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# Toward a neuro-cognitive model of socio-political discourse, and an application to the populist discourse of Donald Trump

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## 1. Introduction

In this paper, I aim to show how neurocognitive research into human language can combine with an utterance-based approach, in the hope of both developing our scientific understanding of human linguistic behaviour and at the same time developing our tools of discourse analysis.

The overarching scientific framework is that of Cognitive Science, specifically Cognitive Linguistics. However, the framework of cognitive linguistics in the anglophone tradition has not adequately integrated the fact that humans are social animals constantly engaged in social interaction. Language is for social action, or rather interaction. My aim therefore is to bring together the cognitive dimension with the social (which I take to extend to the political).

In section 2, I introduce deictic space theory or DST (Chilton 2014), which I earlier called discourse space theory (2004). It has been influenced to some extent by the French school centred on the notion of *énonciation*. This approach has to do with the fundamental grounding of human communication in spatial cognition, projected at various levels of abstraction, and intimately bound up with human social relations. In section 3, I review and develop some well-established results from cognitive semantics -- image schema theory. I will show how these two

modules of the mind interact and combine, and then briefly illustrate how they can be deployed as analytic filters in the analysis of an important contemporary piece of discourse.

## **2. Deictic Space Theory (DST): positioning the self in space and discourse**

DST lies at the intersection of several. DST draws on the psychologically oriented theories of Bühler (1934). It has also been influenced by French theorists in the tradition of Benveniste (1966) and the enunciation approach, in particular, Culioli's (1990, 1999) advances in formalising the notions of *repérage*, multiple enunciating subjects, spatial, temporal and epistemic coordinate systems. Also important are the insistence on the centrality of deictic engagement in the inferring of meaning, and the claim that pragmatic elements are apparent in linguistic. Deictic space theory finds corroboration from work in cognitive psychology (e.g. MacWhinney 2005). In neuroscience, imaging evidence points to the involvement of specific brain regions in the processing of deixis and deictic shift. For example, in the case of the pronouns *I* and *you*, right anterior insula and precuneus (Mizuno et al. 2011). Deictic shifts in narrative comprehension involve the right temporal gyrus, precuneus and the posterior/middle cingulate on both sides (Whitney et al. 2009).

The theory takes orientation of self in experienced space-time as its starting point and integrates it with the self's experiences of and judgements about what is real and 'irreal'. The advantage of this model is that it is the basis for modelling highly abstract concepts, without losing touch with their bodily basis, and also linking them to linguistic and other semiotic input from a context. The diagram below (Figure 1) is the basic diagram for a very abstract "deictic space". It is a conceptual space not a physical one. It is the conceptual space that language systems use to represent many kinds of conceptualisations by way of words, parts of words and grammatical constructions -- conceptualisations that need not be literally to do with spatial objects at all but which are derived from our brain's representation of them. In the diagram the point where the three axes converge, the geometric origin *S*, is the experiential self, the *I* who represents the world around it in terms of three conceptual dimensions.

