

Polysemy and Default Inheritance. A Diachronic Approach

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It is now widely accepted that both synchronic and diachronic approaches have to be integrated in linguistic research, since the present state of any language necessarily reflects its history. The need for the combination of both approaches is especially evident in the study of polysemy because the motivation in the semantic structure of polysemous items can be explained by reference to the historical addition of new senses to the already existing meanings and the loss of old ones. The interrelationship of the different subsenses, apparently unrelated from a synchronic point of view, can be brought to light when they are seen from a diachronic perspective.

Recent research in cognitive linguistics¹ has shown that it is a highly appropriate framework to deal with the semantic change of polysemous words. Cognitive Grammar² claims that the structure of language is based on our perception and understanding of the real world, that is, on human cognition. Coleman and Kay (1981)³ remark that the semantic structure of an item is based on our knowledge of the world, and Lakoff (1987)⁴ shares the assumption that the meaning of a word cannot be successfully analysed into binary features (as postulated by Katz and Fodor 1963)⁵ since word meanings are frequently prototype-based. In prototypical categories some of the senses are more central than others, but the distinction between core senses and marginal nuances is not sharp because word meanings are fuzzy, not clear-cut entities and do not have clear boundaries.

In this paper we will address two main issues: First, we will prove that semantic change can be motivated. Second, we will concentrate on a long-standing neglected aspect of diachrony, that of the formalization of semantic change, and will show that semantic change can be formalized in an explicit manner using a unified inheritance default formalism called DATR. Our research will focus on the analysis of the historical development of the polysemous English verb WATCH, which will provide extensive evidence for these two points. The DATR encoding of our theory and the output theorems which prove that our claims are correct are given as appendices.

As the discussion proceeds, we will bring to light the interrelationships between the earliest meanings of WATCH and the new senses in a cognitively based approach, along the lines of the prototype theory. We will argue that the new meanings that this word has acquired over the centuries are not random and

that its multiple senses are interrelated in a motivated way. In the case of the verb under discussion, semantic change can be considered as a continuum, a logical succession of meanings. The new subsenses of WATCH appear by inheriting the components of a primitive sense plus the addition of one or more related idiosyncratic semantic components, which interact with it and give rise to a new meaning. The primitive atomic sense becomes molecular by the addition of these new semantic elements. At that moment we may have polysemy - the old meaning and the new one coexisting - and therefore ambiguity. This ambiguity can be solved by means of the linguistic context, i.e. complementation, or the extralinguistic context - pragmatics -, thus showing the relationship between syntax, semantics and pragmatics. Then, a new semantic component related to the most recently acquired may appear, and at the same time the old one may disappear. Again, we have polysemy and ambiguity, solved in its turn by the complementation. In short, the different meanings take shape by the continuous addition of semantic components to the ones inherited from the previous sense, forming ever changing clusters of semantic properties, and followed by different types of complementation, which may help to give shape to the new meaning, as well as to disambiguate the possible resultant polysemy.

Semantic evolution of WATCH

Present-day WATCH has two central groups of related senses 'keep looking at' and 'keep an eye on' and another, less predominant, sense 'be awake with a sick person'. The analysis of the development of WATCH will show how the original meaning 'be awake' has been lost except in the case of 'with a sick person' (which combines 'be awake' and 'take care'). On the other hand, another of the OE meanings 'be on the alert' has given rise to 'keep watch' by the addition of semantic and syntactic features. This latter meaning, in its turn, has originated 'keep looking at', which was a relatively late development, but is today one of its core meanings.

According to our data⁶, originally OE *wæccan* had two main meanings⁷: (i) 'be awake', which had another subsense closely related to it: 'remain awake' intentionally and for a purpose, which could be non-specific or specific, in the latter case it was usually religious:

Sive vigilemus sive dormiamus, Sva hvœ-er we **wocca** wel we slepa.

Rituale Eccles. Dunelm. 28

Heo wæs **wæccende** dæges ond nihtes

Blick. Hom. 137

(ii) 'be on the alert', 'keep watch':

Ac hē **wæccende** wrāpum on andan
bād bolgen-mōd beadwa gepinges.

Beowulf. 708-9

These two senses, apparently unrelated, are, as we will argue, connected in a motivated way.

