

Application of the ATT-Meta Metaphor-Understanding Approach to Selected Examples from Goatly

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Abstract

This report provides a measure of relatively objective evaluation of our ATT-Meta approach to conducting some of the reasoning needed in the understanding of metaphorical utterances. The approach is partially implemented in our ATT-Meta system. The approach and system are not described in detail here. The utterances of most interest in this report are map-transcending ones: that is, ones that rest on metaphorical views (conceptual metaphors) that are familiar to the understander but transcend the views by using aspects of the source-domain that are not handled by the between-domain mappings the metaphorical views involve. The report evaluates the approach (not the implemented system) by applying it to fifteen examples. The source of our examples was a well-known 1997 book on metaphor by Andrew Goatly. We took all the examples that could strongly be claimed to be mundane, map-transcending and non-sidelined (see body of report for this last concept). The report shows that the approach successfully produces what we claim to be the main pieces of information conveyed by the examples. The report also vindicates our stance that metaphorical mappings should by default not be extended to cope with aspects of utterances that are those mappings do not deal with: rather, within-source-domain reasoning should be used to link those aspects to source-domain aspects that those mappings do deal with. Also, even though of the fifteen examples six require some degree of map-extension, the amount of extension is small and its nature is mostly strongly indicated by the wording in the examples. It requires little in the way of elaborate search for partial isomorphism between domains.

1 Introduction

The aim of this report is to provide a measure of objective evaluation of our “ATT-Meta” approach to conducting some of the reasoning needed in the understanding of metaphorical utterances. This approach is partially implemented in our ATT-Meta system. The approach and system will not be described in detail here—the reader is referred to other papers (Barnden *et al.*, 1996; Barnden, 1998a,b; Barnden & Lee, 1999, 2001a). The present paper is intended as an adjunct to another technical report (Barnden & Lee, 2001a), and although the present one is self-contained it is best read after absorbing the less technical portions of the other paper.

The metaphorical utterances of most interest to us are ones we call *map-transcending*: they rest on metaphorical views (conceptual metaphors) that are familiar to the understander but transcend them by using source-domain concepts not handled by the between-domain mappings the metaphorical views involve. A possible example is “McEnroe starved Connors to death” when used as a description of a tennis match. A metaphorical view of SPORT AS COMBAT might be familiar to the understander, and that view might map combat-domain concepts such as killing to target-domain concepts such as defeating. However, the existing mapping might not contain any mapping relationship that maps the source-domain concept of starving someone. (We regard a mapping to be a set of mapping relationships, each of which maps an aspect of the source domain to an aspect of the target domain.)

For map-transcending utterances based on familiar metaphorical views, our approach advocates possibly-extensive inferencing in the terms of the source domain of the metaphorical view, while avoiding as far as possible the extension of the mappings to deal with the map-transcending source-domain aspects of the utterance. Map-extension is regarded as an exceptional action undertaken only when special needs of discourse understanding force it to take place.

The source-domain inferencing is done in an attempt to derive, from the source-domain meaning of the utterance, information that *can* be converted by the existing source-to-target mapping into information about the target domain. The source-domain inferencing is done within a special, protected computational environment we call a *pretence cocoon*. See Figure 1. The cocoon can be thought of heuristically as the belief space of a hypothetical agent who believes that the source-domain meaning of the utterance is true. This approach will become clearer in the examples and diagrams below. In the above starving example, the source-domain meaning is that McEnroe starved Connors to death in the real, biological sense. The inferencing within the cocoon can then establish that McEnroe killed Connors. The existing mapping can then be applied to derive, in the target domain and outside the cocoon, the hypothesis that McEnroe defeated Connors in the match. Other inferences could be made within the cocoon on the basis of the detailed form of killing that starving someone constitutes, and some resulting inferences might be mapped over to the target domain by additional existing mapping relationships.

There is a great deal of understander-relativity in our approach to metaphor understanding. For one thing, the question of whether a metaphorical view is familiar or not is an understander-relative issue. Thus, in choosing examples, we have tried to assess whether the view would be familiar to a typical ordinary English speaker. We did this partly by intuition, partly by considering claims of other metaphor theorists such as Lakoff as to what views are conventional (and as illustrated in compendia such as the Master Metaphor List—Lakoff, 1994), partly on the basis of views we have discovered to be common in building our own databank of metaphor examples (Barnden, n.d.), and partly by looking in dictionaries for the phraseology used in the utterances.

There is further understander-relativity in the question of what particular mapping relationships between source and target are included in viewing something A as something B. For example, different understanders

may differ in detail on what a metaphorical view of IDEAS AS PLANTS amounts to. We have tried to include in the view only those source/target mapping relationships that seem to be needed in many examples we have encountered.

We also assume that stock English metaphorical phraseology (i.e., phraseology that is frequently occurring and quite fixed, such as “see the problem”) rests on metaphorical views that are familiar to typical English understanders, and that the source-domain concepts used in the phraseology are mapped by the mappings, so that the phraseology does not count as map-transcending.

Additionally, we will only consider examples in which the metaphoricity is plausibly not *sidelined* for an ordinary English speaker. For example, an understander might have a sports-domain lexicon sense for “kill,” so that he/she/it could use that sense in understanding the sentence “McEnroe killed Connors” in the tennis context, circumventing any need to proceed via a sense of kill in the biological combat domain and a mapping from that domain to the domain of sport. Clearly, whether the metaphoricity of an utterance is sidelined or not is again an understander-relative matter.¹

The evaluation of the ATT-Meta approach in this paper consists of showing how it could extract important target-domain information from (simplified variants of) examples we found in Goatly (1997)—a well-known work on metaphor. We concentrated on examples that plausibly are based on familiar views, are not sidelined and are map-transcending. Goatly presents a thorough study of the different forms in which metaphor can appear in discourse, and contains numerous real-discourse examples he found either by himself in newspapers, magazines and books and or by a search over a corpus that was a precursor to the current Collins COBUILD Bank of English. The examples come from a wide variety of sources, both mundane and literary. Most seem to us to be either, at one extreme, stock metaphorical phrases or, at the other extreme, utterances that rest on unfamiliar metaphorical views for the typical, non-literary understander.² Thus, only a relatively small subset of Goatly’s examples fit our criterion of resting map-transcendingly on familiar views.

Another constraint on our selection of examples was that we wanted them to come from mundane discourse. By mundane discourse we mean discourse in conversations, popular magazine articles, popular novels, news articles, popular science texts and other factual texts for wide consumption by the public. When it was not clear from Goatly’s annotations whether the examples were from such discourse, we still included them if we judged that could plausibly be used in mundane discourse without looking out of place. As a result of applying our various constraints, we ultimately settled on fifteen examples from Goatly.³

The ATT-Meta approach is not as it stands a specific, complete model of metaphor understanding. It is parametrized by whatever views are familiar to a particular understander, what mapping relationships are included in each familiar view, and what direct, lexicon senses the understander has for words. Thus, it is important to understand that the purpose of this report is not to establish that any particular metaphorical views are familiar to typical understanders, that any particular mapping relationships appear in particular views, or that the metaphoricity in any particular example is not sidelined for typical understanders. The purpose is to show that, given particular decisions about what is familiar, what is mapped and what is not sidelined, the ATT-Meta approach can succeed in drawing useful information about the target domain from a metaphorical utterance; and also to show that very little has to be included in the mappings in order

¹Observe that we can still regard “McEnroe killed Connors” as being metaphorical for the understander as long as the biological-combat-domain route is in principle *available* to the understander.

²Many of these unfamiliar views are ad hoc image-based mappings.

³We counted roughly 170 mundane examples altogether in Goatly, although counting is difficult because some are from extended passages of prose. The fraction 15/170 is not a good guide to the frequency of non-sidelined, map-transcending metaphorical utterances in metaphorical discourse at large, because Goatly mentions particular examples for particular theoretical reasons, rather than to be statistically representative. In addition Goatly neither categorizes examples as we do nor provides relative frequency statistics for the different utterance categories that are related to ours.

to get great ability to draw out such information. The less sidelining we assume and the fewer mapping relationships we include in a metaphorical view, the more the power of the approach is demonstrated.

We believe our discussion of the individual examples below covers the main informational contributions that the examples make concerning the target domains of the utterances. We were unable to find the COBUILD precursor corpus Goatly used, even with his help (personal communication), and the six examples from it in our chosen fifteen do not appear to be in the current Bank of English. We have not looked at the original sources of the non-corpus examples. Therefore, we have not checked our suggestions about intended informational contributions against the discourse contexts of the examples. But in most cases we doubt that our suppositions about what informational contributions were intended by the originators of the examples are controversial.

The plan of the rest of the report is as follows. Section 2 summarizes an important additional feature of the treatment of source/target mappings in our approach. Section 3 discusses those ten examples of the fifteen selected from Goatly that we judge not to require much if anything in the way of map-extension, at least for the purpose of obtaining the particular informational contributions that we claim the utterances make. Section 4 discusses the remaining examples, i.e. the five where appreciable map-extension is definitely required or may well be required. (The section also discusses one example from Section 3 where some map-creation is needed.) Even in these, the extensions are either very circumscribed or more or less directly provided by the discourse itself anyway. Section 5 summarizes the performance of the approach on the examples. It points to limitations of the approach and opportunities for future research.

The implemented ATT-Meta *system* has not been applied to the examples in this report. However, in Lee & Barnden (2001b) we evaluate the system itself, as well as the approach, by applying it to real-discourse utterances based on most of the metaphorical views about mental state/processes that are listed in the Master Metaphor List (Lakoff, 1994). See also Barnden & Lee (2001a,b) for detailed descriptions of how the implemented system works on some simplified real-discourse examples. Barnden (2001) evaluates the approach (not the system) by applying it to examples from our own databank (Barnden, n.d.) of examples of the usage of metaphorical views about mental states/processes. Although the examples in these various papers concentrate on metaphors of mind, the examples in the present report have no such limitation, and in any case the approach is in no way limited to metaphors of mind.

