], *societies* in [20]) are modified by evaluative adjectives. These adjectives indicate that the predication of being essential does not apply to all instances of the type designated by those nouns, but only to a potential subset of them. In (19), for instance, the property of not opening all the boxes of your bosom is said to be an essential property of *truly wise men* (only), so not of just every man. The property actually serves as a criterion for a man to be taken up in the privileged subset of truly wise men, or, in other words, if you want to be considered a truly wise man, you should not open all the boxes of your bosom. Example (20) can in turn be paraphrased as "in order for a society to be considered formed and regular, it should have government, or it should be governed". These condition-goal paraphrases make it clear that evaluative adjectives bring with them the notion of dynamic (situation-internal) necessity.

Because this step is so crucial in the development of essential, it may be useful to provide some further evidence for the effect of evaluative adjectives on the meaning of *essential*. A first test is to add an evaluative adjective to an expression that is obviously defining in meaning, such as (21) for instance.

(21) Heat is **essential** to fire.
(22) Heat is **essential** to a good fire.

As we saw in (13), heat is a defining feature of fire, intrinsically present in it. As soon as we add an evaluative adjective, however, as in (22), heat is no longer essential to all instances of fire, but only to good fires. Imagine a discussion about outdoor cooking and the qualities of a good fire to prepare pasta, for instance. In such a context, (22) can turn up as it specifies a necessary condition for a good fire, *viz*. that it should be hot. This shows how evaluative adjectives can even turn defining instances into dynamic uses.

Another piece of evidence can be found in the reversal of the test discussed above: we can also leave out an evaluative adjective and see how this deletion changes the meaning of *essential*. Below I repeat example (20) as (23), and in (24) I delete the adjectival phrase *formed and regular*.

(23) Government is **essential** to formed and regular Societies. (OED 1681–86)
(24) Government is **essential** to societies.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

As argued above, (23) involves dynamic necessity, as the predication of being essential does not apply to all the instances of the society, but only to a potential subset of these, *viz*. those that are formed and regular. In (24), on the other hand, we have an ambiguous case. We can insert the phrase ''the nature of'' without a semantically anomalous interpretation, which points to a defining meaning of *essential* (see section 2.2.2 for more details on this insertion test). If someone argues ''Government is essential to *the nature of* societies'', then in this person's *Weltanschauung* every type of society, anarchic, democratic or dictatorial, has a form of government. Government thus is intrinsically present in and a defining feature of society. In addition to this defining interpretation, we could also argue for a dynamic-modal reading. The insertion of an action nominal can make this clearer. The expression ''Government is essential to *the maintenance of* societies'', is semantically sound as well. The speaker, however, has a different *Weltanschauung*, in which not every society necessarily has a form of government, but they should have one in order to remain vigorous. In this interpretation, government is a necessary condition to maintain societies. Apart from acknowledging possible ambiguity and the importance of the speaker's *Weltanschauung* to resolve it, this exercise has also shown that the deletion of evaluative elements can imply a defining reading. From both this insertion and deletion test with evaluative adjectives we can conclude that such an adjective alone can force potential meaning and change the nature of the relationship established by *essential* from one of intrinsic inclusion to one of indispensability, giving rise to the dynamic modal meaning of situational necessity.

2.2.2 Potential action. Potentiality—and dynamic necessity—do not only emerge when the element to which something is said to be essential is modified by an evaluative adjective, but also when it is a potential action. This was illustrated in example (18) above, in which some very intricate and refined reflections are said to be essential to produce any passion or emotion. Clearly, the action of producing is potential: it has not yet been realized, but it can be realized at some point in the future. Some other examples involving potential actions are given below.