As a working hypothesis, we will assume that the most basic and atomic sense is 'be awake', which can be understood as a physical state. When the component⁸ 'intentionally and with a purpose' is added, 'be awake' becomes 'remain awake'. The element 'a period of time' is also implicit in this new subsense⁹. This change is schematized in (1):

(1) BE AWAKE + [intentionally, purpose] > REMAIN AWAKE (physical state).

It is also possible to motivate the connection between 'be on the alert' and 'remain awake' if it is assumed that the component 'attention', triggered by the presence of danger, interacts with the prototypical features of 'remain awake', conforming the new sense 'be on the alert'. This latter sense can be considered molecular, since to be on the alert one must necessarily remain awake, which necessarily implies being awake. The component of attention gives rise to a change of state: the original physical state becomes a physical mental state involving the participation of all senses. This change is schematized in (2):

(2) REMAIN AWAKE + [attention] > BE ON THE ALERT (physical mental state)

This physical mental state, implying watchfulness against danger, naturally develops into 'keep watch', which refers to an activity implying readiness to take action at the right moment. 'Keep watch' implies that there may be real and imminent danger, and attention is focused on it. The sense of vision becomes more prominent since the subject controls the space within his visual scope, and although the potential danger is out of his range of vision, the subject is ready to take action when the danger comes within it. 'Be on the alert' and 'keep watch' are categories with fuzzy boundaries, their differences are a matter of gradience rather than a clear-cut distinction. Danger can be perceived as [+/- concrete] and [+/- imminent]. In the case of 'be on the alert' it is [- concrete] and [-imminent], but [+concrete] and [+imminent] in 'keep watch'. This change is schematized in (3):

(3) REMAIN AWAKE (physical mental state) > KEEP WATCH (activity)

Our hypothesis that all these senses have evolved from ‘be awake’ can be proved by the Modern English translation of **wæccende** in *Beowulf* as ‘kept unblinking watch’, which clearly shows the connection between all these senses and supports our claim that there has been a process of simple inheritance by which ‘keep watch’ (act of watching) inherits from ‘be on the alert’ (watchfulness), which in turn inherits from ‘remain awake’ (wakefulness), and ‘remain awake’ from ‘be awake’. The verb indicating physical mental state ‘remain awake’ has become an activity verb ‘keep watch’. With the appearance of ‘keep watch’ as an activity emerges the role of the watchman or sentinel, who fulfils the act of watching:

That every householder should **watche** in proper person or at the least provide a good honest and able **watcheman** for the more suertie and save garde of the towne.

S’hampton Crt. Leet Rec. I.i.131

Each man **watches** four hours , and rests eight.

W. Scoresby, *An Account of the Arctic*

Regions. II. 235

At the end of the Middle English period WATCH arises as a transitive verb and then the complementation of the verb begins to have a crucial importance to conform the successive meanings. When the verb is transitive, its complementation interacts with its semantic features and gives rise to different subsenses. Old English *wæccan* ‘be awake, remain awake’ is intransitive, and so are ‘be on the alert’, indicating verb of state, and ‘keep watch’ indicating activity. However, in the Middle English period, although *wacchen* as an activity verb can appear without complementation, with the meaning ‘act of watching’ to take action at the right moment, it can also be transitive and appear with explicit complementation, with the generic sense ‘keep something in sight’. The object is the focus of attention and within the visual control of the subject. Sight begins to have prominence over the other meanings, and the grammatical subject is the controller, its attention focused on the visible grammatical object. When the subject’s intention is hostile, and its purpose to attack or do harm, the meaning of WATCH is ‘keep a hostile lookout’:

Hauing once this iuyce
Ile **watch** Titania, when she is asleepe,
And drop the liquor of it in her eyes.

W. Shakespeare, *A Midsummer Night's Dream*; II,i .

He became aware that he was **watched** by a party of men, whose appearance
had nothing in it very consolatory to the journeyer of those days.

G. James, *Philip Augustus* v

A neighbour had seen somebody **watching** the house the night before.

If the subjects's intention is not hostile, i.e. prevent harm, then the meaning
changes to 'keep an eye on':

But who would **watch** her with a mother's tenderness.

M. Wollstonecraft, *Maria or the Wrongs of Woman*, Ch I

I'll **watch** the baby while you go out.