2 View-Neutral Mapping Adjuncts

Barnden & Lee (2001a) specify various *view-neutral mapping adjuncts* (VNMA). These provide additional mapping relationships that apply, by default, whatever particular metaphorical view is at hand. They are parasitic on other things that are mapped, in the sense that they are all of the form: if such-and-such things are mapped from the pretence into reality space, then also such-and-such things are mapped.

One of the simplest VNMA is the *Negation* VNMA, which states that if a within-pretence proposition P is mapped into reality space to become a proposition R there, then the negation of P is also mapped, and is mapped to the negation of R. For example, if the proposition that McEnroe killed Connors is mapped to the proposition that he defeated Connors, then, by virtue of the VNMA, the view also maps the proposition that McEnroe did *not* kill Connors to the proposition that he did *not* defeat Connors. Relatedly, the *Qualitative Degree* VNMA maps identically the qualitative degree to which properties and relationships hold.

The *Causation/Ability* VNMA identically maps causation, enablement, disablement, ability, and easiness properties and relationships. For example, consider the within-pretence proposition that McEnroe's combat actions enabled McEnroe to kill Connors *easily*. If the metaphorical view maps combat actions to

tennis actions and killing to defeating, then this proposition is mapped to the proposition in reality-space that McEnroe's tennis actions enabled McEnroe to defeat Connors *easily*.

The *Change* VNMA maps a change event that stands between two within-pretence states to a change event between corresponding reality-space states if any. The *Event-Shape* VNMA identically maps aspectual features of events/situations/processes in the pretence, such as whether they have a start or end, or are intermittent, to corresponding events/situations/processes if any in the reality space. The *Time-Order* VNMA identically maps the time order of events in the pretence. The *Duration* VNMA identically maps qualitative durations of events.

The *Mental/Emotional States* VNMA maps the mental/emotional states of within-pretence agents over to mental/emotional states of corresponding reality-space agents, if any. The mental attitude (e.g. belief) or the quality of the emotion (e.g. anger) is preserved, but the propositional content, if any, may be modified by other mapping relationships. The *Value-Judgment* VNMA identically maps value-judgments (e.g. by the understander) about within-pretence hypotheses.

The *Function* VNMA identically maps the functions (i.e., purposes served) of entities.

The *Physical Size* VNMA identically maps relative, qualitative physical size of objects in the pretence.

Further VNMAs and more refined descriptions are given in Barnden & Lee (2001a). Our VNMAs are inspired in part by, but are different from, postulates about mapping put forward by other authors, as detailed in Barnden & Lee (2001a).

3 Examples where Little or No Map-Extension is Needed

For each Goatly example, we give a page reference to where the example appears in Goatly (1997). We give an indication of the example's genre when known to us, or of whether it came from the abovementioned precursor corpus (in the latter case, Goatly usually does not specify the genre). The exact citations for the examples are in Goatly's book. For each example in this section there is a Figure at the end of the report depicting the computational processing sketched in the text.

3.1 Infection Entering

The lymphatic tissues help to defend the areas of the body where infection can easily enter.
[Goatly p.321; from *New Scientist* magazine]

A physical state of infection is often portrayed as a physical substance that can move—e.g. infection is often described as “spreading.” We assume that this familiar metaphorical view maps the proposition that an infection is in a body area to the proposition that the infection affects that area, and may also map the general notion of physical movement of an infection to its progressively arising in different places. However, we suppose that the understander may not have a mapping relationship for the specific physical-movement concept of “entering,” so that the sentence would be map-transcending in this respect for the understander.

Figure 2 shows how the approach could handle the entering. For ease of illustration we have modified and curtailed the example to get the metaphorical utterance “Infection can easily enter A” where A is some body area. Simple physical reasoning within the pretence cocoon from an infection entering an area can establish that at some point the infection comes to be within the area. We assume that ease and ability is carried along by such an inference, so that in the pretence we get the conclusion that it can easily come to be that the infection is physically in A. The coming-to-be in the source-domain maps to coming-to-be in the

target-domain, by virtue of the Change VNMA. The ease is carried over by the Causation/Ability VNMA. The overall effect is that the understander can construct the target-domain informational contribution that the infection can easily come to be affecting the tissue areas in question.

Notice that there is no need to extend the mapping so that it now maps *entering* itself to some process in the target domain. Rather, the approach exploits the existing mapping and the standard extensibility inherent in the view-neutral mapping adjuncts.

The “defending” in the example can also be dealt with. We assume that one sense for “defend” in the domain of physical entities is “preventing physical damage.” Assume for the moment that the metaphorical view of INFECTION AS PHYSICAL SUBSTANCE maps physical damage of an area of tissue to biological damage (which is itself of course a specialized form of physical damage). Then prevention of physical damage maps to prevention of biological damage, because of the Causation/Ability VNMA. The same VNMA then specifies that *helping* to prevent physical damage maps to *helping* to prevent biological damage.

The assumption we made a moment ago that INFECTION AS PHYSICAL SUBSTANCE maps physical damage to biological damage is not actually necessary. As explained in sections 3.3 and 3.5, the VNMA allow damage to be mapped over automatically to a target-domain state of the entity in question not being as it should be and being partially defunct.

3.2 The Fast Hairdresser

(N) Britain’s fastest hairdresser ... is hoping to snip five minutes off his world record today.
[Goatly p.161; from *Daily Mirror* newspaper]

The metaphorically-used word “snip” is of course a pun, in that hairdressers snip hair. We ignore this aspect here—our focus is not on any humour as such, but on the informational contributions to be drawn about the hairdresser. We simplify the example slightly to get the sentence shown in Figure 3.

The sentence rests on a familiar metaphorical view of a measurement (here, a competitive record) as a long physical object, with the length corresponding to the size of the measurement. Within the source domain of physical objects, snipping off implies cutting off, which causes reduction of length. By the familiar length-to-measure-value mapping, the original length before the snipping and the resulting smaller length map to the original record time and the later improved record time. The *event* of shortening maps to become an *event* of improving, because of the Change VNMA. The causation of the shortening by the hairdresser maps by the Causation/Ability VNMA to the causation of the record-improvement by the hairdresser.

The Figure assumes that a snipping act is one of *easy* cutting. Therefore, the above record-shortening event in the pretence cocoon is easy. The ease of this event can be mapped over by the Causation/Ability VNMA. Finally, the Mental/Emotional States VNMA allows the hoping to be mapped over.

There is no need to map the notions of snipping or cutting to the target domain.

3.3 Broken Railway

The railway’s recovery from recession and last summer’s strikes was “fragile” and would be damaged by another dispute. [Goatly p.320; from *International Express* newspaper]

The example is from a newspaper report, and immediately follows the sentence “Mr Watkinson said he was confident the vast majority would reject industrial action.” Thus it is likely that the quotation marks round

“fragile” are to indicate that the word is one Watkinson himself used, rather than to mark a special or unusual usage. This common journalistic use of quotation occurs throughout the excerpt in Goatly.

We take the example to use a familiar metaphorical view of ABSTRACT STATE AS PHYSICAL OBJECT. This view is manifested also in a stock fashion by the word “damaged” in the example. One could felicitously talk, say, about a state of calm activity in a company as being “smashed” by a takeover bid. States of health or of the mind/emotions are often talked about in these terms – indeed, “fragile state of health” or “fragile state of mind” strike us as stock phrases. It may therefore be that it is stock to describe a recovery as fragile, so that there is no map-transcendence. However, as we are unsure on this point we will assume that there is an understander for whom the fragility is map-transcending, as a way of illustrating the nature of our approach.

Since a fragile physical object is one that can be easily damaged, it is an immediate inference in the pretence (see Figure 4) that the railway’s recovered state (metonymically referred to by “recovery”) is one that can be easily damaged. As for damage itself, it may already be mapped by the metaphorical view to an undesirable modification of state. If not, the understander can infer an undesirable modification by the Change and Value-Judgment VNMA. Ease of possible damage then implies ease of possibly reaching the undesirably-modified state, because of the Causation/Ability VNMA. There is no need to map the notions of fragility and damage to the target domain.

Although the Figure shows a view-specific mapping arrow from the railway’s recovered state to itself, in fact the state is to be thought of as an entity that is simultaneously both in the pretence space and the reality space. Note also that the proposition mapped over (with the help of the VNMA) is not altered in the process.

It is plausible also that the word “recovery” is being used as a stock manifestation of a view of ORGANIZATION AS CREATURE, given that a creature can recover from a poor state of health. This possibility fits in well with the the stock use of fragility to describe health. If the understander does treat the utterance in this way, then the example involves serially compounded metaphor: the current state of the railway is being viewed as a state of health, which is in turn being viewed as a fragile physical object. Our approach and system can handle this and another, parallel, sort of compounding (Lee & Barnden, 2001a) but we will not pursue the matter here.

3.4 People on the Line

And if you have to draw a line through the whole company it would be a pretty thick line, you know, it would have two edges, and there would be a fair number of people in it, contained in it. [Goatly p.156; part of an interview reported in an academic journal article]

We analyze this as manifesting the familiar metaphorical view of ORGANIZATION AS PHYSICAL STRUCTURE. The organization is the company, and we assume that the physical structure is a configuration in the drawing or picture that is implicitly referred to by the sentence.⁴ Under the metaphorical view, *parts* of the organization correspond to *parts* of the physical structure, and *role* of a person within the organization corresponds to *physical location* of a depiction of the person within the physical structure. Part of Goatly’s claims about the example amount to saying that the example connotes that a fair number of people do not have a role in the two aspects—let’s call them A and B—of the company corresponding to the picture-regions separated by the line (but instead have a role in the company aspect C corresponding to the line itself). From the

⁴Perhaps the physical structure should not be the drawn configuration itself but rather some hypothetical physical structure depicted by the drawing, so we then have to take into account the structural analogy between drawing and physical structure. This more complex account would not upset our main observations.

containment in the line it can be inferred by source-domain reasoning in the pretence cocoon that the contained items are not on either side of the line, even though they are within the overall structure. The familiar metaphorical mapping in ORGANIZATION AS PHYSICAL STRUCTURE together with the view-neutral Negation VNMA can then allow the assembly of the informational contribution that people within the line have a role within the company aspect C but do not have a role in aspects A and B. See Figure 5.