(25) And practice, though **essential** to perfection, can never attain that to which it aims, unless it works under the direction of principle. (CLMET 1720–80)

(26) Vegetables again in turn, and during the daytime, exhale and breathe forth that pure dephlogisticated air, so **essential** to the support of animal existence. (OED 1807)

In (26), the air exhaled by vegetables during the daytime is said to be essential to the support of animal existence. In other words, this is a dynamic-modal type of necessity, because it states a necessary condition (animal species must breathe in pure air) for an action, or rather the maintenance of a state (in order to stay alive). In (25), practice is argued to be essential to perfection. Perfection can either be interpreted as an action nominal (the action of making perfect), or as a state (the

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

condition of being perfect), but in the latter case what is meant here is the reaching of that perfect state. Again, the example expresses dynamic (situational) necessity, as an action (*practising*) is presented as a necessary condition for reaching a particular goal (*perfection*).

In examples (17), (18), (25), and (26), the potential action can be retrieved rather easily from the text or context, though often with the help of our knowledge of the extralinguistic world. To get a better grip on the distinction between defining and dynamic examples when the potential action is not that easily retrievable, we can repeat one of the tests from the previous section. If one can insert the phrase ''the nature of'' in front of the element to which something is said to be essential, without resulting in a semantically anomalous interpretation, *essential* will be used in its defining meaning. If, however, the insertion does not really fit the context, it should be replaced by a suitable action nominal. If the insertion of the latter is felicitous, *essential* will be used in its dynamic-modal meaning. Consider a corpus example in (27) and an invented one in (28).

(27) that lapsabilitie which is **essential** to humanitie. (OED 1682)
(28) that pure dephlogisticated air which is **essential** to humanities.

If we try to insert ''the nature of'' in (27) (''that lapsabilitie which is essential to *the nature of* humanitie''), we have a semantically acceptable expression, implying that lapsability is defining of human beings (of course according to the *Weltanschauung* of the speaker/writer). If we replaced ''the nature of'' by ''the survival of'', we would get a semantically anomalous expression, as if lapsability would be evolutionarily profitable and thus indispensable for the survival of human beings. Thus in (27), *essential* is used in its defining meaning. In (28), however, the test points to a dynamic-modal analysis of *essential*. As air is not intrinsically present in the nature of human beings, the defining interpretation of *essential* does not make sense. Rather, the intake of air is essential or indispensable to *the survival of* humanity, as we need it to maintain our cell activities (potential action, or rather potential maintenance of a state). Clearly, we use our linguistic and encyclopaedic knowledge to distinguish between defining and non-defining meaning, but the insertion test can make the ''options'' more explicit in case of doubt.

2.3 To Deontic Meaning ''Morally Necessary''

The discussion from the previous section shows that the extension of *essential* to evaluative contexts and contexts of potential action implies a semantic extension of the adjective. More specifically, the relationship established by *essential* has been extended from one of intrinsic inclusion to one of indispensability or dynamic-modal necessity. With the emergence of potential meaning, *essential* typically expresses situational necessity. In evaluative contexts, on the one hand, something or someone must first fulfil a particular condition in order to be accepted in a

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

privileged subset defined by evaluative adjectives. In contexts of potential actions, on the other hand, some means or action is a necessary condition to reach a certain goal, just like the support of the bill by 100 MPs in (6) is necessary to give it a second reading. Thus, in these two contexts *essential* expresses a necessity that is internal to the SoA referred to.

To express deontic modality, however, an utterance needs a modal source (typically the speaker) in whose view a certain action is assessed as necessary or desirable on the basis of (moral) arguments that are external to the SoA. As such, the final step on the pathway to deontic meaning involves the process of subjectification as defined by Elizabeth Closs Traugott, in which ''meanings tend to become increasingly based in the speaker's subjective belief state/attitude toward the proposition''.[30] Deontic utterances appear in the first half of the nineteenth century. An example is given below.

(29) The Anglo-Catholics consider it **essential** to be ordained by bishops receiving their appointment in regular succession from the apostles. (OED 1842)

In (29), the Anglo-Catholics are the modal source who consider it desirable or morally necessary that the bishops (modal agents) ordain them (and not, for instance, other ministers of the Church of England). Here, the action itself is expressed, but the entity for which the action is assessed as essential is not. Indeed, it is hard to express to what entity an action can be considered morally necessary, or, in other words, with which entity *essential* links the modal action in this example. In rather abstract terms it can be proposed that a modal action is regarded as desirable to the good cause, or to what the modal source considers good or suitable in general, rather than to any specific SoA, which would make the utterance dynamic. It should be acknowledged, of course, that the dividing line between a deontic and a dynamic reading is not always clear-cut.