The addressee's pragmatic knowledge of the real world will determine
whether the verb is used in its positive sense of protection or in the negative sense
of surveillance in order to attack or do harm. These changes can be schematized
in (4) and (5):

(4) KEEP WATCH + [negative intention, purpose to control]> KEEP A HOSTILE
LOOKOUT.

(5) KEEP WATCH + [positive intention, purpose to control] > KEEP AN EYE ON.

As we have just said, there is a point in the evolution of WATCH when the
grammatical object is within the scope of vision of the subject and sight becomes
more and more prominent. At first, in early Modern English, the two semantic
elements 'vision' and 'hostile lookout' are both present and closely linked,
involving continuous control, as the following example shows:

And they **watched** him, whether he would heal him on the sabbath day; that
they might accuse him.

Mark, 003:002

In the Modern English period sight becomes the salient feature. The subject's intention gradually becomes more neutral, since it can just be to observe and learn, and to know what is going on. These new subsenses could be paraphrased as 'observe' and 'keep looking at'. Again, there is gradience here [+/- control] and [+/- awareness]:

The students **watched** as the surgeon performed the operation.

She would take her station here, at dusk, and **watch** the people as they passed up and down the street.

C. Dickens, *The Old Curiosity Shop*, Ch. IX.

Watch TV.

These changes can be schematized in (6) and (7):

(6) KEEP STH IN SIGHT + [intention to be aware and learn, +control] > OBSERVE

(7) KEEP STH IN SIGHT + [intent. to know what is going on, -control] > KEEP LOOKING AT

In a parallel way to the rise of the sense 'keep in sight' there is also a shift in the type of object. When the meaning of WATCH is 'keep watch, keep under surveillance', the object is a Noun Phrase which refers to an individual, a person or thing:

Than he **watched** your Chambre bryght,
With men of armes hardy and wyght

The Squyr of lowe Degree, 997

However, when WATCH arises as a verb of perception, its complementation corresponds to what Dik and Hengeveld (1991)¹⁰ classify as 'immediate perception of state of affairs' by an individual, that is to say, the subject perceives not the individual itself, but a state of affairs. For this reason, we generally have animate objects, or NP implying processes:

These two girls had been above an hour in the place, happily employed in visiting an opposite milliner, **watching** the sentinel on guard, and dressing a salad and cucumber

J. Austen, *Pride and Prejudice*, Ch 39

Thus long have we stood to **watch** the fearefull bending of thy knee
W. Shakespeare, *Richard II*, III, iii

Gazing at the moon , and **watching** its motion
M. Wollstonecraft, *Maria or the Wrongs of Woman*, Ch II

Therefore, WATCH cannot be used in the sense ‘look at’ with an inanimate object when there is no movement or expectation of state of affairs. This explains the ungrammaticality of sentences such as “Watch the pencil” or *”He’s watching the chair”¹¹.

When WATCH is used as a perception verb there gradually appears an XComplement in the complementation (VP[bare infinitive/present participle]):

Mary **watched** the boatman leave the house
Mrs. Gaskell, *Mary Barton* , xxxi

Lying upon my back, I **watched** the clouds forming
J. Tyndall, *The Glaciers of the Alps*, I. xxv

Although in the Middle English period the *to*-infinitive became the most frequent form, the verbs of perception, *see*, *feel*, *hear* continued to appear with the bare infinitive, even though with most other verbs the bare infinitive clearly lost ground to the *to*-infinitive. According to Fischer (1992)¹², from Middle English on, the bare infinitive is found when the matrix verb is grammaticalised, that is to say, has little semantic content - the case of the modals, for example, and with verbs of perception. The verbs of perception keep their lexical meaning but normally take the bare infinitive. Fischer explains this exception to the general rule saying that this is because the actions expressed by the perception verb and the infinitive are simultaneous.

Once WATCH has acquired the sense of visual perception, it can be metaphorically extended to mean mental perception, ‘keep something in mental view’:

He **watched** th’ideas rising in her mind.
A. Pope, *Rape of the Lock*, III

Metaphorical extension is frequent with verbs of vision (Sweetser 1990). Its basis is probably the close relationship between the sense of sight and knowledge and the fact that knowledge is normally obtained through sight.