There is no need to have any mapping, into the organization domain, for the property of being a thick line or for the edges of a line.

3.5 The Battered Trilby

And towards the end of the century men began to wear, so to speak, the very symbol of their bashed-in authority: the trilby. [Goatly p.127, from corpus; hyphen inserted by us]

The focus of Goatly's discussion is the metaphorical view (as he claims) of authority as trilby hat. The notion that authority can be bashed in exploits the common occurrence of hats being bashed in. However, for brevity we will ignore the hat and discuss merely the simplified sentence "Men's authority is bashed in" without relying on any mention of a hat at all. We can take this sentence to manifest a familiar, very general metaphorical view of ABSTRACT ENTITY AS PHYSICAL OBJECT. Prototypically, bashed-in things are rigid walls, doors, etc: perhaps exterior physical surfaces in general. As a result of being bashed in, such a physical object is damaged—i.e., it is undesirably modified and is probably defunct to some extent. Noting that the latter means the object probably lacks to some extent the ability to perform its function, the Value-Judgment, Function, Causation/Ability and Qualitative Degree VNMA's allow the production of the target informational contribution that the authority is undesirably modified and is probably somewhat defunct. Note again for the identity mapping of a proposition in the pretence cocoon.

There is no need for the specific physical notion of bashing-in to be mapped to the target domain. See Figure 6.

3.6 Going with the Flow

a kind of psychic eddy current, some sort of spiritual diabetic flow [Goatly p.171; from corpus]

The phrase before the comma manifests the familiar metaphorical views of MENTAL ENTITIES AS LIQUID (a special case of MENTAL ENTITIES AS PHYSICAL OBJECTS), MENTAL PROCESSING AS LIQUID FLOW, and MIND AS PHYSICAL SPACE. An eddy current is a current off to the side of the main flow of a river (etc.). So the mental process is somewhat separated from the main subregion of the mind. This leads, much as in the Anne/Kyle example in Barnden & Lee (2001a), to an informational contribution that the mental process is somewhat absent from conscious awareness. The activeness inherent in the notion of a current maps to the mental domain by the Event-Shape VNMA, to get an informational contribution that a process is being talked about, not a fixed state. There is no need to map the notion of eddy current itself. See Figure 7.

The phrase after the comma is puzzling. We suspect that the word "diabetic" is either a typo or an illiterate substitution for "diabatic" (meaning to do with the flow of heat), and that no metaphor in terms of diabetes is intended. On this assumption, the mental activity under discussion is also being metaphorically viewed as flow of heat or of something hot. Since it is common for certain emotions to be metaphorically viewed in terms of heat (e.g.: some positive emotions as warmth; anger as [intense] heat), the intention could be to connote an emotional activity. This might fit with the word "spiritual" as well.

3.7 The Nanny State

Planetary control would require the existence of some kind of giant panglossian nanny who had looked after the earth since life began; or committees of organisms with foresight who could plan the future. [Goatly p.308; from a *New Scientist* article]

This is from an article by J. Lovelock putting forward the theory of “Gaia,” whereby the planet forms an integrated organism in which biological organisms keep the planet fit for life. But the quoted excerpt is part of a summary of a criticism of the theory by another scientist, F. Doolittle, who is reported as rejecting Gaia on the grounds that planetary self-regulation would need foresight and planning by living organisms. Thus Doolittle is claiming (according to the clause before the semicolon) that there would need *literally* to be a thinking agent caring for and controlling the planet. (NB: Lovelock himself makes no such claim in the article.) This agent is, according to Lovelock, described metaphorically by Doolittle as a panglossian nanny.

This metaphorical step can be regarded as a use of a familiar metaphorical view of CARING, CONTROLLING ENTITY AS NANNY (witness phrases such as “nanny state” and the verb “to nanny”). But the passage is presumably map-transcending at least in its use of the word “panglossian.” This word means believing that all is for the best in this best of all possible worlds (see *Webster’s Third New International Dictionary*, 1961). So, in the pretence cocoon, the nanny believes that what goes on in the world is the best possible, including, presumably, her own control/caretaking actions. See Figure 8. By means of the Mental/Emotional-States VNMA the understander can transfer the optimistic beliefs of the nanny to become optimistic beliefs of the planet-agent. In this processing there is no need to extend the metaphorical mapping. See Figure 8, where we just deal with two optimistic beliefs the nanny presumably has. We need to assume that the metaphorical view applies the identity mapping to real physical objects, such as natural life forms, that are part of the controlled entity, the planet.

Finally, to handle the word “giant” we either need to assume that gigantic size is attributed by the utterance directly to the planet-agent, or that it is applied to the nanny in the pretence and then mapped to the target by the Physical Size VNMA, as assumed in the Figure.

3.8 The Neck-Cricked Managers

This all means that general managers have cricks in their necks from talking down to the Community Health Councils and District Health Authorities, and up to Regions and the Department. [Goatly p.162; from *Daily Telegraph* newspaper]

This manifests a familiar metaphorical view of ORGANIZATIONAL CONTROL AS VERTICAL POSITION. The managers control the Councils and Authorities, and are controlled by the Regions and the Department. (It does not seem that “talking down to” is being used in its stock metaphorical meaning of “being condescending to.”) See Figure 9 for the processing. In the pretence cocoon, the managers get cricks in their necks because of their contortions. The managers therefore experience physical suffering, and hence emotional suffering. The causation and emotional suffering map to the target by Causation/Ability and Mental/Emotional States VNMA. Notice also that talking is an aspect both of the source domain and the target domain, and that an identity mapping relationship links them.

It could further be inferred from the utterance that the managers have some inability to continue talking easily to their controllers and controllees. This would follow from inferring within the pretence cocoon that the cricks cause some inability to turn heads, so that there is difficulty in talking, and then applying VNMA.

The Causation/Ability VNMA maps the causation and the inability to the target domain. Also, the degree of inability is mapped by the Qualitative Degree VNMA.

There is no need to find a mapping relationship that handles necks, cricks, physical suffering or head-turning themselves.

3.9 Political Flotsam

The example here is more colourful than the ones above, while still being in mundane discourse. By showing that even in such a relatively fanciful example there is no need to extend the relevant familiar mapping, we support the case that this is a reasonable approach in more straightforward examples.

... until James Callaghan is washed up onto the pebbles of the Upper House [Goatly p.109; from *Daily Telegraph* newspaper]

This passage is about James Callaghan moving from the House of Commons (the Lower House) to the House of Lords (the Upper House) in the U.K. Parliament. We take the passage to manifest a familiar metaphorical view of INSTITUTIONS AS SPATIAL REGIONS, with membership of an institution corresponding to presence in a region. Plausibly, a map-transcending aspect of the example is that it casts the Upper House as being a specific sort of spatial region: a land-mass with a shore. Another map-transcending aspect is the notion of being washed up.

The informational contribution to the effect that Callaghan joined the Upper House follows simply from viewing the Lower House (House of Commons) and Upper House as regions, reasoning within the source domain of physical space that Callaghan moved to the latter region, using the known mapping relationship between presence in a region and membership of an institution, and using the Change VNMA to infer an event of membership change from the physical movement event. See Figure 10.

Although therefore the particular, mentioned event of physically being washed up from the sea maps to the event of joining an institution, the being-physically-washed-up *property* itself need not map to anything.

When a person is washed up by the sea, it is reasonable to infer that the person arrives on the shore non-deliberately, and may well be physically exhausted, unconscious or dead and therefore at least partially defunct. The non-deliberateness can be mapped over by the Negation and Mental/Emotional States VNMA's.

The production of the informational contributions in this example does not require the identification of anything in the target domain as corresponding to being washed up, being a pebble, the pebbles themselves or the shore.

3.10 The Staid Strippers

When the contestants strip off their designer suits to reveal rippling muscularity, they metaphorically shed their shackling cloaks of staid mundaneness. [Goatly p.170; from a news or magazine article]

This rather colourful passage is complex. It provides informational contributions concerning the temporary abstract appearance of the contestants (temporary staid mundaneness) and concerning temporary constraint on the contestants. We consider the constraint after the appearance.

We take “cloaks of staid mundaneness” to specify that the staid mundaneness is, metaphorically, the fabric out of which the imaginary shackling cloaks are made (cf. “cloaks of velvet”). A cloak of a particular fabric causes the external physical appearance of the wearer to be (that of) that fabric. Accordingly, we take the sentence to be using a familiar metaphorical view of ABSTRACT APPEARANCE AS PHYSICAL APPEARANCE, with the staid mundaneness being the abstract appearance in this case. This metaphorical view is often manifested in expressions such as “wear an appearance of [conciliation, say]”, “put on a [conciliatory, say] face” and “wear / put on a mask” when this is used metaphorically.⁵

In the metaphorical pretence, before the shedding of the cloaks the contestants have the appearance of the staid-mundaneness fabric. In fact, this is so to a high degree because a cloak is a relatively all-encompassing covering. Thus, in reality the contestants initially have to a high degree the appearance of staid mundaneness. But the shedding of the cloaks in the pretence implies that the physical appearance of the contestants ceases to be the staid-mundaneness fabric. Therefore, by the Event Shape VNMA, in reality the abstract appearance of the contestants ceases to be staid mundaneness.