2.4 Conclusion

We conclude this section with Table 2 which summarizes the four stages of the development of *essential* in terms of the properties of relationality, potentiality and desirability on SoA-external grounds.

In the first stage, *essential* does not have a relational meaning, as it denotes a subclass of only one element and does not link it with another one. In the second stage, co-occurrence with relational nouns facilitates the development of relational meaning, and the emergence of defining necessity. In the third stage, which starts only a few decades after the second one, co-occurrence with evaluative adjectives and potential actions drives the development of potential meaning, and the development from intrinsic inclusion to indispensability or dynamic necessity. It is not surprising

[30]Traugott, 35.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

Table 2 The Four Stages in the Semantic Development of *Essential*

Stages / Semantic properties	Stage 1: original meaning (from 1340 onwards) "being such by its true nature"	Stage 2: defining necessity (from 1596 onwards) "constituting the true nature of"	Stage 3: dynamic necessity (from 1618 onwards) "indispensable for"	Stage 4: deontic necessity (from 1842 onwards) "morally necessary"
Relationality	−	+	+	+
Potentiality	−	−	+	+
Desirability	−	−	−	+

that evaluative contexts are earlier than contexts of potential action, as evaluative contexts are still close to defining contexts because of the part-whole or inclusion relationship between X and Y (properties of men in [19], government of societies in [20]). Contexts of potential action are both diachronically and semantically further "removed" from defining contexts, because they have given up the part-whole relationship at all. As to the final stage with actions assessed desirable on (SoA-external) moral grounds, we appealed to the process of subjectification as mechanism of semantic change. It will be shown that the process of subjectification also plays an important role in the semantic development of *crucial*.

3. The Semantic Development of *Crucial*

Crucial is another adjective that was borrowed into English as a non-modal adjective, but later developed deontic meanings. In this section, we will show that five stages can be distinguished in its semantic development, which are not as clear-cut as is the case for *essential*. Three semantic changes will be discussed in their chronological order; a first change driven by metaphorical extension (discussed in section 3.1), a second change driven by semantic generalization (discussed in 3.2), and a third change driven by subjectification (discussed in 3.3). Again, we will describe the development of deontic meaning in terms of the semantic features of relationality, potentiality and desirability.

3.1 From "Cross-Shaped" to "Necessary to Decide Between Two Hypotheses"

Like *essential*, *crucial* is of Romance origin. According to the etymology given in the OED, it was borrowed from French into English in the early eighteenth century with the meaning of "cross-shaped" or "in the form of a cross". The French word *crucial* itself is formed on the Latin noun *crux*, *crucem* "cross" and appeared in French medical texts in the sixteenth century (e.g., in *section cruciale*), also in the sense of "cross-shaped".[31] The first attestations of *crucial* in the OED are given below. Clearly, they are also taken from medical texts.

[31]Malgaigne 1840–1, as cited in *Trésor de la langue française*, 6:559a.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

(30) ***Crucial*** *Incision*, the cutting or lancing of an Impostume or Swelling cross ~ wise. (OED 1706)

(31) The bursal and **crucial** ligaments were in their natural order. (OED 1751)

In both (30) and (31), *crucial* functions as a classifier. In (30), it indicates a specific type of incision in the form of a cross, as opposed to a linear incision. As such, *crucial* designates a subtype of the general type of incision, rather than assigning a gradable quality. In (31), *crucial* denotes a sub-class of *ligaments*: specifically, these are the two ligaments in the knee-joint, which cross each other in the form of a Saint Andrew's cross and connect the femur and tibia, as opposed to the bursal ligaments, which cross the bursa.[32] In this case too, *crucial* indicates a subtype of the general type of the head noun, and does not attribute a quality to the NP referent. More generally, the OED database does not contain any predicative or graded uses of *crucial* in its original meaning. It is clear that *crucial* in the sense of "cross-shaped" or "cross-like" is non-relational, since it does not link two concepts, that it is non-potential, since it does not involve a potential event or the potential presence of an entity, and that it does not involve a notion of desirability (but merely an indication of the shape of an entity).

