

The 6th China International Forum on Cognitive Linguistics

Language, Culture and Mind:

10 lectures on development, evolution and cognitive linguistics

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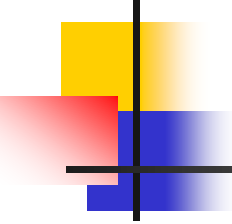
Lecture 2

The Psychological Roots of Cognitive
Linguistics ... and Beyond



New wine and old bottles

- Cognitive Linguistics is a new theoretical approach in linguistics, whose key theoretical texts are barely a quarter century old
- However, it draws upon concepts from earlier research traditions
- In Linguistics, the main relevant tradition is Functional linguistics
- Unsurprisingly, many of the most important concepts used by cognitive linguists derive from the discipline of Psychology



Some key psychological concepts used in CL

- Gestalt
- Schema
- Frame
- Figure-Ground Organization
- It is often claimed that “before Chomsky” there was only Behaviorism
- But the above concepts are from pre-World War II cognitive psychology



Gestalt

- German: “Whole” or “Complete Pattern”
- In perception, a focus upon the relationships between individual elements, not the isolated elements
- It is the whole that gives meaning to the parts
- Von Ehrenfels (1890): the example of a melody
- Although its origins go back to before the First World War, Gestalt psychology flourished in Germany in the inter-war years

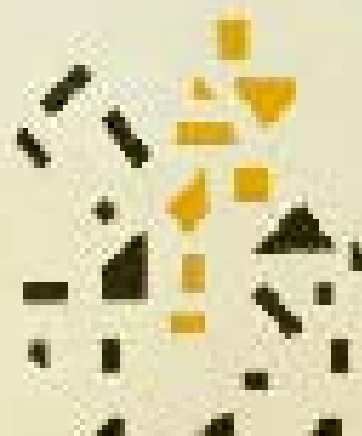
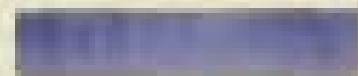


Gestalt

- Gestalt psychology represented a break with atomism and sensation-based psychology (Helmholtz)
- It also rejected the behaviorist notion of “stimulus”, in favour of a focus on whole, real objects in relation to the activity of a whole organism
- Gestalt psychology therefore prefigured the “ecological” theory of perception of James Gibson and was related to the notion of “Umwelt” (von Uexküll)
- The Gestalt psychologist Wolfgang Köhler was the first to study non-human primates using film
- He claimed that chimpanzees are capable of “insight learning”
- Gestalt psychology was also influential in modern art movements

TENTOONSTELLING

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VOOR DE KUNST

NO. ELSTR. UTRECHT



Representation and recognition

- Does the previous slide suggest that representation has more to do with the *recognition of a representational intent* than with fidelity to the original?
- And does recognition of this representational intent also involve the recognition of what is *intended to be represented*?