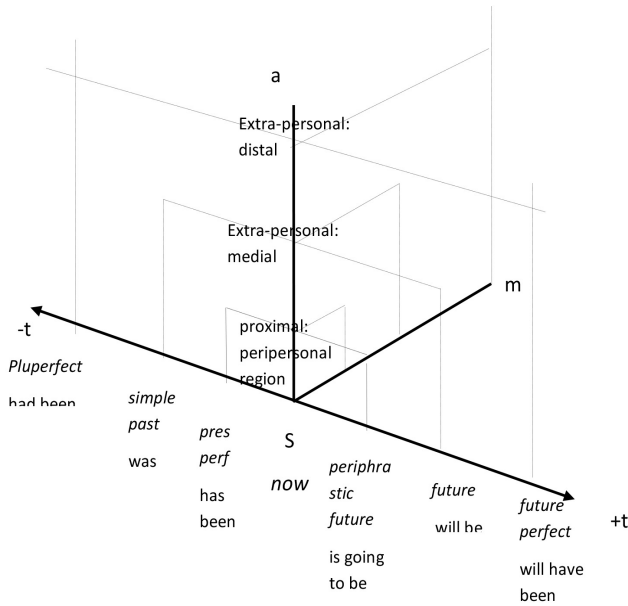


Figure 1: The fundamental deictic space

The vertical axis in Figure 1 was originally considered spatial (and labelled “*a*-axis”, distance axis; see Chilton 2005). However, although focusing within the visual field is the prototypical example, we can focus attention on the non-visual and non-spatial too – on particular thought in our stream of consciousness, or sounds in our environment. Still, even in non-spatial consciousness, spatio-visual metaphors are often used to grasp the phenomenon of attention. Psychologists often speak of the “spotlight” of attention, the “beam” of attention, or the “zoom lens” model. DST proposes to think of attention in terms of foreground and background. If we concentrate on something in the “forefront” of our attention, the rest in the background. In terms of Figure 1, an entity on the *a*-axis is “closer” to S, analogously to spatial perception, where anything that comes into our peripersonal space is like to command greater attention.

The *t*-axis is intended to model the subjective bi-directionality of time. Analogously to the *a*-axis, events on *t* are subjectively “closer” to S or more “remote”, whether S is “looking back” into the past or “forwards” into the future, from the deictic centre  $t_0$ . The *t*-axis represents the way human minds think of time via metaphor -- as

extending in two directions, into the future (abstracted from planning and anticipation systems of the brain) and into the past (abstracted from memory systems)<sup>1</sup>.

The *m*-axis (modal axis) is special and important. It represents our sense of what is most real (true), generally that which is closest to us, 'present' and 'here', literally and metaphorically within our grasp. What is more distant is progressively less real, more uncertain epistemically, and ultimately 'irreal'<sup>2</sup>. So the *m*-axis is a scale from what is here, now and real to what is from S's perspective not real at all. Geometrically, the *m*-axis is a half-line for good reasons, as is the *a*-axis. Bidirectionality does not make sense in either case; this is simply the way the geometric space has to model the properties of the human cognitive space that has these three fundamental dimensions - attentive awareness, temporal awareness and awareness that some events and entities are actual, merely possible, impossible or non-existent. The *m*-axis includes concepts linguistically expressed by, for example, modal verbs, though it is true that there are many kinds and degrees of reality and irrealty that have not been specified in DST<sup>3</sup>.

In sum, we have relative degrees of distance from self on axes of attention, temporal ordering and epistemic judgement. These are abstractions, used by language and other semiotic systems, for building complex ideas and communicating them.

### 3. Image schema theory: conceptualising the world

I shall propose that, at for discursive representations of social entities, we need to look at the projection of bodily-based combinations of the container image space with the deictic space. Both are involved in the experience of self and in its core deictic role in language systems and discourse systems.

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1. Whether the direction in relation to the body is conventionally up-down, front-back, back, back-front, etc. varies across languages. In English we speak of the past being behind us and the future in front; speakers of Aymara do the reverse. The left-right orientation of the *t*-axis in the diagrams is not significant in itself but the bi-directionality centred on self is.
  2. The term "irreal" is intended to reflect the technical term 'irrealis mood' used in linguistics to refer to morphologically marked semantic categories such as 'subjunctive', 'conditional' and many others that used to express states of affairs not asserted to be (yet) true.
  3. Modal verbs frequently can deontic meanings. In this version of DST *m* is epistemic; on deontic models see Chilton (2011).

Image schemas are simple conceptual structures that derive from the interaction of the human organism with its environment, and which recur in the semantics of natural human language. This hypothesis was formulated in philosophy by Johnson (1987) and Lakoff (1987; see also J.-P. Desclés, webpage), and their existence in the brain is now well supported by experiment (Mandler 1992) and neuro-imaging (see Rohrer 2006). Not all meaning is image-schematic, but much of it is, and in any case all meaning is constituted by patterns of neural networks distributed in and between different areas of the brain. Image schemata are lexical items and modulated by context; they also provide the source domains for conceptual metaphor.