The first semantic change of *crucial* on its way to deontic meaning involves metaphorical projection. It is commonly accepted that the basis of this metaphorical extension was laid in the work of Francis Bacon (1561–1626).[33] In his very influential *Novum Organum* (1620), written in Latin, Bacon coins the phrase *instantia crucis* "crucial instance", which he explains as a metaphor derived from crosses that are placed at bifurcations of the road and indicate where each way will lead. Crucial instances are places where the scientist or thinker in general has to make a decision, as much as finger-posts are places where the traveller has to decide which way to go[34] (the Latin word *crux* at that time had acquired the meaning of "a guidepost that gives directions at a place where one road becomes two";[35] the question whether the emergence of the metaphorized meaning in English is a language-internal development or the result of another borrowing does not concern us here). Bacon thus maps the more concrete domain of travelling onto the more abstract domain of thinking. Robert Boyle (1627–91) and Isaac Newton (1642–1727) built on this metaphor and used the term *experimentum crucis* to refer to the experiment performed to decide between two rival hypotheses.[36] Although the studies of the scientists mentioned were written in the seventeenth or early eighteenth

[32]OED, s.v. *crucial* and *bursal*.

[33]OED, s.v. *crucial*; Von Wartburg, 2, bk.2:1382b; Klein, 178; *Trésor de la langue française*, 6:559.

[34]It can be argued that this metaphor has a metonymical basis, as the instances in question are not cross-like, but rather situated at crosses posted at bifurcations of the road. This relation of spatial contiguity thus serves as the base for the metaphor, which is in line with Antonio Barcelona's claim that the target and/or the source of a potential metaphor "must be *understood* or *perspectivized* metonymically for the metaphor to be possible" (Barcelona, 31; italics original).

[35]OED, s.v. *crucial*; Von Wartburg, 2, bk.2:1380a.

[36]OED, s.v. *crucial*.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

century (some in Latin), the specific phrases with the adjective *crucial* appear in English only in the nineteenth century. The earliest example is given in (32) below.[37]

(32) What Bacon terms **crucial** instances, which are phenomena brought forward to decide between two causes, each having the same analogies in its favour. (OED 1830)

The definitions of *crucial instance* (in [32]) and *crucial experiment* (given above) make it clear that these fixed phrases have relational and potential meaning as a whole, since the consideration of a "finger-post-like" type of instance or the performance of such a type of experiment is necessary in order to decide between rival hypotheses. (Note that *crucial* functions as a classifier of its collocates.) These condition-goal paraphrases imply that the collocations involve dynamic situational necessity, just like *essential* in its third stage of semantic development.

3.2 From "Necessary to Decide Between Two Hypotheses" to "Decisive For"

A second semantic change takes place when the use of *crucial* is extended to contexts other than the collocations with *instance* and *experiment*, and concomitantly, the specific meaning of "necessary to decide between two hypotheses" is generalized to "decisive for" or "important for". Whereas *crucial* only has this specific meaning in the collocations with *instance* and *experiment*, in which it functions as a classifier, it retains a more general meaning of "important" or "decisive" when used in modifying other nouns. Semantically, in such other contexts, it is *crucial* itself that has relational and potential meaning, and not the combination between the adjective and the noun. Syntactically, it no longer functions as a classifier, but as an attribute: it is gradable, it can be used in predicative position (see [34] – [35]), and it allows complements (see [33] – [35]). Example (33) illustrates the semantic generalization of *crucial*. Even if it modifies the noun *experiments*, we can still argue for a general attribute reading, since the potential action to which the experiment is considered crucial needs to be expressed; if *crucial experiments* had been used in its specific collocational sense, the *for*-complement would have been redundant. It should be noted that the type of relationship that *crucial* establishes between two concepts is one of decisive importance or determining influence.

