

# Embodied Cognition

*Cognition is embodied when it is deeply dependent upon features of the physical body of an agent, that is, when aspects of the agent's body beyond the brain play a significant causal or physically constitutive role in cognitive processing.*

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# Metaphor and Cognition

- **Metaphor** is an instance of non-literal language processing
- Lakoff and Johnson famously argued that “*human experience is intricately bound up with large-scale metaphors, and both experience and metaphor are shaped up by the kinds of bodies we have that mediate between agent and world*”
- So they were making two claims:
  - The use of metaphor involves embodied cognition
  - Metaphor is not just confined to our use of language, but plays an important role in human cognition more generally

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# Examples

## Conceptual Metaphor: **ARGUMENT IS WAR**

- Your claims are *undefensible*.
- He *attacked every weak point* in my argument.
- His criticisms were *right on target*.
- I *demolished* his argument.
- I've never *won* an argument with him.
- You disagree? Okay, *shoot*!
- If you use that *strategy*, he'll *wipe you out*.
- He *shot down* all of my arguments.

# Examples

## Conceptual Metaphor: **ARGUMENT IS WAR**

Lakoff and Johnson are not only saying that we talk about arguments this way; they are saying that we also *think* about arguments this way, and this thinking shapes our actions:

*“We can actually win or lose arguments. We see the person we are arguing with as an opponent. We attack his positions and we defend our own. We gain and lose ground. We plan and use strategies. If we find a position indefensible, we can abandon it and take a new line of attack. Many of the things we do in arguing are partially structured by the concept of war. Though there is no physical battle, there is a verbal battle, and the structure of an argument--attack, defense, counter-attack, etc.---reflects this. It is in this sense that the ARGUMENT IS WAR metaphor is one that we live by in this culture; its structures the actions we perform in arguing.”*

# Examples

## Conceptual Metaphor: **TIME IS MONEY**

- You're *wasting* my time.
- This gadget will *save* you hours.
- I don't *have* the time to *give* you.
- How do you *spend* your time these days?
- That flat tire *cost* me an hour.
- I've *invested* a lot of time in her.
- I don't *have enough* time to *spare* for that.
- You're *running out* of time.
- You need to *budget* your time.

# Examples

## Conceptual Metaphor: **TIME IS MONEY**

- *Put aside* some time for ping pong.
- Is that *worth your while*?
- Do you *have* much time *left*?
- He's living on *borrowed* time.
- You don't *use* your time *profitably*.
- I *lost* a lot of time when I got sick.
- *Thank you for* your time.

# The **CONDUIT** Metaphor (our language about language)

Conceptual Metaphors:

**IDEAS (or MEANINGS) ARE OBJECTS.**

**LINGUISTIC EXPRESSIONS ARE  
CONTAINERS.**

**COMMUNICATION IS SENDING.**

- It's hard to *get* that idea *across* to him.
- I *gave* you that idea.
- Your reasons *came through* to us.
- It's difficult to *put* my ideas *into* words.

# The **CONDUIT** Metaphor (our language about language)

- When you *have* a good idea, try to *capture* it immediately *in* words.
- Try to *pack* more thought *into* fewer words.
- You can't simply *stuff* ideas *into* a sentence any old way.
- The meaning is right there *in* the words.
- Don't *force* your meanings *into* the wrong words.
- His words *carry* little meaning.
- The introduction *has* a great deal of thought *content*.
- Your words seem *hollow*.
- The sentence is *without* meaning.
- The idea is *buried in* terribly dense paragraphs.



# The **CONDUIT** Metaphor (our language about language)

- A metaphor emphasises certain aspects of a concept, by relating them to, and understanding them in terms of, other concepts
- In this process certain other aspects of the concept are likely to get obscured
- The **CONDUIT** metaphor seems to obscure the *context-dependence* of language (who is speaking and to whom, what implicit knowledge about the situation is being invoked)
- E.g., “*Please sit in the apple-juice seat.*” [Pamela Downing]  
(Only makes sense when we know that there are four places set at the breakfast table, three with orange juice and one with apple juice.)

# Orientational Metaphors

## HAPPY IS UP; SAD IS DOWN.

I'm feeling *up*. That *boosted* my spirits. My spirits *rose*. You're in *high* spirits. Thinking about her always gives me a *lift*. I'm feeling *down*. I'm *depressed*. He's really *low* these days. I *fell* into a depression. My spirits *sank*.