I concentrate here on two particular image schemas, CONTAINER AND PATH. These are image schema that are of particular importance in social conceptualisation, social actions, ideologies and policies of many kinds of discourse application (*cf.* Chilton 1996). We may tend to think of schemas in the abstract, but they are anatomically and neurologically grounded, as an evolutionary outcome of the interaction of organisms and environment.

This embodiment of semantics is important but in practical discourse research we need to have an equally well motivated abstract methodology. As in the case of orientational conceptualisation and deixis, basic geometrical concepts and diagrams make sense because they themselves are grounded in the spatial experience of the human body. Since Johnson (1987) diagrams have been used in image schema semantics. Whereas the DST diagrams are based on coordinate geometry, image schema diagrams are of various types – container is essentially topological, path is essentially a translation vector. All can, however, be combined conceptually, since they all model different ways in which space is experienced.

Figure 2 combines two image schema models. The labelled ellipse is a diagrammatic model of CONTAINER, labelled with the English words that actually fire the neural circuits that constitute, and whose meanings are dependent upon it. The two labelled arrows are the diagrammatic form of PATH that can be regarded as vectors (the full DST theory makes use of vectors also). The basic diagram for path is source-path-goal in the direction of the arrow. However, it seems to me to be likely that the path schemas stored in memory and used in language are like to be more detailed. The path vector is a translation vector: indicating direction and distance of travel. But in discursive use, the source and goal are specified as a location and the moving point as an actor that may be self or other,

within the deictic space. Crucially, self (S) may be inside a container location moving out (evoked by lexemes *exit*, *go out* or even *leave*, *quit*, *depart*, etc.), and a distal actor in the deictic space (O), may be conceptualised as *outside* S's containing space *coming in*, *entering*, *intruding*, *penetrating*, etc. It is not necessary to examine all the permutations here. But it is worth noting that a separate schema may well be constituted by two vectors in opposite directions, with S located at both source of vector 1 and goal of vector 2, both vectors combined in a deictic space, which of course includes temporal directionality. This is a composite image schema that grounds notions such as “two way” street (used metaphorically by the speaker in the example below), and more fundamentally in concepts of *return*. This composite schema is of fundamental importance in social discourse, incidentally, because it provides the embodied basis of the concept *home*, in addition to other kinds of social knowledge and affect, “home” (cf. “home base”) is the location to which one habitually returns.

It is particularly important for what follows in section 4 below to note that motion of an object or agent in the direction of S is probably linked to numerous neural circuits, most significantly those representing the containing boundary of peripersonal space. If peripersonal space (and its discursively constructed extension to the social group) is approached or transgressed, there is a neural response linked to the amygdala, which is responsible for processing fear and danger and the attendant hormonal responses. Of direct relevance at this point is brain-imaging evidence that words related to danger (e.g. *threat*, *kill*, and the like) trigger amygdala activity (Isenberg & alii 1999). Discourses that activate penetration of the self's container—whether biological peripersonal space or the borders of S's territory—may stimulate the same biological fear response. It's a testable hypothesis.

Now it is this conceptual neuro-cognitive background that motivates another humanly vital area of behaviour, conceptualisation, linguistic lexicalisation and discursive action – the area evoked by words such as “safe”, “secure”, “security” and “protect”. In fact, the very meaning of these words *requires* the activation of the container concepts. However, containers can have an emotionally negative value: inside a container, you might feel confined, imprisoned. This kind of container concept depends not only on the internal point of view but also on bodily systems responding to pressure and skin contact—that is to vector forces that impinge on the container surface. So, CONTAINER is emotionally ambiguous; it can be good or bad. It is bad if there is pressure whose

source is from outside, or whose boundary is a force blocking S's path out from inside. It is good if its boundary is blocking Other's pressure on the boundary in the direction of S.