Overview of DATR¹³

Evans and Gazdar (1989 a,b)¹⁴ presented the basic features of **DATR**. In this section we briefly review these features; more detailed discussion accompanies examples below where appropriate. **DATR** is a declarative network representation language with two principal mechanisms: orthogonal multiple inheritance and nonmonotonic definition by default. The primary unit of a **DATR** network description is called a **NODE** and consists of a set of **PATH/DEFINITION** pairs where **PATH** is an ordered sequence of arbitrary atoms (enclosed in angle brackets), and **DEFINITION** is either a value, an inheritance specification or a list of definitions (enclosed in round brackets). The primary operation on a **DATR** description is the evaluation of a **QUERY**, namely the determination of a value associated with a given **PATH** at a given **NODE**. Such a value is either (a) defined directly for **PATH** at **NODE** or (b) obtained via an inheritance specification for **PATH** at **NODE** or (c) determined from the definition for the longest subpath of **PATH** defined at **NODE**, when **PATH** itself is not defined at **NODE**. Inheritance specifications provide a new node, new path or both to seek a value from. The simplest form of inheritance, called **LOCAL** inheritance, just changes the node and/or path specification in the current context:

```
Node1:Path1 == Node2
    (inherit value from Path1 at Node2)
Node1:Path1 == Path2
    (inherit value from Path2 at Node1)
Node1:Path1 == Node2:Path2
    (inherit value from Path2 at Node2)
```

A second form of inheritance, called **GLOBAL** inheritance, changes the node and/or path specification in the saved global context (initially set to the node/path pair of a query) and inherits from the new global context:

```
Node1:Path1 == "Node2"
    (set global node to Node2 and inherit value from global node/path)
Node1:Path1 == "Path2"
    (set global path to Path2 and inherit value from global node/path)
Node1:Path1 == "Node2:Path2"
    (set global node and path and inherit)
```


When a requested path is not defined at a node, the longest subpath (starting from the left) is used to provide a definition, with all the paths (if any) in the definition specification extended by the extra requested atoms. Thus if paths $\langle a \ b \ c \rangle$ and $\langle a \ b \ c \ d \rangle$ are defined at Node1, a definition such as:

Node1: $\langle a \ b \rangle ==$ Node2: $\langle x \rangle$.

implicitly defines both the following:

Node1: $\langle a \ b \ c \rangle ==$ Node2: $\langle x \ c \rangle$.

Node1: $\langle a \ b \ c \ d \rangle ==$ Node2: $\langle x \ c \ d \rangle$.

This ‘definition by default’ (in the absence of any more specific path definition) gives DATR its nonmonotonic character: add a definition to a node and some of those previously valid, but derived by this default mechanism, may cease to hold.

DATR description of the semantic evolution of WATCH

As we have already discussed, the meanings of WATCH originated from the primitive OE meaning ‘be awake’, by a process of simple inheritance and interaction of idiosyncratic new properties. A partial DATR fragment for OE, which expresses this process, is illustrated in (1):

(1) DATR fragment for OE WATCH:

BE_AWAKE:

$\langle \text{origin} \rangle == \text{old_english}$
 $\langle \text{meaning} \rangle == \text{be_awake}$
 $\langle \text{state} \rangle == \text{physical_state}$.

REMAIN_AWAKE:

$\diamond == \text{BE_AWAKE}$
 $\langle \text{motivated} \rangle == \langle \text{BE_AWAKE} : \diamond \text{ and } \langle \text{purpose} \rangle \rangle$
 $\langle \text{meaning} \rangle == \text{“} \langle \text{motivated meaning} \rangle \text{”}$
 $\langle \text{purpose} \rangle == \text{any_purpose}$
 $\langle \text{be_awake and any_purpose} \rangle == \text{remain_awake}$.

Watch1:

$\diamond == \text{BE_AWAKE}$.

Watch2:

◇ == REMAIN_AWAKE.

The inheritance hierarchy illustrated in (1) is rooted in node BE_AWAKE, which is defined for path <origin>, <meaning> and <state>. Thus, in the query:

Watch1: <meaning> = ?

DATR infers:

Watch1: <meaning> = be_aware.

This illustrates a process of simple default inheritance in which Watch1 inherits its value from path <meaning> at node BE_AWAKE. By the same token, if the query is: Watch1 = ?, DATR infers:

Watch1: <origin> = old_english.

Watch1: <meaning> = be_aware.

Watch1: <state> = physical_state.