(33) **Crucial** experiments for the verification of his theory. (OED 1869)

[37]The Latin phrases appeared in earlier scientific or philosophical English writings (e.g., *The gradual removal of these suspicions at length led me to the Experimentum crucis* [Newton 1672, OED, s.v. *crucial*]; *The Experimentum crucis or that Experiment, which points out the Way we should follow, in any Doubt or Ambiguity* [Hume 1751, OED, s.v. *experimentum crucis*]).

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

As in the case of *essential*, potential contexts such as in (33) are a prerequisite for dynamic and later on deontic modal meaning. In the following dynamic examples, some actions are considered crucial to other potential actions.

(34) These results show that fertilizer is **crucial** for satisfactory growth, particularly slow acting types such as John Innes base. (OED 1970)
(35) It is **crucial** that the blocking device, (...), is deposited at this point to ensure that the tubes are rendered impassable. (CB)

In (34), the use of fertilizer is shown to be decisive for satisfactory growth. Clearly, the semantic properties of relationality and potentiality are present; the use of fertilizer is a necessary condition to attain the goal of satisfactory growth. The same goes for (35), where the blocking device has to be deposited at a certain point in order to ensure that the fallopian tubes are rendered impassable. The action of depositing is thought to be necessary on SoA-internal grounds, that is, for the proper blocking of the tubes (in a sterilization operation). Examples (33)–(35) have thus made clear that *crucial* in its generalized meaning of "decisive for" can be used in dynamic utterances expressing a situation-internal necessity.

3.3 To Deontic Meaning "Morally Necessary"

Whereas in the examples above actions are described as crucial or necessary on the basis of SoA-internal arguments, deontic utterances need a modal source who assesses an action as morally necessary on SoA-external grounds. Such expressions are only found in present-day English.

(36) With the scourge of illegal narcotics infecting every part of the world, it is **crucial** to educate young people about the dangers of drugs. (CB)

Here, the speaker (modal source) argues that it is desirable or morally necessary to educate young people about the dangers of drugs. The modal agent is not only the actual hearer(s), but rather a generic hearer. As the meaning of *crucial* is based in the speaker's (moral) attitude toward the proposition, more than is the case in the earlier dynamic expressions, we can again invoke subjectification. As in the case of *essential*, the element to which the modal action is considered crucial is not expressed, but can be identified with what the modal source considers to be good or suitable in general.

3.4 Conclusion

The five stages that can be distinguished in the semantic development of the French loan *crucial* are summarized in Table 3, again in terms of the properties of relationality, potentiality and desirability.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

Table 3 The Five Stages in the Semantic Development of *Crucial*

Stages / Semantic properties	Stage 1: original meaning (from 1706 onwards) "cross-shaped"	Stage 2: metaphorized meaning (from 1830 onwards) "like (at) a finger-post"	Stage 3: collocational meaning (from 1830 onwards) "necessary to decide between two hypotheses"	Stage 4: dynamic meaning (from 1869 onwards) "decisive, important for"	Stage 5: deontic meaning (only in present-day English) "morally necessary"
Relationality	−	−	+	+	+
Potentiality	−	−	+	+	+
Desirability	−	−	−	−	+

First, it should be noted that the distinction between stages 2 and 3 is not clear-cut. In fact, these two stages coincide temporally, since the metaphorical projection is brought about by Bacon's coining of the fixed collocation *crucial instance*. The two stages have been distinguished on the basis of the principle of image-schema preservation, which ensures that the source and target meaning of a metaphor have the same image-schematic structure (stage 1 and stage 2 have the same configuration of semantic properties). Arguably, only in the specific collocations with *instance* and *experiment* can *crucial* be characterized by relational and potential meaning (see stage 3). In a process of semantic generalization, *crucial* loses the specific collocational meaning, and comes to mean "that is decisive for". In this meaning, it can be used in dynamic utterances expressing necessity inherent in a situation, like *essential* in its third stage of development. Deontic utterances, however, require the presence of a modal source assessing an action as desirable on SoA-external (moral) grounds. The semantic extension of *crucial* to deontic meaning involves subjectification as well, and is found only in present-day English.