Gestalt, ambiguity and illusion



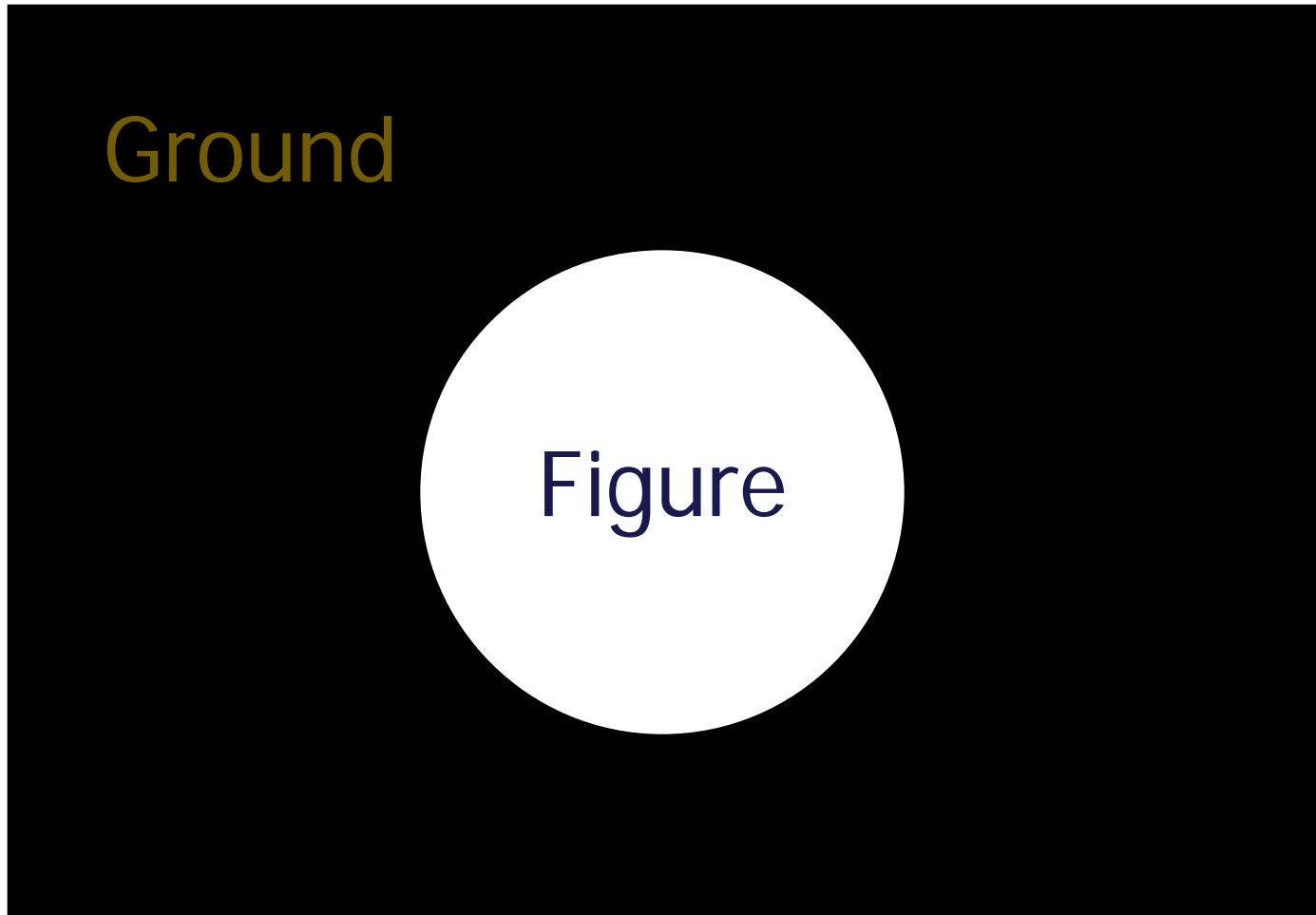


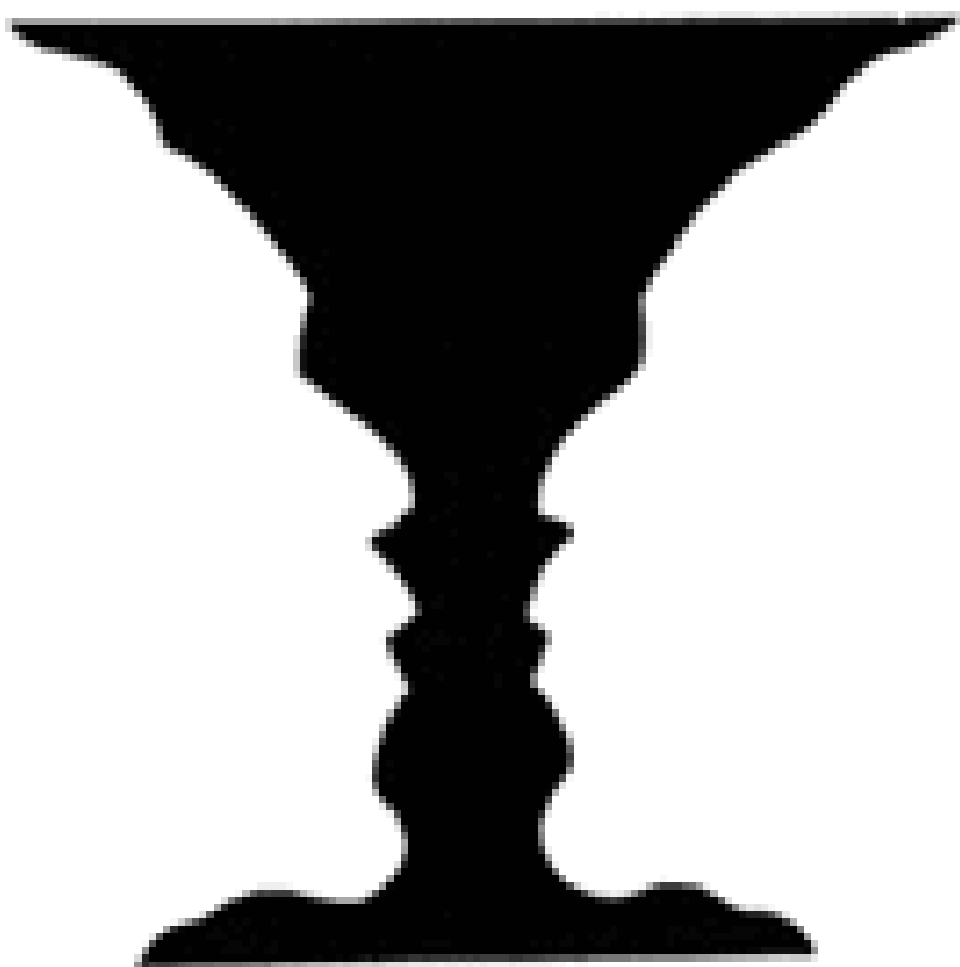
Gestalt, interpretation and construal

- The previous line drawing is often referred to as the “old woman / young woman” illusion
- But it is not really an illusion, rather a puzzle of **construal**
- Once the observer construes the image a certain way, this construal determines the **significance of each of the elements**