This query provides another example of default inheritance. In this case, Watch1 inherits by default all its defining attributes from node BE_AWAKE..

The node REMAIN_AWAKE, as defined in (1), inherits by default from BE_AWAKE those properties that are not explicitly defined in it. Thus, if we query DATR for:

Watch2: <origin> = ?

DATR infers:

Watch2: <origin> = old_english.

This illustrates how Watch2 inherits the value of path <origin> from REMAIN_AWAKE, which in its turn inherits from BE_AWAKE. A more complex process of inheritance and inference is provided by the query:

Watch2: <meaning> = ?.

In order to evaluate the query DATR searches the value of path <meaning> at node Watch2, and as the path <meaning> is not defined at node Watch2, it is defined by extension¹⁵ at node REMAIN_AWAKE from which Watch2 inherits:

Watch2: <meaning> == REMAIN_AWAKE: <meaning>
 REMAIN_AWAKE: <meaning> == "<motivated meaning>"

The value of path <meaning> at node REMAIN_AWAKE is the quoted path "<motivated meaning>", which provides an example of global inheritance and means that the value of the path must be evaluated at the node of the query. But as the path is not defined at Watch2, it must be defined by extension:

Watch2: <motivated meaning> == REMAIN_AWAKE: <motivated meaning>
 REMAIN_AWAKE: <motivated meaning> ==
 REMAIN_AWAKE: <BE_AWAKE: <meaning> and
 <purpose>>

The path <BE_AWAKE: <meaning> and <purpose>> is an example of 'evaluable path' and is one of the most powerful expressive resources of DATR. In this example, the path is made out of two subpaths i) BE_AWAKE:<meaning> and ii) REMAIN_AWAKE:<purpose>. Concatenating the values of these subpaths and the feature 'and' a new path which needs further evaluation is obtained:

REMAIN_AWAKE:<be_awake and any_purpose_or_religious>

The resulting path illustrates local inheritance. In order to get its value, the path must be evaluated locally at node REMAIN_AWAKE or at those nodes from which REMAIN_AWAKE inherits:

BE_AWAKE: <meaning> = be_awake
 REMAIN_AWAKE: <purpose> = any_purpose_or_religious
 REMAIN_AWAKE : <be_awake and any_purpose_or_religious> =
 remain_awake

Once a value has been found, DATR infers:

Watch2: <meaning> = remain_awake.

The DATR fragment illustrated so far clearly shows how the OE meaning 'remain awake' is arrived at by the interaction of inherited properties (i.e. the

meaning 'be awake') and idiosyncratic properties (i.e. purpose, in this case). The same process of inheritance and inference can be extended to the rest of the senses of WATCH. An explicit account of the DATR theory for the semantic evaluation of WATCH is provided in appendix A. The output DATR theorems that support our claims are provided in appendix B.

Conclusions

In conclusion, our research has confirmed the validity of our two initial hypotheses:

- 1) The analysis of the historical evolution of WATCH has shown that the multiple senses of polysemous words are indeed interrelated and that semantic change is motivated, since a new sense or subsense arises when idiosyncratic semantic properties are added to, and interact with, the inherited properties of the earlier meaning.
- 2) The historical evolution of our case study verb WATCH has been formalized in an explicit manner. Our formalization with DATR, which, to our knowledge, has been used so far only in synchronic studies, has proved, on the one hand, that it can also be applied in diachronic studies; and, on the other hand, that our hypothesis is correct.

APPENDIX A: DATR THEORY

TITLE: Formalization diachrony Watch; Motivating semantic change
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DATE: Barcelona June 11, 1996

WATCH (OE, ME, MnE)

BE_AWAKE:

<origin> == old_english
<meaning> == be_aware
<state> == physical_state.