4. Adjectival Pathways to Deontic Meaning

If we compare the development of deontic adjectives with what we know about deontic verbs like *must*, *can* and *may*, there are some obvious similarities, but also a range of interesting differences. The clearest similarity is in the last phase of development: in both cases, deontic meanings are subjectifications of earlier dynamic types of meaning. Importantly, however, the type of dynamic meaning involved differs. Whereas the modal auxiliaries express agent-internal meaning (ability) in their dynamic stage, the adjectives studied express situation-internal meaning, with the process of subjectification re-orienting the property of necessity from the situation (necessity internal to a particular situation) to the modal source (necessity as judged by someone, typically the speaker). What is even more interesting, is the stages leading up to this final stage. With adjectives, the

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

development of the dynamic meaning that leads up to deontic meaning is a matter of the properties of relationality and potentiality. Relationality is needed to turn the adjective into a predicate of necessity that can link a modal agent with an action, whereas potentiality is needed to ensure that the necessity involved is dynamic-modal rather than defining.

The case studies investigated here also show some substantial differences in the development of these properties. On the one hand, they show that the factors driving the emergence of relationality can be quite different: patterns of co-occurrence with relational nouns in the case of *essential*, as opposed to metaphorical developments and semantic generalization in the case of *crucial*. On the other hand, the case studies also show that the properties function on different levels: the development of relationality seems to be mainly a lexical matter, while the development of potentiality seems to be on a constructional rather than a lexical level. The change from non-relational to relational meaning always involves the largest semantic leap (from meanings that do not involve necessity to meanings that do) and precedes the development of the other properties, most clearly so in the semantic extension of *essential*. The changes involving potential meaning, and further on to deontic meaning, by contrast, involve smaller semantic developments (from one type of necessity to another).

From a broader perspective, our analysis of the development of deontic adjectives does not only contribute to our knowledge about the development of deontic expressions in general, but the two adjectives studied here can also serve as models for a whole range of other deontic adjectives, which seem to have followed similar paths. Thus, for instance, *proper* and *vital* seem to share a pre-dynamic stage of defining necessity and part-whole semantics with *essential* (OED). *Critical*, on the other hand, can be shown to have developed along the same lines as *crucial*, maybe not via a metaphorical extension, but certainly via a generalization of meaning from a medical context. Apart from these adjectives, which are all loan words, native adjectives like *needful* may present us with yet other pathways to deontic meaning (like from ''poor'', ''needy'' over ''necessary'', ''indispensable''[38] to ''morally desirable''). We hope that further research can elaborate on this preliminary typology of adjectival paths to deontic meaning.

Acknowledgements

The research reported on in this paper has been made possible by research grants OT/03/20/TBA and OT/04/12 of the Research Council of the University of Leuven. We would like to thank Ditte Kimps and Lot Brems for discussion of several topics treated in this paper, and Hendrik De Smet and Tine Breban for providing us with some useful references.

[38]OED, s.v. *needful*.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008

References

Barcelona, Antonio. "Introduction: The Cognitive Theory of Metaphor and Metonymy." In *Metaphor and Metonymy at the Crossroads: A Cognitive Perspective*, edited by Antonio Barcelona. Berlin: Mouton de Gruyter, 2000.

Bolinger, Dwight. "Adjectives in English: Attribution and Predication." *Lingua* 18 (1967): 1–34.

Bybee, Joan, Revere Perkins, and William Pagliuca. *The Evolution of Grammar: Tense, Aspect, and Modality in the Languages of the World.* Chicago: The University of Chicago Press, 1994.

Coates, Jennifer. *The Semantics of the Modal Auxiliaries.* London: Croom Helm, 1983.

Collins Cobuild Corpus. CoBUILD *The Bank of English* curpus [http://www.cobuild.collins.co.uk]. London: Collins Publishers.

Corpus of Late Modern English Texts. See De Smet, Hendrik, 2005.

Davies, Eirian. *On the Semantics of Syntax. Mood and Condition in English.* London: Croom Helm, 1979.

De Smet, Hendrik. "A Corpus of Late Modern English Texts." *ICAME Journal* 29 (2005): 69–82.