In fact, we can go further than this and infer that initially the *designer suits* caused the contestants to have the appearance of staid mundaneness, but then after the stripping this was no longer the case. For this inference we need a small amount of map creation. As explained in section 4.1, the sentence strongly suggests a metaphorical correspondence between the real suits and the imaginary shackling cloaks (and between the stripping-off of the suits and the shedding of the shackling cloaks). This means that in the pretence the suits and cloaks are identified. Thus, in the pretence the suits initially cause the contestants to have the appearance of staid-mundaneness fabric, but then after being shed they no longer cause this. By the Causation/Ability VNMA, since the suits do exist in reality we find that the suits initially caused but then ceased to cause the abstract appearance of staid mundaneness. See Figure 11.

We turn now to the question of constraint. The example uses a further familiar metaphorical view. The mundaneness-cloak is shackling, so that we have a use of ABSTRACT CONSTRAINT AS PHYSICAL CONSTRAINT. This view is familiarly manifested in utterances like “Bill is chained/shackled to his job” and “Pension increases should be tied to inflation.” In the present example the physical constraint is of a strong sort, so that by the Qualitative Degree VNMA the abstract constraint is too. The shedding of the cloaks implies that the physical constraint ceases, so that in reality the abstract constraint ceases. (The later cessation is not included in the Figure.)

The sentence is map-transcending with respect to the above pair of views in at least the following respect: it uses the word “shed,” whereas it is plausible to say that neither view contains a mapping relationship for shedding. But there is no need to create a mapping relationship for the notion of shedding. Equally, the word “shackling” is plausibly map-transcending, but does not need to be mapped.

Finally, the word “metaphorically” in the example is, of course, used as a hint of metaphoricity to the understander, a hint that is perhaps needed. The similarity of cloaks to suits together with the possibility of literally shedding either type of clothing might lead the understander up a the literal garden-path of taking the suits to be, actually, cloaks. Goatly (1997) discusses the function of words such as “metaphorically.”

⁵Indeed, in many such examples the physical object that has the physical appearance (in the metaphorical pretence) is some form of clothing: notice the words “wear” and “mask.” The verb entry for “cloak” in *Webster’s Third New International Dictionary* (1961) gives as one sense “to clothe [sic] in a given often false or misleading form or appearance” and includes the examples “the stories ... perhaps cloaked in symbolic form an old quarrel” and “self-assurance cloaked by a quiet ... manner.”

4 Examples Where Map Extension/Creation Seems Necessary

In this section we will look at five further map-transcending examples from Goatly. These require map-extension (a form of map-creation). As well as these five we will also continue with the Staid Strippers example (section 2.10), which involves some map creation. We have just started to investigate what types of map-extension are needed in practice and how they might be performed. The contents of this section should therefore be regarded as a preliminary discussion.

To actually include map-extension/creation in our approach/system, there is the possibility of selecting from and adapting the large body of work that has been done on creating entirely new mappings by a search for partial isomorphism of the target and source domains (as in Falkenhainer *et al.*, 1989). However, we conjecture that in actuality the full power of such processing is often, and perhaps typically, not needed for performing map extensions, because the discourse itself gives such strong clues as to what the additional mapping relationships should be. This is demonstrated by the following examples.

4.1 The Staid Strippers Again

In section 2.10 we pointed out that the suits metaphorically correspond to the pretend cloaks, that the stripping-off of the suits metaphorically corresponds to the shedding of the pretend cloaks, and that these correspondences have to be created by the understander. But the correspondence of the striping and shedding is virtually stated by the sentence itself, in its use of “When.” Triggered by this word, a very simple instance of analogy finding between the two clauses in the example can pair the mentioned stripping action with the mentioned shedding action, and therefore pair the suits with the cloaks.

4.2 Stolen Love

Sooner or later the stealing ceases, for the love that was symbolically stolen in the form of money or goods is now given. [Goatly p.127; from corpus]

This rests at base on on a familiar metaphorical view of POSITIVE MENTAL/EMOTIONAL ORIENTATION AS TRANSFERRED PHYSICAL ENTITY. In particular it is stock to talk about “giving” one’s love to someone (as indeed the Goatly example itself does), or “taking” someone else’s love. It is common to talk of giving “all” one’s love to someone; and it would be unexceptional to say that one had “no love left over” for someone else. Reaffirming a state of being loving to someone is viewed as giving a physical object, the love itself, to that person. Similar comments apply to positive orientations to people other than loving them, such as having respect for someone (cf. “awarding a tremendous amount of respect to someone”).

In the example, we presume that someone else’s loving was not obtained in the past, so the stealer tries to steal some love from elsewhere. Let us assume that the understander has no mapping relationship for stealing, money or goods as part of the above metaphorical view (even though some understanders may of course be familiar with the idea of people taking physical objects to symbolize love). Thus, the sentence is map-transcending in these respects. The stealing is easily handled, because a simple within-pretence inference tells the understander that the stolen money or goods were transferred to the stealer. The transferring can be handled by the known mapping in the familiar metaphorical view. But, clearly, in order to understand the point of the sentence the understander must identify (i.e., establish a mapping relationship between) the love and the money-or-goods. However, this identification is fairly explicitly stated by the sentence itself, partly through the phrase “in the form of” and the word “symbolically.”

4.3 A Mechanical Smile

it was that mechanical sort of smile that suggested gears and pulleys [Goatly p.181; from corpus]

This rests on a familiar metaphorical view of CREATURE AS MACHINE. The adjective “mechanical” is a stock manifestation of this. (Of course, there could be grounds for saying that, scientifically, creatures really are machines. But creatures are commonsensically not viewed as being machines.) Movements being mechanical is mapped to their being done by the rigid following of a procedure, without emotional warmth, etc. We assume the metaphorical view does not map gears and pulleys themselves to the CREATURE domain, so that the utterance is map-transcending in this respect.

Clearly, the “gears and pulleys” add extra vividness to the stock manifestation. It could be that they serve merely to enhance the mechanicalness within the pretence, so that the effect could be handled by the Qualitative Degree view-neutral mapping adjunct. But it is possible also that an understander would imagine the person’s face to contain parts that play roles analogous to those of gears and pulleys in a machine. For example, the understander might come up with joints and tendons. However, since no particular structure of gears and pulleys is given by the discourse, there is no need to search for complex structural isomorphism – a rough similarity of role is all that needs to be looked for. The similarity need go no further than that joints and tendons are body parts that control movement, and gears and pulleys are machine parts that do so.

4.4 Economic Osmosis

this process, a kind of economic osmosis [Goatly p.181; from corpus]

This manifests the familiar metaphorical views of MONEY (etc.) AS LIQUID (cf. flow of capital; liquid assets) and POSSESSION AS LOCATION. Physical osmosis causes slow transfer of liquid through a barrier.⁶ Therefore, the possession of the economic assets in question changes slowly, the change being caused by the mentioned process. Here the causation is mapped by the Causation/Ability VNMA, and the slowness by the Duration VNMA. The physical flow is inhibited by the barrier. Assuming the barrier can be mapped to something specific in the co-text or situational context, then the inhibition of the physical flow is mapped to inhibition in the economic domain by the Causation/Ability VNMA again.

Presumably the context makes clear what economic assets are in question. Once the word “economic” has suggested that the target items are economic entities (see Goatly on adjectives being frequently used to hint at target domains), it is not much work to conjecture that the target items are the already-salient economic assests. The remaining isomorphism-finding work for the understander is detecting something inhibitory that can correspond to the barrier in the osmosis domain. This example therefore involves a modicum of searching for relational isomorphism, but only a modicum.

4.5 The Super-Horse

as long as we consider the automobile a sort of super-horse [Goatly p.183; from corpus]

⁶Actually, osmosis is more complex than this, but the passage may only rely on a primitive commonsensical understanding of osmosis.

This transcends an arguably familiar metaphorical view of ARTIFICIAL LAND VEHICLE AS CREATURE, where the creature may well be a horse (cf. “iron horse” for train). It transcends it in talking about *super-horses*. Of course, the understander does not have to work out a mapping relationship from super-horses to automobiles — the mapping is given by the sentence. But neither do the particular qualities on which automobiles are to be considered superior to real horses need to be worked out by any analogy-discovery process, because they are presumably the same qualities as are mapped by the existing metaphorical view. These are qualities such as being able to carry people, going faster than a person, having great endurance, and (possibly) indicating relatively high social status. So, the utterance is talking about automobiles being superior to horses in their greater ability to carry people, their greater speed-advantage over people, etc.

This does not mean that the sentence cannot also be taken to convey that there are also *further* respects in which automobiles are superior to horses. But it is arguable that the understander can simply note that there may be such respects without working out what they are. To claim that the understander is obliged to work them out would be as unwarranted as claiming that the utterance “cars are like horses” should induce the understander already familiar with ARTIFICIAL LAND VEHICLE AS HORSE to work out similarities over and above those he/she/it already knows, as opposed simply to recalling the known similarities.

An unusual feature of the example is that it postulates an imaginary category (super-horses) in an otherwise familiar source domain. Most metaphor, even when map-transcending, uses just the familiar realistic aspects of the source domain.

4.6 Worm Squirm

The worms of loathing [Goatly p.220; from *Punch* magazine]

We cannot tell from Goatly (1997) whether this is from mundane discourse or from a literary work. We include it here for interest in any case. It manifests the familiar metaphorical view of MENTAL/EMOTIONAL ENTITIES AS ANIMATE BEINGS (cf. the examples of IDEAS AS PERSONS OR OTHER ANIMATE BEINGS category in our databank: Barnden, n.d.). It is common, for instance, to talk of troublesome matters “gnawing away” at people. Also, the phrases “worm of care” and “worm of conscience” are noted in *Webster’s Third New International Dictionary* (1961). However, for the sake of example, let us assume that the metaphorical view does not contain a mapping for worms in particular, though it does contain, let us say, a mapping from “gnawing” at the agent to causation of some type of continuous psychological suffering by the agent. *Webster’s* mentions the worm of conscience “gnawing.”