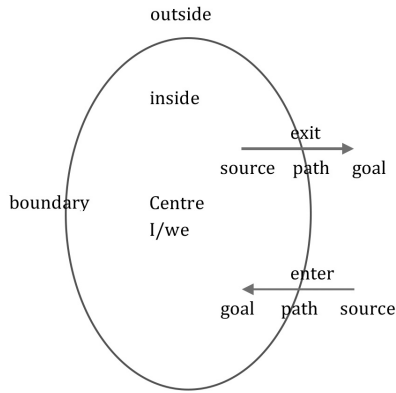


Figure 2: container and path image schemas

To sum up, the hypothesis is that language-discourse processing in necessarily social contexts draws on multiple neural networks that constitute conceptual schemas of this kind. Image schemas do not act in isolation but in combination and in discourse they are, indeed must be, *deicticised*. They are, furthermore, intimately linked to circuits concerned with emotional response. In the next section we shall see how the conceptual, neural and other biological systems adumbrated here can be linguistically activated in socio-political contexts, with profound implications for the social animals that we are.

#### 4. Deictic space and image schema in the discourse of Donald Trump

DST and image schema theory are two modelling attempts that seek to grasp the multifaceted workings of the human communication seen as an integral part of the human mind. They also offer us two tools for analysing specimens of human discourse. In this section I will take an all too brief look at such a specimen—part of a political campaign speech by Donald Trump (*cf.* the analysis of Jean-Marie Le Pen in Chilton 1994a and b).

In the contemporary world, there is an instability and uncertainty in the way in which human representation systems are making sense

of human groups and the relations between them. These disturbances are evident in linguistically primed mental representations involving speaker choices in deictic self-representations and projections. This is further reflected in competing discourses, where individual selves are projected onto group-selves in terms of varying and competing uses of the container image schema. The following extract is from Republican Party candidate Donald Trump's speech at Gettysburg in October 2016. The geographical location has historical significance that is ideologically exploited. Our main focus, however, is on the spatial concepts involved in the enunciative event that we can analyse with DST and the mental representations that we can analyse using the cognitive semantic theory of image schemas, specifically that of containment.

**Trump's Gettysburg speech - Oct. 22, 2016**

And (7) **Illegal Immigration Act** [cheering]. Fully funds the construction of a wall on **our**<sub>1</sub> southern border. Don't worry about it. Remember, **I**<sub>1</sub> said Mexico's paying for the wall. With the full understanding that the country of Mexico will be reimbursing the United States for the full cost of such a wall. Okay? **We**<sub>2</sub>'re going to have the wall. Mexico is going to pay for the wall. By the way, **I**<sub>2</sub> met with the President of Mexico two-and-a-half months ago. Wonderful meeting. Wonderful person. But **I**<sub>3</sub> told **him** this is a two-way Highway; not a one-way highway. **We**<sub>3</sub> have **our**<sub>4</sub> people. **We**<sub>5</sub> have to take care of **our**<sub>6</sub> people. **We**<sub>7</sub> have to protect **our**<sub>8</sub> people. So it's got to be a two-way street. Otherwise, it's gonna be a whole different deal. But it establishes a two-year, mandatory, minimum federal prison sentence. This is people coming in illegally. For illegally re-entering the United States after a previous deportation. And a 5-year mandatory minimum for illegally re-entering for those with felony convictions, multiple misdemeanor convictions, or two or more prior deportations. So when somebody comes in, **we**<sub>9</sub> send **them**<sub>1</sub> out. **They**<sub>2</sub> come back in; **they**<sub>3</sub> go to prison for quite a while. **They**<sub>4</sub> come back. **They**<sub>5</sub> come back again, **they**<sub>6</sub> go five years. Because what's happening is: **they**<sub>7</sub>'re coming back ten times and **I**<sub>4</sub> could go case after case. **They**<sub>8</sub> come back. Look at what happened in San Francisco. Five times **he** came back. On the fifth time **he** killed Kate. Five times. But so many others. One, ten times, came back. Killed somebody after ten times. When **they**<sub>9</sub> get deported, **they**<sub>10</sub> stay out. Otherwise, **they**<sub>11</sub> have very serious prison terms. **They**<sub>12</sub> will stay out -- once **you** do that. **They**<sub>13</sub> will stay out. Right now, **they**<sub>14</sub> have no consequence. **They**<sub>15</sub> have no consequences.