Halliday, M. A. K. *An Introduction to Functional Grammar.* 2d ed. London: Edward Arnold, 1994.

Helsinki Corpus. See Kytö, Merja, 1996.

Hengeveld, Kees. "Illocution, Mood and Modality in a Functional Grammar of Spanish." *Journal of Semantics* 6 (1988): 227–69.

Klein, Ernest. *A Comprehensive Etymological Dictionary of the English Language Dealing with the Origin of Words and their Sense Development, thus Illustrating the History of Civilization and Culture.* Amsterdam: Elsevier Publishing Company, 1971.

Kytö, Merja. "Manual to the diachronic part of the Helsinki Corpus of English Texts. Cooling conventions and lists of source texts." Helsinki: Department of English, University of Helsinki, 1996.

Langacker, Ronald W. *Foundations of Cognitive Grammar.* Vol. 2, *Descriptive Application.* Stanford: Stanford University Press, 1991.

Loureiro-Porto, Lucía. "The Semantic Predecessors of *Need:* From Old to Early Modern English." Ph.D. diss., Universidade de Santiago de Compostela, 2005.

Lyons, John. *Semantics.* Vol. 2. Cambridge: Cambridge University Press, 1977.

Nuyts, Jan. "Modality and the Layered Representation of Conceptual and Linguistic Structure." *Linguistics* 31 (1993): 933–69.

———. "Subjectivity as an Evidential Dimension in Epistemic Modal Expressions." *Journal of Pragmatics* 33, no. 3 (2001): 383–400.

Nuyts, Jan, Pieter Byloo, and Janneke Diepeveen. "On Deontic Modality, Directivity, and Mood. A Case Study of Dutch *mogen* and *moeten*." In *Antwerp Papers in Linguistics.* Vol. 110. Antwerp: University of Antwerp, 2005.

Oxford English Dictionary. 2nd ed. (1989) on CD-ROM, version 3 (2002) Oxford: Oxford University Press.

Palmer, Frank Robert. *Modality and the English Modals.* London: Longman, 1979.

———. *Mood and Modality.* Cambridge: Cambridge University Press, 1998.

———. *Mood and Modality.* 2d ed. Cambridge: Cambridge University Press, 2001.

Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech, and Jan Svartvik. *A Comprehensive Grammar of the English Language.* London: Longman, 1985.

Riviere, Claude. "Modal Adjectives: Transformations, Synonymy, and Complementation." *Lingua* 59 (1983): 1–45.

Sweetser, Eve. *From Etymology to Pragmatics.* Cambridge: Cambridge University Press, 1990.

Teyssier, Jacques. "Notes on the Syntax of the *Adjective* in Modern English." *Lingua* 20 (1968): 225–49.

Traugott, Elizabeth Closs. "On the Rise of Epistemic Meanings in English: An Exemplification of Subjectification in Semantic Change." *Language* 65 (1989): 31–55.

Traugott, Elizabeth Closs, and Richard B. Dasher. *Regularity in Semantic Change.* Cambridge: Cambridge University Press, 2002.

Trésor de la langue française. Dictionnaire de la langue du XIX^e^ et du XX^e^ siècle. 16 vols. Paris: Centre National de la Recherche Scientifique, 1971–94.

Van der Auwera, Johan, and Vladimir Plungian. "Modality's Semantic Map." *Linguistic Typology* 2, no. 1 (1998): 79–124.

Verstraete, Jean-Christophe. "Scalar Quantity Implicatures and the Interpretation of Modality. Problems in the Deontic Domain." *Journal of Pragmatics* 37, no. 9 (2005): 1401–18.

Von Wartburg, Walther. *Französisches Etymologisches Wörterbuch. Eine Darstellung des gallo-omanischen Sprachschatzes.* Bonn: K. Schroeder, 1922.

Von Wright, Georg Henrik. *An Essay in Modal Logic.* Amsterdam: North Holland, 1951.

———. *Norm and Action: A Logical Enquiry.* London: Routledge, 1971.

Downloaded By: [Van linden, An] At: 09:46 16 April 2008