The phrase “worms of loathing” plausibly conveys a metaphorical categorization of loathing as (i) a collection of worms (paraphrase: “the worms that symbolize loathing”), rather than, say, (ii) a possessive or part-whole relationship (paraphrase: “the worms belonging to loathing”) or (iii) a causation relationship (paraphrase: “the worms caused by loathing”; cf. “tears of anger” for tears caused by anger). See Goatly for many examples of type-(i) usage of the genitive, including in metaphorical contexts. Strangely, however, Goatly himself says that the example is to be analyzed in terms of worms *causing* loathing (the reverse of iii), a stance that we find highly unintuitive.

Give our stance on the example, we might consider whether the understander needs to search for or create additional, associated mapping relationships, between aspects of worms and aspects of loathing. But we claim that it is enough to note that worms gnaw, where gnawing is *already* known to be mapped by the familiar view to production of a type of psychological suffering, and therefore therefore infer that loathing causes that type of psychological suffering in the loather. If this is consistent with what the understander

knows about loathing in general, then there is no need for the understander to look further. If it is not, of course, then the understander does need to embark on a more elaborate search for an analogy.

5 Conclusions

The report has shown that the ATT-Meta approach can derive, at least, what seem to us to be the most important informational contributions from fifteen real-discourse metaphor examples collected independently from our own work. The evaluation was restricted to mundane, non-sidelined, map-transcending utterances based on familiar metaphorical views, as these utterances are the main target of our approach. Clearly, as we only treated fifteen examples, and in any case Goatly's set of examples is not claimed to be statistically representative, the evaluation is limited, but the obvious wide diversity of content of the examples and the fact that were collected by Goatly independently of our own concerns provides a measure of assurance that the approach is a promising one in general.

Goatly (1997) includes about 170 examples that we judge to come from mundane discourse or that could easily be used in mundane discourse. The 15 examples we have addressed are all of the 170 that we judged could strongly be claimed to be non-sidelined, map-transcending, mundane usages of familiar metaphorical views. We did not exclude examples on the grounds that they might cause difficulties for our approach.

A particular hypothesis supported by the report is that when map-extension/creation is necessary, no extensive elaborate search for partial isomorphism is required, and the discourse itself generally provides much guidance as to which specific mapping relationships should be created. Six of the fifteen examples (the five in Section 4 plus the Staid Strippers example in Section 3.10) were judged to require non-trivial map-extension/creation, but in all six cases the hypothesis was borne out. This gives grounds for supposing that the ATT-Meta approach's default of trying not to do map-extension/creation is on the right track.

The report did not need to go beyond the particular view-neutral mapping adjuncts suggested in Barnden & Lee (2001a). In fact, the present report did not need the whole set that is included there on theoretical grounds.

Acknowledgments

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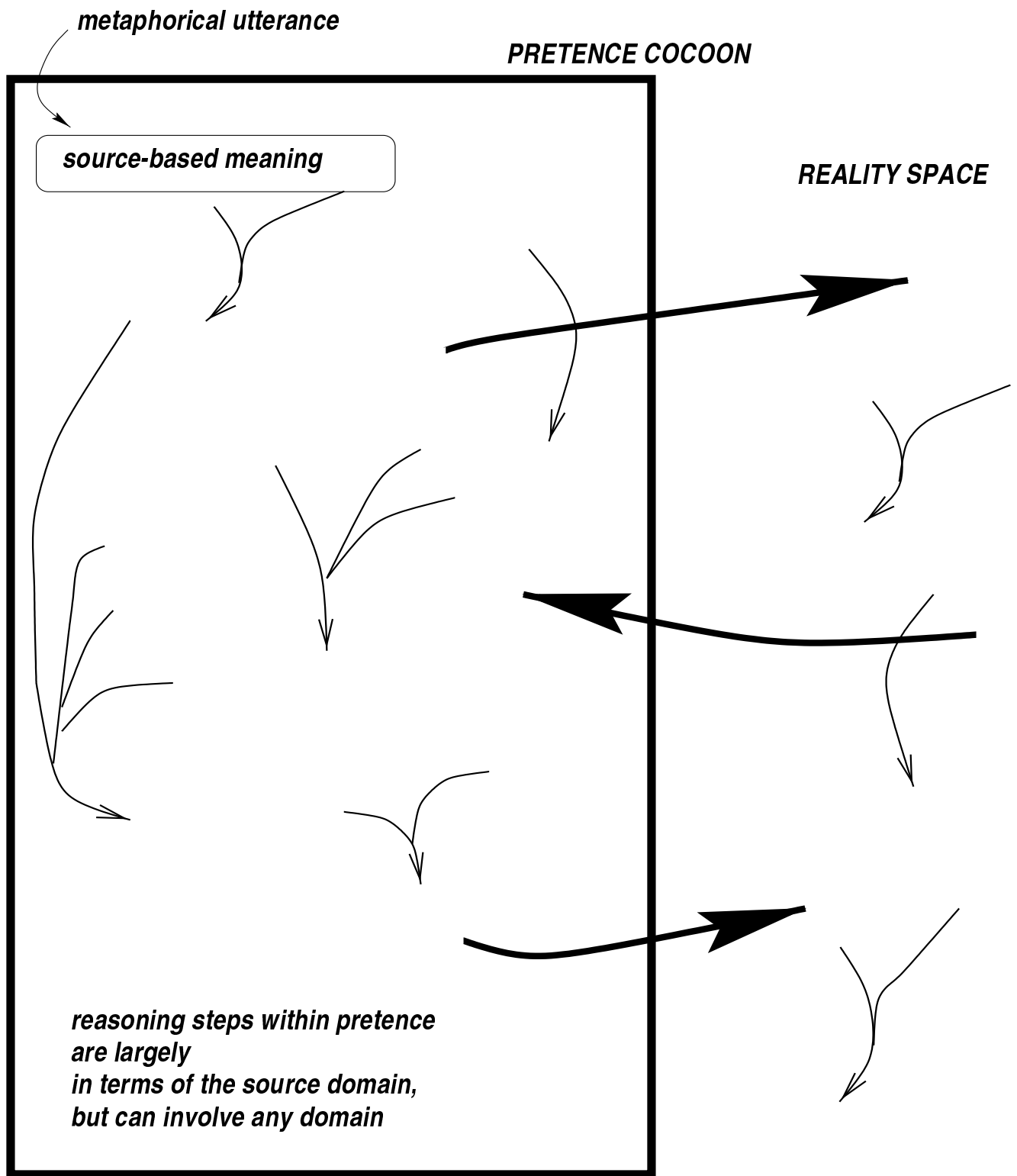


Figure 1: **General nature of reasoning in the ATT-Meta approach.** The bold box shows the pretence cocoon. Bold arrows show the action of mapping relationships, between source-domain information in the pretence cocoon and target-domain information in reality. (Target-to-source mapping actions are allowed in the approach, for reasons explained in Barnden, in press. An example occurs in Figure 10.) Other arrows, apart from the one at the top, show reasoning actions within reality or within the pretence.