[English transcript by Ken Adachi]

<http://educate-yourself.org/cn/Trump-Gettysburg-Speech-Full-Text24oct16.shtml>

Example: Trump text fragment on immigration

#### 4.1. Applying DST

In this text the fundamental deictic structure is set up by the pronouns use, which are in bold in the example, and also numbered. There are two embedded sets of axes which contain two narratives in the past - the first in which the speaker S reports a conversation with the Mexican president, the second which narrates a past event ascribed to an unnamed

individual “he”. The latter is by inference located on *t*-axis prior to the Mexican president meeting.

The two uses of *I* establish S as a speaker—in the first case in a dialogic relation with an implicit *you*, his audience and in the second case in a semantic frame that gives him the role of international actor engaging dialogue with a head of state. The *you* may be residually processed by hearers as addressing them directly. However, it is first-person plural pronouns and third-person plural pronouns that are statistically salient, with the latter exceeding the former. What is going on here? *We* and its forms is always variably dependent of verbal and nonverbal context. *We*<sub>1</sub> and *we*[*our*]<sub>2</sub> are most probably understood as inclusive by the hearers. S is establishing self and addressee as in the same part of the deictic space -- and of course the same political space. Cases *we*<sub>3</sub> to *we*<sub>7</sub> involve slightly more complex processing. It depends whether hearers process them as inside the embedded deictic space (S’s conversation with the Mexican president) or not. The co-textual cues suggest the former -- a manifestation of *style indirect libre* interpretation. Inside the reported event space, *we* seems to be exclusive of the Mexican addressee and to refer only to S in the role of head of state speaker, using the plural pronoun. However, an unwary hearer might not process the *we* in that way, i.e. not place it in the embedded mental space, but rather process it as part of S’s ongoing address to him/her the hearer. In this case, *we* gets processed in an *inclusive* sense where *we* = *I* + *you* together. Or both possibilities are somehow blended - a political payoff for S.

Turning to the cases of *they*, it is easy to see that the repetition establishes a conceptual dichotomy in this part of the speech between the foregoing collective *we* and a distal (as they would be represented in a DST model) third party *they*. The occurrence of the singular third-person pronoun *he* in the second embedded space, the narrative, is probably perceived, and is probably intended to be perceived, as an instance of the *they* category just discursively established. Overall, one has the impression of discursive effort going into getting hearers to set up a conceptual *us-them* dichotomy. It may seem bizarre to unpack the obvious in this way -- but I want to emphasize that linguistic communication, i.e. discourse, involves a myriad complex neurological events in intercommunicating brains.

I have focussed here on person deixis signalled though personal pronouns. DST also enables the analysis of temporal deixis - in this section we can see how embedded axis have secondary deictic centre on the *t*-axis, and we can speculate about their significance. More obviously

significant is the fact that an analysis of this Trump text would have no *m*-axis, or a minimal one. This speaker typically does not hedge, speculate, hypothesize or use conditionals.

#### 4.2. Applying image schema theory in combination with DST

The lexical items in this passage have recurrent meanings, constituted by neural events and networks that can be modelled in image schema theory. The most obvious one is CONTAINER. A number of lexical items in this text require the container image schema in their processing; these are indicated by double underlining. The word *wall* is linked to cognitions of spatial separation, at a minimum, but also to the more detailed container schema, which includes enclosure surrounding self or other. This schema is repeatedly activated by the speaker, in the opening sentence, and again at the end of the extract in *out*. The word *prison* also depends on the container schema linked to a particular deictic value (*we* is outside), as well as to social, knowledge frames and to affect. The embodied cognitions involved in stimulating mental representations of the Other are complementary: prisons keep *us* safe by containing the Other and holding them *in* /blocking them coming *out* by directed force; border walls keep us safe from the Other's ingress into our inside space, by force exerted in the opposite direction. It's because these basic bodily schemas are in play in word meaning, and repeated by the speaker, that they trigger emotional response, and have persuasive power, in lieu of, and overriding, argumentation and evidence.