REMAIN_AWAKE:

◇ == BE_AWAKE
<motivated> == <BE_AWAKE:◇ and <purpose>>

<meaning> == "<motivated meaning>"
<state> == "<motivated state>"
<purpose> == any_purpose or religious
meaning
<be_aware and any_purpose> == remain_aware
state
<physical_state and> == physical_state.

comments:

1. the subject remains awake intentionally ==> the subject is volitional.
2. He does it for a purpose (usually religious in OE)

BE_ON_THE_ALERT:

◇ == REMAIN_AWAKE
<motivated> == <REMAIN_AWAKE and <purpose>>
<senses> == "<motivated senses>"
<purpose> == alertness
comment: be_alert_for_hypothetical_danger
meaning
<remain_aware and alertness> == be_watchful
state
<physical_state and alertness> == physical_mental_state
senses
<motivated senses> == all_senses.

comments:

purpose ==> mental awareness through physical senses ==>
physical_mental_state of alertness or attentiveness

KEEP_WATCH:

◇ == BE_ON_THE_ALERT
<motivated> == <BE_ON_THE_ALERT and <purpose>>
<purpose> == defence
be on the look out against real imminent danger
<role> == watchman_sentinel_or_guard
meaning
<be_watchful and defence> == keep_watch
state

<physical_mental_state and defence> == activity
senses

<all_senses and defence> == physical_senses.

comments:

danger is real, concrete and possibly imminent.

1. the awareness of this situation:

- a) focuses attention on danger,
- b) vision becomes prominent,
- c) triggers action ==> act of watching

2. danger is out of the visual scope of the subject ==> the subject is prompt and ready to take action but in order to do so the so called danger or enemy must be within his range of visual scope. The subject, therefore, is bound to make the second move ==> defence

3. the subject controls the space within his range of visual scope

General comments:

Be_on_the_alert and Keep_watch are fuzzy categories. The boundaries are a matter of gradience. Danger can be perceived as [+/- concrete and +/- imminent]

Poles:

[-concrete and -imminent] (but just in case) = be_on_the_alert

[+concrete and +imminent] = keep_watch.

ME_WATCH_TRANS:

<> == KEEP_WATCH

<origin> == middle_english

<motivated> == "<KEEP_WATCH and '<purpose>'>"

<purpose> == control

<role> == controller

meaning

<keep_watch and control> == <keep_a_look_out and '<intention>'>

<keep_a_look_out and hostile> == keep_a_hostile_look_out

<keep_a_look_out and protect> == keep_an_eye_on

state

<activity and> == activity

senses

<physical_senses and> == sight.

KEEP_A_HOSTILE_LOOK_OUT:

◇ == ME_WATCH_TRANS
<intention> == <attack_or_do_harm>
<attack_or_do_harm> == hostile.

comments:

intention depends on gr_subj's intention towards gr_obj
shift of purpose: defend > attack_do_harm_or_capture
gr_subj's attention focussed on visible gr_obj

KEEP_AN_EYE_ON:

◇ == ME_WATCH_TRANS
<intention> == <prevent_harm>
<prevent_harm> == protect.

comments:

shift of intention: controller's negative harmful intention towards the
controllee >

controller's possitive harmless intention towards the controllee

MnE_WATCH:

◇ == ME_WATCH_TRANS
<origin> == modern_english
<purpose> == look
meaning
<keep_watch and look> == <keep_in_sight and "<intention>">
<keep_in_sight and be_aware_and_learn> == observe
<keep_in_sight and curiosity> == look_at.

OBSERVE:

◇ == MnE_WATCH
<intention> == be_aware_and_learn
<role> == observer.

LOOK_AT:

◇ == MnE_WATCH
<intention> == curiosity or_entertainment
<role> == watcher.

DATR Queries

OE: Watch1, Watch2, Watch3, Watch4

Watch1:

◇ == BE_AWAKE.

Watch2:

◇ == REMAIN_AWAKE.

Watch3:

◇ == BE_ON_THE_ALERT.

Watch4:

◇ == KEEP_WATCH.

ME: Watch5, Watch6

Watch5:

◇ == KEEP_A_HOSTILE_LOOK_OUT.

Watch6:

◇ == KEEP_AN_EYE_ON.

MnE: Watch7, Watch8

Watch7:

◇ == OBSERVE.

Watch8:

◇ == LOOK_AT.

APPENDIX B: OUTPUT THEOREMS OF THE DATR THEORY

Watch1: <origin> = old_english.

Watch1: <meaning> = be_awake.

Watch1: <state> = physical_state.

Watch2: <origin> = old_english.

Watch2: <meaning> = remain_awake.

Watch2: <state> = physical_state.

Watch2: <purpose> = any_purpose.

Watch3: <origin> = old_english.

Watch3: <meaning> = be_watchful.

Watch3: <state> = physical_mental_state.

Watch3: <purpose> = alertness.