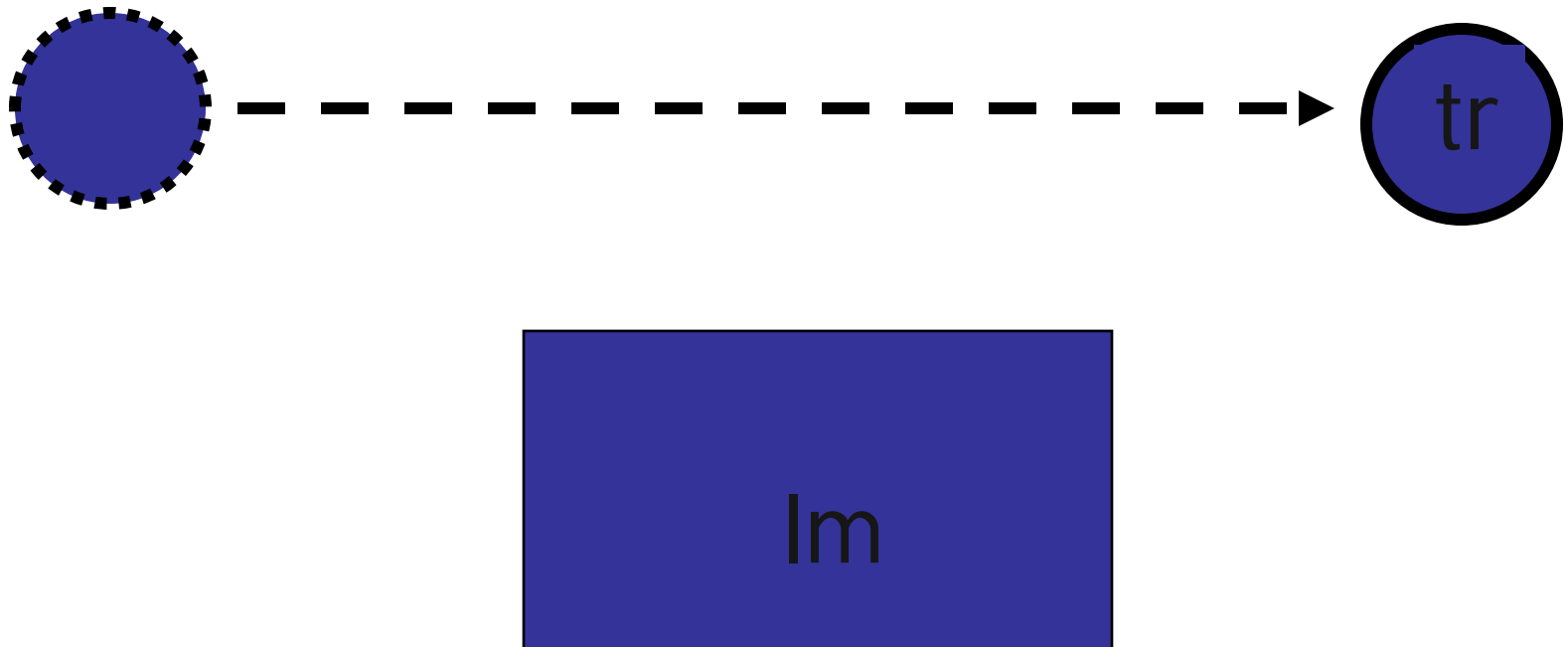
Figure and Ground

(Edgar Rubin 1914)

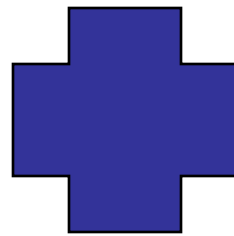
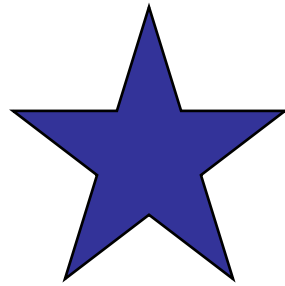




Trajector and Landmark (Langacker)



The flexible linguistic and perceptual construal of spatial relations



The star (Fig.) is above the cross

The cross (Fig.) is below the star



Gestalt and cognitive linguistics

- For Gestalt psychologists, experience was not merely the registration of sensations and the attempt to tie them together through association
- Experience was considered to involve the active contribution of the subject and his or her point of view
- Cognitive linguists such as Lakoff, Langacker and Talmy have built on these notions in emphasizing that speakers are also embodied experiencers and active cognizers
- But are some forms of flexible construal only available to language users?
- Perhaps language is a key part of the human *Umwelt* because it not only *reflects* cognition and perception but also transforms them (semiotic mediation)



Schema

- Classical cognitivism inherited from Formalist linguistics the idea that **rules** operate over internal **symbols**
- In place of rules, cognitive-functional linguistics employs the concept of **schema**
- A schema is a principle of organization applying to, and unifying, perception and cognition (or conceptualization)



Kant's argument (1781)

- Since Antiquity, it had been generally agreed that concepts are related to abstract images or mental pictures
- But, says Kant, any single member of a category, or any single image, will always be too particular to cover all cases.
- Even an ideal image will be too concrete (eg an equilateral triangle cannot represent all triangles)



Immanuel Kant (1781)

- Indeed, it is schemas, not images of objects, which underlie our pure sensible concepts ... The concept 'dog' signifies a rule according to which my imagination can delineate the figure of a four footed animal in a general manner, without limitation to any single determinate figure such as experience, or any possible image that I can represent *in concreto*, actually presents.



Kant again

- Whereas all intuitions [perceptions] rest on affections [sensations], concepts rest on functions. By “function” I mean the unity of the act of bringing various representations together under one common representation.