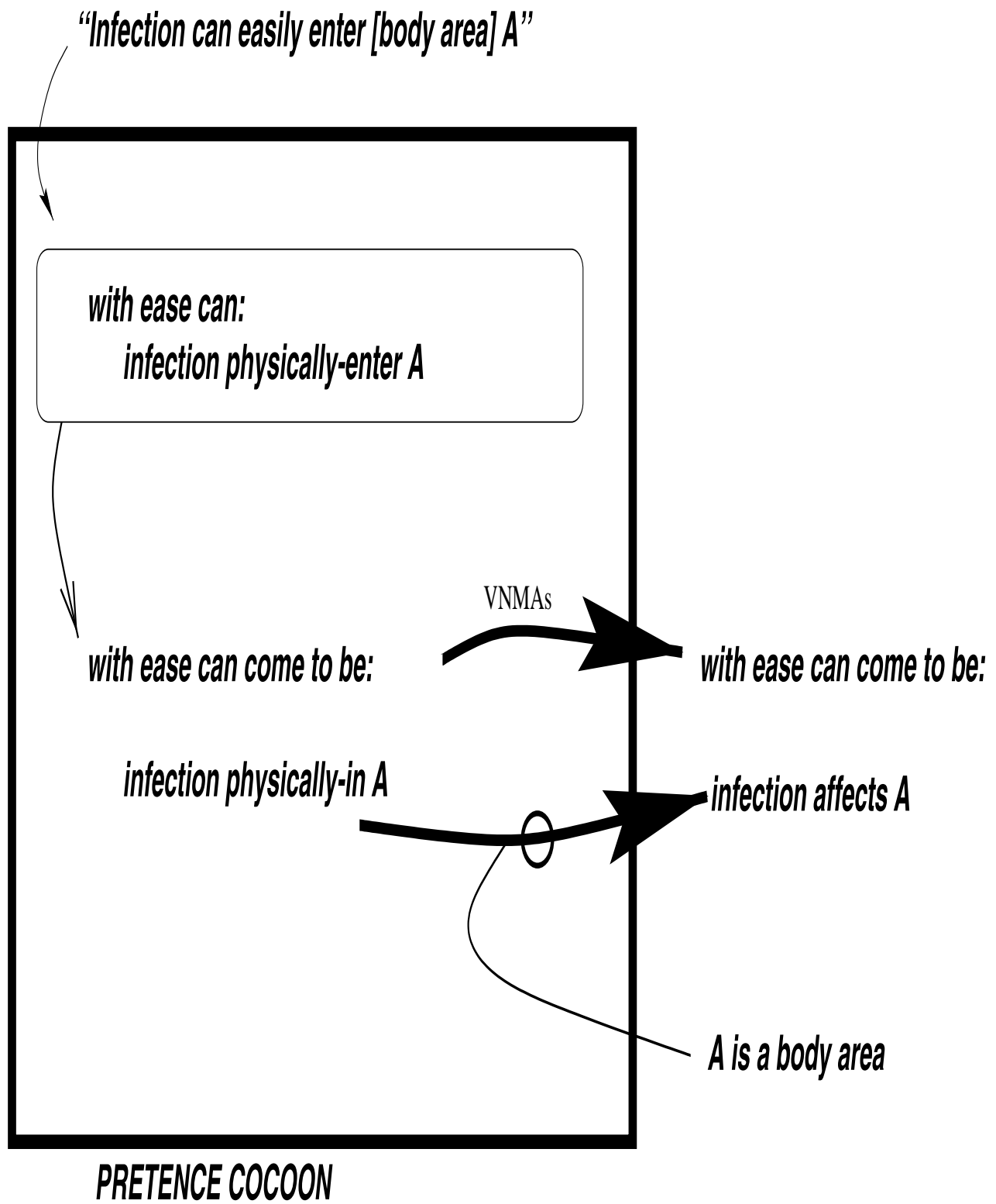
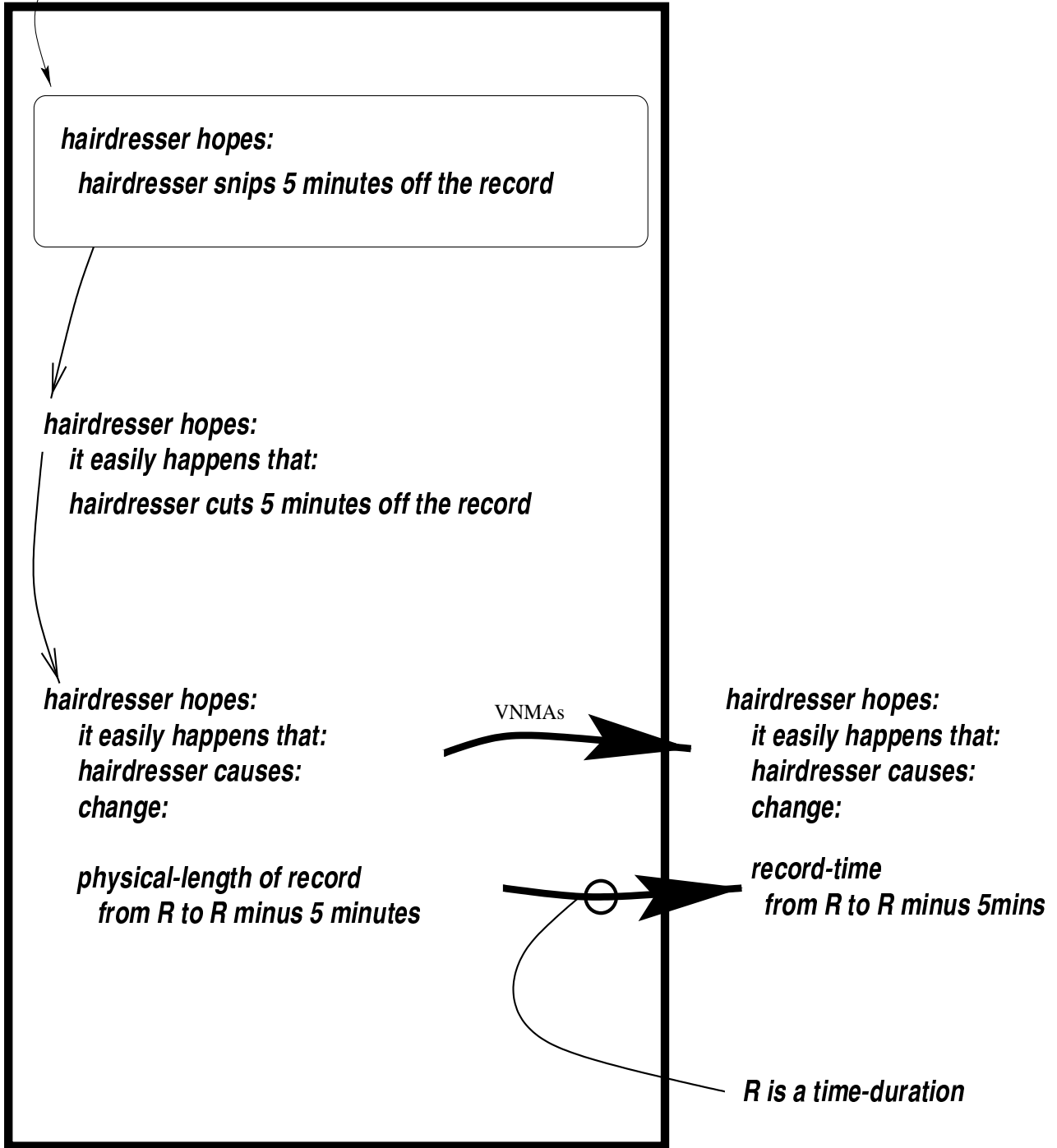


Figure 2: **Infection Entering.** In this and later figures, a mapping arrow labelled VNMA or VNMA's shows the action of one or more view-neutral mapping adjuncts. A mapping arrow marked with a circle shows the action of a mapping relationship specific to a particular metaphorical view, here INFECTION AS PHYSICAL SUBSTANCE. Note that the view-specific mapping action in the present figure requires the fact that A is a body area. The source-based meaning of the utterance is shown in a small box near the top of the diagram. The propositions within the cocoon box and to its right are English glosses of expressions in some internal representation scheme used by the understander. In our figures only a selection of the possible propositions and inferential links are shown.

"The hairdresser hopes to snip 5 minutes off the record."