Watch3: <senses> = all_senses.

Watch4: <origin> = old_english.

Watch4: <meaning> = keep_watch.

Watch4: <state> = activity.

Watch4: <purpose> = defence.

Watch4: <senses> = physical_senses.

Watch4: <role> = watchman_sentinel_or_guard.

Watch5: <origin> = middle_english.

Watch5: <meaning> = keep_a_hostile_look_out.

Watch5: <state> = activity.

Watch5: <purpose> = control.

Watch5: <intention> = hostile.

Watch5: <senses> = sight.

Watch5: <role> = controller.

Watch6: <origin> = middle_english.

Watch6: <meaning> = keep_an_eye_on.

Watch6: <state> = activity.

Watch6: <purpose> = control.

Watch6: <intention> = protect.

Watch6: <senses> = sight.

Watch6: <role> = controller.

Watch7: <origin> = modern_english.

Watch7: <meaning> = observe.

Watch7: <state> = activity.

Watch7: <purpose> = look.

Watch7: <intention> = be_aware_and_learn.

Watch7: <senses> = sight.

Watch7: <role> = observer.

Watch8: <origin> = modern_english.

Watch8: <meaning> = look_at.

Watch8: <state> = activity.

Watch8: <purpose> = look.

Watch8: <intention> = curiosity.

Watch8: <senses> = sight.

Watch8: <role> = watcher.

Notes

1. Dirk Geeraerts, 'Prototypicality effects in diachronic semantics: a round-up', in *Diachrony within Synchrony: Language, History, and Cognition*, eds. G. Kellermann and M. Morrissey (Frankfurt am Main: Peter Lang, 1992). pp. 183-203; 'Subsets in Semantic Change: Generalising Inductive Generalisation', in *Perspectives on English*, eds. K. Carlon, K. Davidse and B. Rudzka-Ostyn (Leuven-Paris: Peeters, 1994). pp. 128-39; Eve Sweetser, *From Etymology to Pragmatics* (Cambridge: CUP, 1990).
2. Ronald Langacker, *Concept, Image, and Symbol. The Cognitive Basis of Grammar* (New York: Mouton de Gruyter, 1991); 'A Dynamic Usage-Based Model'
3. 'Prototype semantics: the English word *lie*', *Language* 57, 26-44.
4. *Women, Fire and Dangerous Things* (Chicago: The University of Chicago Press, 1987).
5. 'The Structure of a Semantic Theory', *Language* 39, 170-210.
6. *The Oxford English Dictionary*; *Beowulf*; H. Sweet, *The Student's Dictionary of Anglo-Saxon* (Oxford: Clarendon Press, 1897)
7. 'be, remain awake' is the only sense that appears in the OED in the OE period - although instances of 'be on the lookout' can be found in *Beowulf*. This latter meaning also appears in Sweet's dictionary of Anglo-Saxon.
8. These components must be understood as cognitive semantic features.
9. 'Be awake (naturally)', died out in the seventeenth century, and in this sense of 'wakefulness' WATCH only survives - an old use in Present Day English - for specific purposes: keep vigil and sit up beside a sick person.
10. 'The hierarchical structure of the clause and the typology of perception-verb complements', *Linguistics* 29, p. 231-59.
11. A. Poch and I. Verdaguer, 'An Analysis of the Complementation of WATCH', *Actas XVIII Congreso AEDEAN* (in press); I. Verdaguer and A. Poch, 'The interaction of polysemy and complementation. A case study', *Sederi Journal* (in press).
12. O. Fischer, 'Syntax', in *The Cambridge History of the English Language*, vol. II, ed. R. Hogg (Cambridge: Cambridge University Press, 1992). pp. 207-408.
13. This section borrows heavily from L. Cahill and R. Evans, 'An application of DATR: The TIC lexicon', in *The DATR Papers*, eds. R. Evans and G. Gazdar, Cognitive Science Research Paper CSRP 139 (Brighton, 1990). pp. 31-2.
14. 'Inference in DATR' in *ACL Proceedings, 4th European Conference* (Manchester, 1989a). pp. 1-9; 'The semantics of DATR' in *Proceedings Seventh Conference of the AISB*, ed. A.G. Cohn (Falmer, Sussex, 1989b). pp. 79-87.
15. We follow the convention of using italic for path extensions.

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