Functional equivalence of schema and rule

- The schema is *like* a rule, functionally, but it is *not* a rule because it is not “determinate”.
- But Kant thought that the concepts of language (discursive concepts) *are* determinate (or at least, can be made so)
- Kant did **not** say that schema and concept are the same, but that schemas **bridge** perception and conception.



How does the schema work?

- Schemas are stored representations in memory
- How do they “abstract” from specific objects or episodes and yet remain flexible enough to accommodate new instances of the category to which they apply?
- Kant did not know the answer to this, he thought science would provide it



Parallel Distributed Processing

- “On the one hand, schemata are the structure of the mind. On the other hand, schemata must be sufficiently malleable to fit around most anything ... There is no representational object that is a schema. Rather, schemata emerge at the moment they are needed from the interaction of large numbers of much smaller elements working in concert with one another.”
 - Rumelhart, McClelland & the PDP Research Group, 1986
- Connectionist neural networks, schemas and prototype effects



Schemas in Cognitive Linguistics

- **Image schema** (pre-conceptual)
 - Eg “over” (Lakoff & Brugman)
- **Idealized Cognitive Model** (conceptual)
 - Eg “bachelor” (Fillmore, Lakoff)
 - NB FRAME SEMANTICS
- **Event Schema**
 - Eg Agent-Action-Object
- **Construction schema**
 - Eg Dual Object (Goldberg)



Schemas, scripts and frames

- Schank & Abelson 1977
 - *Scripts, Plans, Goals and Understanding*
- How to computationally represent conventional sequences of action?
 - Eg the restaurant script
- Schemata can exist at different levels of organization
- Frames and scripts can be *partitioned* or *segmented*



Language, cognitive and cultural development

- Children learn early words by embedding their use in repetitively occurring events that can be schematically represented (Nelson)
- They learn grammar by partitioning the “slots” of construction frames and recombining words and expressions (Tomasello)
- Narratives are important higher order frames for understanding self, other and world (Nelson, Bruner)



Rules, representations and normativity

- A schema is **like** a rule but it *can be* pre-conceptual, in which case it is **not** a rule in the strict sense
 - PDP models contain *no rules*, the only rules are those imposed by the observer
- Schemas can also be conceptual, and the **object** as well as the **means** of cognition (eg kinship systems)
- The schemas of language (the assembly of constructions) are conventionally organized
- So language *does* have rules, but they are not autonomous and they are not “internal”
- A schema can be private but a rule cannot (Wittgenstein, Itkonen)
- Rules are **normative**, schemata can also be normative



Cultural and linguistic schemas

- Schemas may be culturally specific
- For example, politeness scripts, kinship frames, schemas for cultural spaces and times
- In these cases we speak of **cultural schemas** or **cultural models**
- Cultural models are intersubjectively shared by members of a cultural community
- Cultural models may motivate grammatical facts in a language (eg classifier systems, spatial frame of reference, time)



Where do schemas exist?

- We have talked about the organization of schemas at the following levels:
 - Neural (PDP modelling)
 - Individual psychological (eg acquisition and development)
 - Intersubjective, social and cultural (cultural schemas)
- Schemas are constructs that bind together cognitive processes at all these levels, enabling the integration of individual with social cognition
- Lower level schemas are preconceptual and prelinguistic (containment, support, object categories)
- High-level schemas organizing abstract domains like time (eg clocks, calendars) are linguistically organized, conceptual, socially shared and normative: **semiotic mediation**

The extended embodiment of schemas

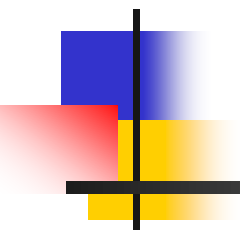


A Medieval Clock (Lund, Sweden)



Schemas and the materiality of representation

- Schemas are where cultural and individual cognition meet and interface
- Because schemas can be embodied in artefacts, they are also where the representation of the mind in language and symbolization achieves material structure not just in the brain but in the world



Thank you