PRETENCE COCOON

Figure 3: **The Fast Hairdresser.**

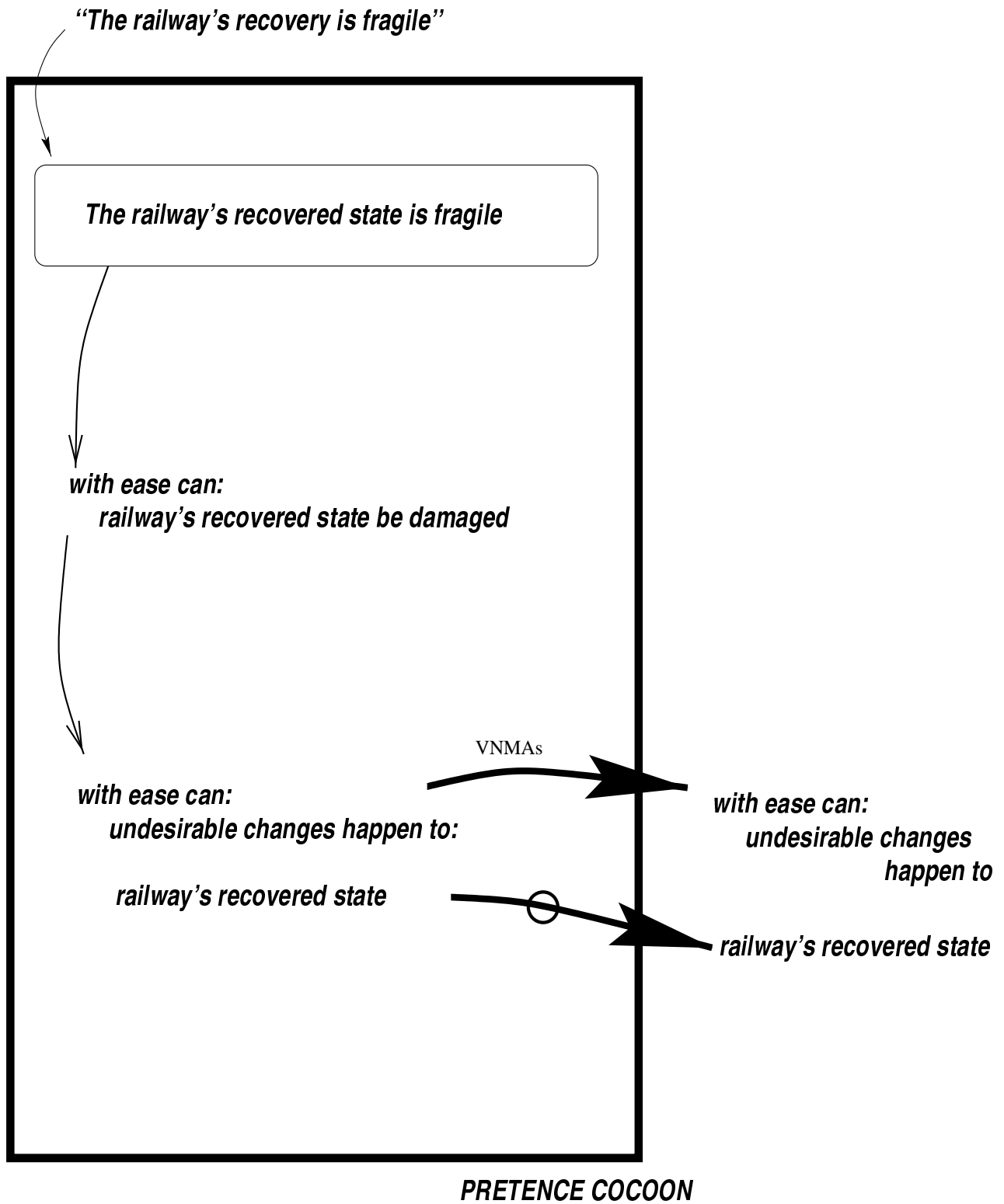


Figure 4: **Broken Railway.**

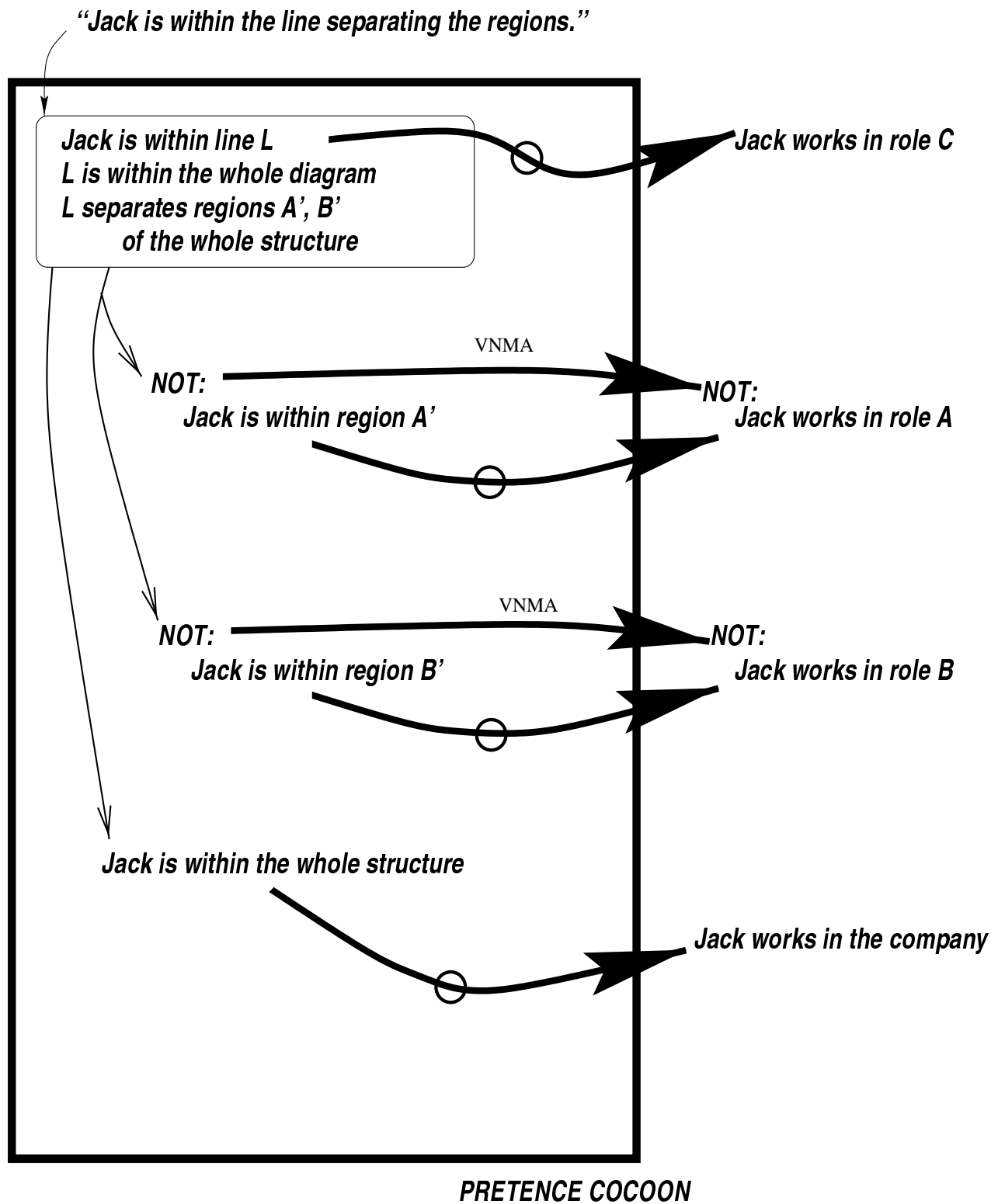


Figure 5: **People on the Line.** The “structure” is a configuration drawn in the diagram, and corresponds to the company. A’ is region of the structure corresponding to work-role A in the company. Similarly B’. The fact that the line, L, is within the drawn structure is included within the source-domain meaning of the utterance, but an alternative approach would be to have it as an ancillary fact obtained from context. This fact (and the fact that L separates regions A’, B’) could be in reality space as opposed the pretence cocoon, because facts can in any case be imported from the former into the latter (Barnden & Lee, 2001a). Relatedly, the example is special in that the source-domain scenario (the drawn diagram) is itself real.

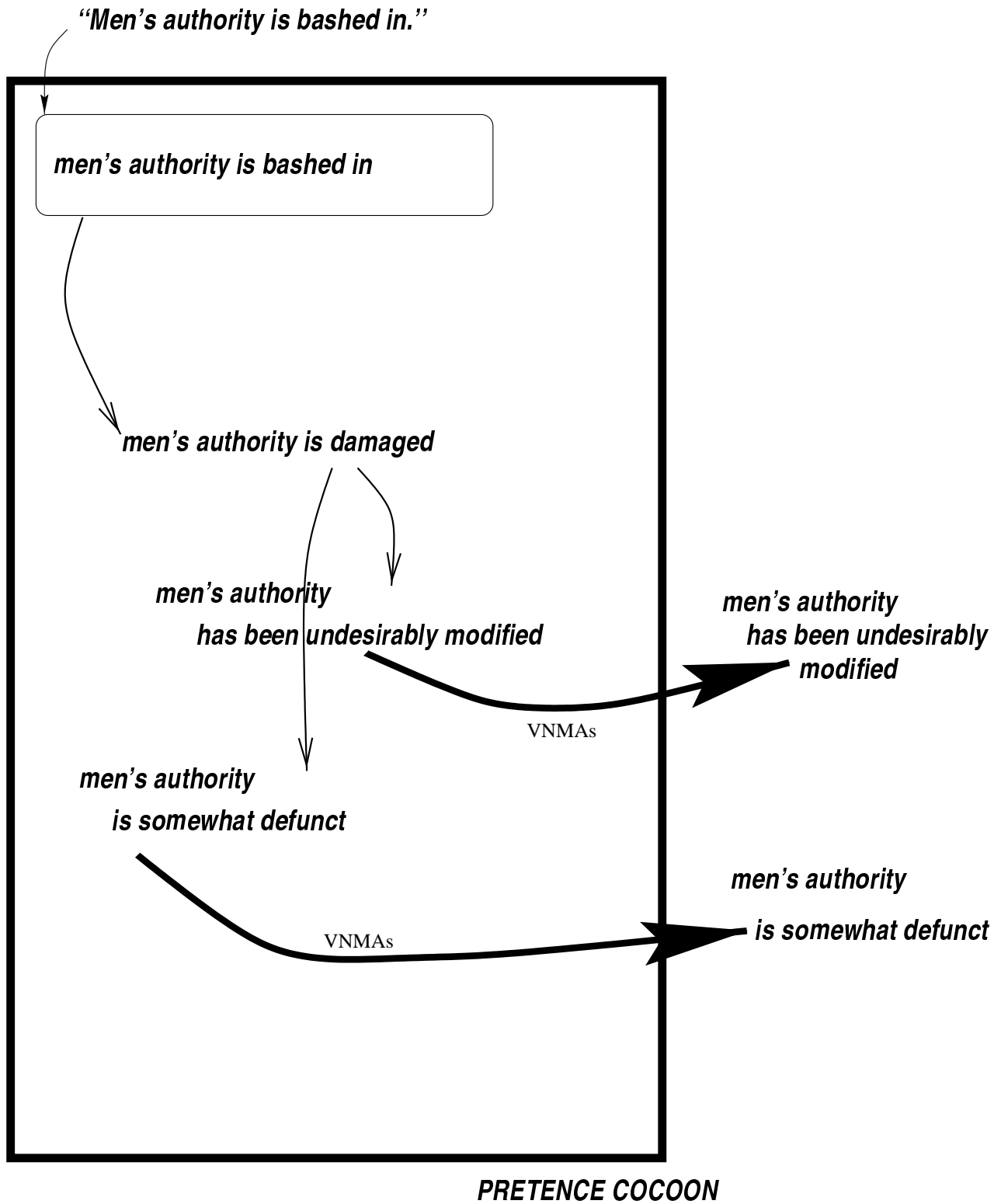


Figure 6: **The Battered Trilby.** Identity mapping of men's authority is not shown.

"The mental process is an eddy current in the mind."