**Physical (embodied) basis:** Drooping posture typically goes along with sadness and depression, erect posture with a positive emotional state.

## CONSCIOUS IS UP; UNCONSCIOUS IS DOWN

Get *up*. Wake *up*. I'm *up* already. He *rises* early in the morning. He *fell* asleep. He *dropped* off to sleep. He's *under* hypnosis. He *sank* into a coma.

**Physical (embodied) basis:** Humans and most other mammals sleep lying down and stand up when they awaken.

# Orientational Metaphors

## HEALTH AND LIFE ARE UP; SICKNESS AND DEATH ARE DOWN

He's at the *peak* of health. Lazarus *rose* from the dead. He's in *top* shape. As to his health, he's way *up* there. He *fell* ill. He's *sinking* fast. He came *down* with the flu. His health is *declining*. He *dropped* dead.

**Physical (embodied) basis:** Serious illness forces us to lie down physically. When you're dead, you are physically down.

## HAVING CONTROL OR FORCE IS UP; BEING SUBJECT TO CONTROL OR FORCE IS DOWN

I have control *over* her. I am *on top* of the situation. He's in a *superior* position. He's at the *height* of his power. He's in the *high* command. He's in the *upper* echelon. His power *rose*. He ranks *above* me in strength. He is *under* my control. He *fell* from power. His power is on the *decline*. He is my social *inferior*. He is *low man* on the totem pole.

**Physical (embodied) basis:** Physical size typically correlates with physical strength, and the victor in a fight is typically on top.

# Oriental Metaphors

## MORE IS UP; LESS IS DOWN

The number of books printed each year keeps going *up*. His draft number is *high*. My income *rose* last year. The amount of artistic activity in this state has gone *down* in the past year. The number of errors he made is incredibly *low*. His income *fell* last year. He is *underage*. If you're too hot, turn the heat *down*.

**Physical (embodied) basis:** If you add more of a substance or of physical objects to a container or pile, the level goes up.

## GOOD IS UP; BAD IS DOWN

Things are looking *up*. We hit a *peak* last year, but it's been *downhill* ever since. Things are at an all-time *low*. He does *high*-quality work.

**Physical (embodied) basis** for personal well-being: Happiness, health, life, and control--the things that principally characterize what is good for a person--all are up.

# Orientational Metaphors

- Spatial concepts such as **UP** and **DOWN** provide perhaps the clearest examples in which embodied experience exists
- These concepts are articulated in terms of our body's position in, and movement through, space
- The experience of **UP**ness, proponents of embodied cognition claim, depends on the particular kind of body we have, and how that body interacts with its surroundings
- Can this dependence be accommodated within traditional cognitive science and its framework of the computational and representational theories of mind?

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# Metaphorical Coherence

Conceptual Metaphor: **LOVE IS A JOURNEY**

- Look *how far we've come*.
- We're *at a crossroads*.
- We'll just have to *go our separate ways*.
- We can't *turn back now*.
- I don't think this relationship is *going anywhere*.
- *Where* are we?
- We're *stuck*.
- It's been a *long, bumpy road*.

# Metaphorical Coherence

Conceptual Metaphor: **LOVE IS A JOURNEY**

- This relationship is a *dead-end street*.
- We're just *spinning our wheels*.
- Our marriage is *on the rocks*.
- We've gotten *off the track*.
- This relationship is *foundering*.

# Metaphorical Coherence

## Conceptual Metaphor: **LOVE IS A JOURNEY**

- A single image doesn't fit all these metaphors, but they are nevertheless *coherent*
- Different kinds of **JOURNEY**s:
  - Car (*long, bumpy road; dead-end street; spinning our wheels*)
  - Train (*off the tracks*)
  - Sea (*on the rocks; foundering*)
- Hence a *conceptual metaphor*: defined not in terms of concrete images, but more general categories or concepts (which often relate to our bodily experience as agents in the physical world)



# Metaphor and Mind

- It seems that a large part of our mental cognitive organisation might be structured on the basis of conceptual metaphors
- In particular, more abstract concepts (like **LOVE** or **TIME**) might often be understood and expressed in terms of more concrete concepts, concepts that will typically be grounded in our physical world
- Points to the importance and universality of semantic organisation: not only for language, but for cognition at large
- Could this be what we're seeing a glimpse of in data like that from **the brain dictionary**?
- As cognitive scientists, we would like to be able to model these kinds of phenomena (have been some efforts, e.g., **ACT-R/E**)