The CONTAINER image schema is activated in combination with PATH, which in turn is combined with deictic conceptualisation. Wavy underlining indicates movement verbs that are directional and that also trigger container concepts, together with other conceptual features that are grounded in image schemas. The concept of immigration, an important element in the whole mental structure that constitute the historical institution of the state, is framed repeatedly as “coming in”, “going”, “staying out” - and by implication staying “in” for those given the right to do so. This switch from Latinate to Germanic lexis, which is a historical feature of English, may also contribute to the impact of the conceptual implications that it has.

It is not simply the activation of PATH and CONTAINER that are relevant here but how the verbs expressing PATH are selectively managed. What after all are verbs? In all languages verbs have their own conceptual schemas (or “frames”: cf. Fillmore 1982) that assign roles to participants in an action or relation, depending on the particular conceptualisation

(meaning) of the verb. In the case of PATH verbs who or what is moving? Is the motion caused, and if so by whom? The direction and goal of motion are expressed partly in adverbs and prepositional phrase, as well as via the assumptions and implications processed by hearers in the context. In the Trump text *entering* and *re-entering* are always constructed with *they* as grammatical subject, in most cases in the role of active Other moving under their volition. Only in one instance is the Other (*them*<sub>1</sub>) the patient, the object of caused motion brought about by *we*, who are not represented as in motion or as a causer, but rather, by implication, as the victim of “they”. Repeated penetrations of containing space already imply danger and threat. The embedded narration (“Look what happened...”) refers to a nameless individual Other who is the agent of *kill*, the actual processing of which verb requires activation of the amygdala’s fear neurons.

Finally, note that verbs of protection and defending (see the verbs underlined in bold) conceptually presuppose threat, and their main meaning component may also draw on CONTAINER as its grounding. The grammatical frame in which they occur is significant. The grammatical subject and conceptual agent here is a use of “we” that is distinctive in this passage (*we*<sub>3,8</sub>). It occurs within the first embedded narrative. In which the speaker represents his conversation with a head of state; he appears to refer to himself as “we” or perhaps to himself together with the US government. These sentences are also the only ones that involve modal expressions -- “we have to”, plausibly interpreted in a deontic sense as well as a necessity sense (protecting is presented as an essential duty). The significant point is that the speaker is representing himself in the role of protector of the people, in a context that is evoking emotions of threat and fear. This protector role is also present implicitly in the last six sentences of this section of the speech, where the speaker presents future actions that prevent future penetrations of the container. It will be obvious that there is a more general narrative schema available for interpretation and latently triggered: that in which a home territory is threatened by an enemy who is countered by a hero and saviour.

## Conclusion

I began this paper by outlining some technical theories within cognitive linguistics, and more broadly within cognitive science. These theories aim to increase scientific understanding of how the highly social capacity for language works. Some of the theoretical models are necessarily abstract. However, they are increasingly being justified by empirical evidence from

the psychology and neuroscience, while also making hypotheses capable of testing. In addition, these detailed empirically oriented models provide practical instruments for the analysis of human discourse. It is no longer possible to treat utterances as disembodied structures; discourse analysts need to be able to relate verbiage to the physical brains that produce it among physical groups of humans. I proceeded to suggest how theoretical models can also be applied as analytical tools that explain the mechanisms of certain kinds of human verbal behaviour and its linkage to major socio-political problems. This does not mean they fully *explain*, let alone *solve* them. They do, however, provide a more than merely descriptive way of understanding some of the most problematic and indeed dangerous trends in contemporary socio-political behaviour. Most salient at the present time are the following: (i) the activation, by verbal stimulation, of exclusionary collective-self concepts, (ii) the prompting of fear responses by the verbal representation of threat to self, and (iii) the verbal (self-) representation of individuals as capable of removing external threats. At this point the concerns of socio-cognitive linguistics merge with those of the social and political sciences.

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