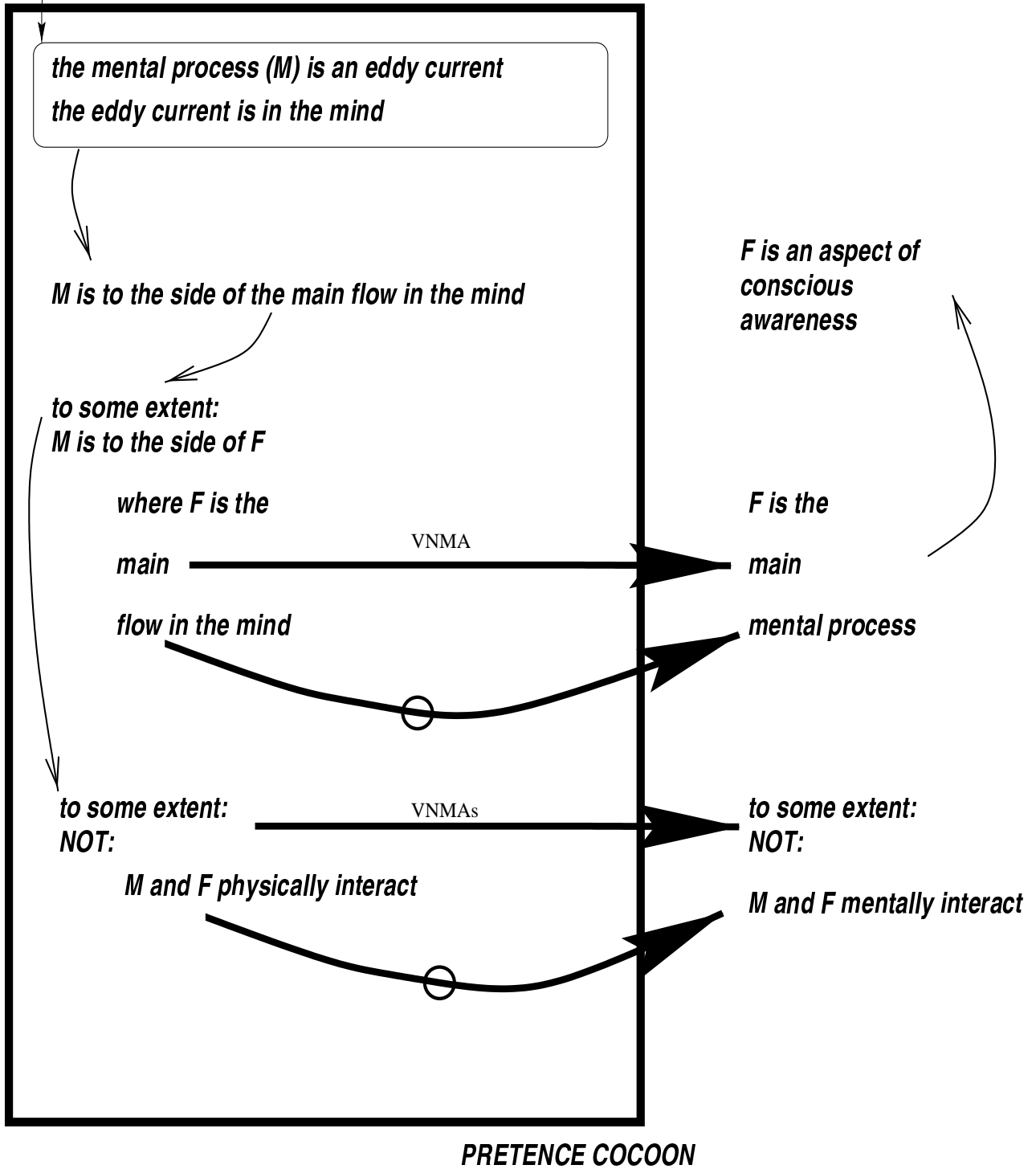


Figure 7: **Going with the Flow.** The example additionally provides a simple illustration of the fact that metaphorical understanding may require reasoning within the reality space as well as the pretence cocoon.

“Controller of the Earth is a giant panglossian nanny.”

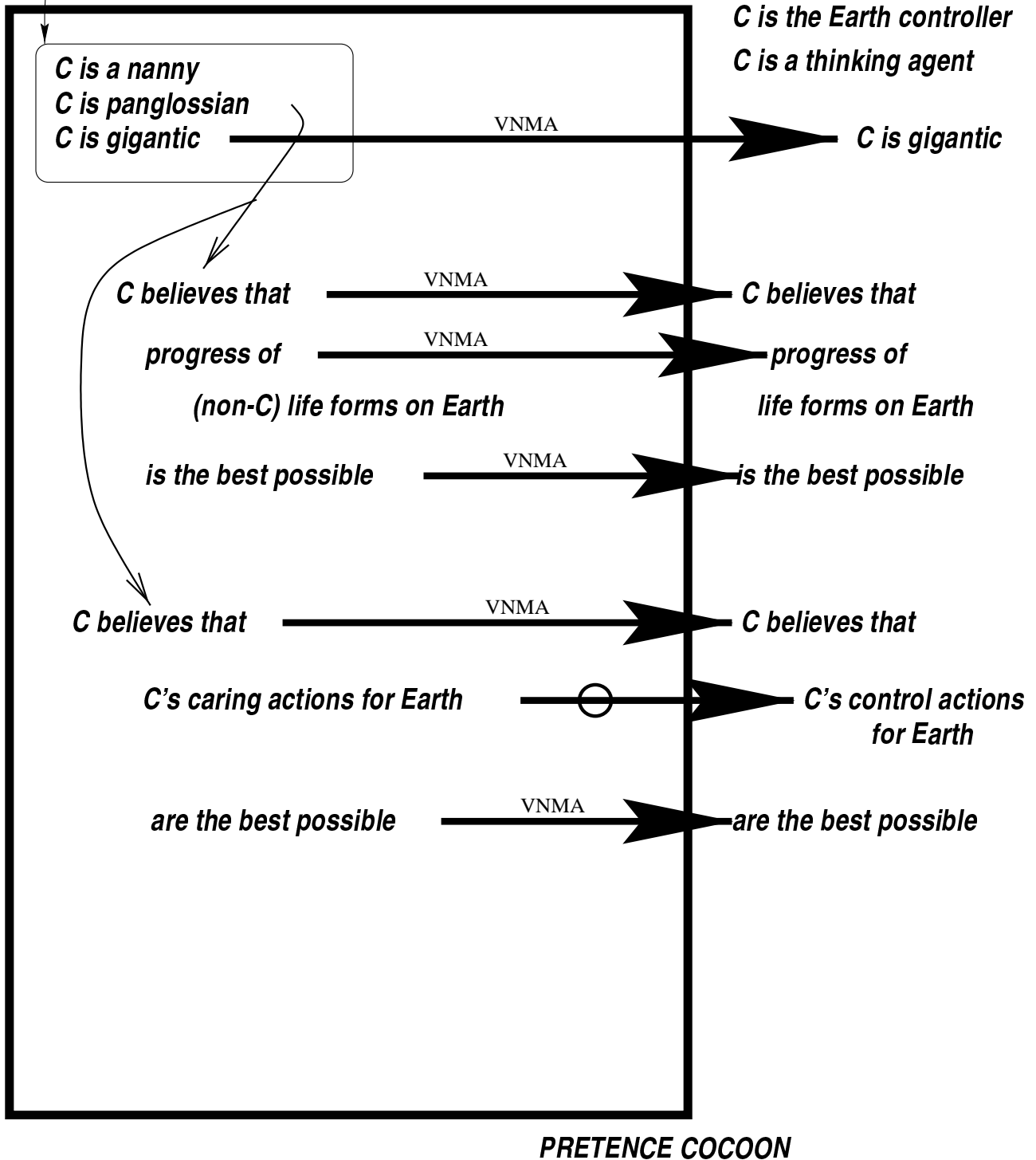


Figure 8: **The Nanny State.** Note that in this example the “reality” space is from the point of view of Doolittle’s critique (see text), according to which the planetary controller really is a thinking agent.

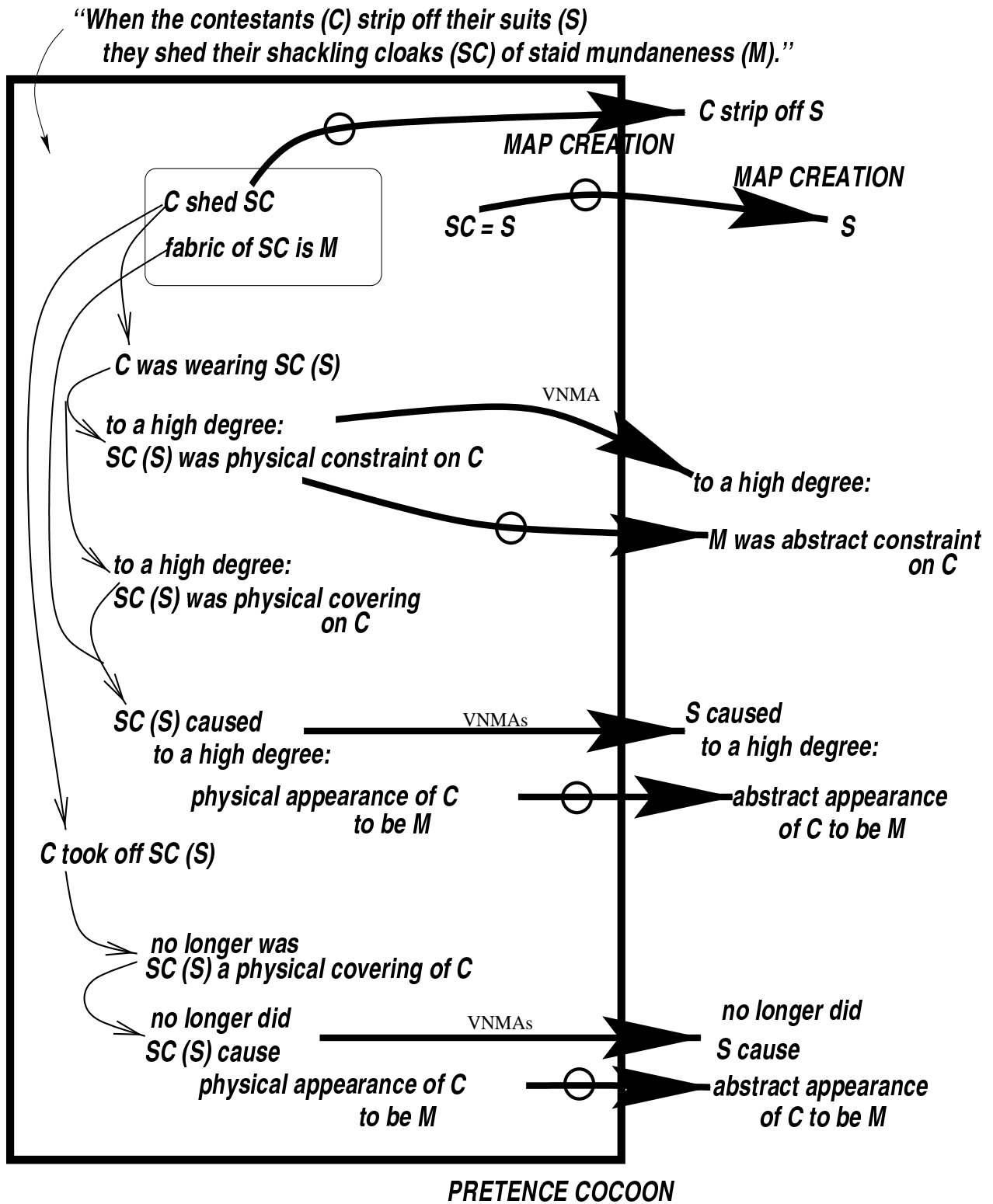


Figure 11: The Staid Strippers.