

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 this project.
He's living on *borrowed* time.



Conceptual Metaphor Theory

- Metaphor – reference to one domain (target) with vocabulary more commonly associated with another domain (source)
- Cross-Domain Mappings – set of correspondences between source and target that result from mapping *cognitive models* or *schemas* from the source domain to the target

Metaphor & Everyday Language

- CMT motivated by metaphors like TIME IS MONEY
- Use of MONEY verbiage to refer to TIME is pervasive and systematic
- Metaphor Clusters explained by cross-domain mapping between time and money
- Metaphoric language reflects connections between concepts



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.
If you use that strategy, he'll *wipe you out*.
He *shot down* all my arguments.



Mappings

- | | |
|--------------------------|--------------------------|
| • Position | • Opinion |
| • Combatant | • Debate Participant |
| • Occupy a position | • Have an opinion |
| • Same position | • Agreement |
| • Different position | • Disagreement |
| • Conflict | • Argument |
| • Allies | • Allies |
| • Adversaries, Opponents | • Adversaries, Opponents |

More Mappings

- | <u>Source Analog</u> | <u>Target Analog</u> |
|----------------------|---|
| • Strategy | • Deciding the best way to convince opponent |
| • Attack | • Ask questions and raise objections so your opponent changes her opinion to yours |
| • Maneuvering | • Changing the premise of the conversation so that you will be in a stronger position |
| • Defense | • Responding to questions and objections |

- Counterattack
- Truce
- Stalemate
- Surrender
- Victory
- Raising new questions and objections
- Decide to stop arguing
- Both opponents maintain original opinions
- One participant changes her opinion
- Participant convinces her opponent to change her opinion

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 is relationship is going anywhere.
We're just spinning our wheels.

Mappings

<p><u>Source</u></p> <ul style="list-style-type: none"> • Travelers • Vehicle • Destination • Obstacles • Speed • Forward 	<p><u>Target</u></p> <ul style="list-style-type: none"> • Lovers • Relationship • Goal • Difficulties • Intensity • Growth
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- ## Higher Level Regularities
- Long-Term Purposeful Activities are Journeys
 - Love is a Journey
 - Career is a Journey
 - Life is a Journey
 - Event Structure 'Metaphor'
 - States are locations
 - Changes are movements
 - Causes are forces
 - Actions are self-propelled movements
 - Purposes are destinations
 - Means are paths
 - Progress is forward movement

Anger Metaphors

- She got all steamed up.
- He was bursting with anger.
- She blew up at me.
- He managed to keep his anger bottled up inside.



Cognitive Model of Anger

- ANGER IS HEAT
- THE BODY IS A CONTAINER FOR THE EMOTIONS
- ANGER IS HEATED FLUID IN A CONTAINER



Mappings in Anger Model

- | | |
|------------------------------------|----------------------|
| • Container | • Body |
| • Heat | • Anger |
| • Temperature | • Intensity |
| • Pressure | • Internal Pressure |
| • Agitating Fluid | • Mental "agitation" |
| • Container's Structural Integrity | • Control over Anger |
| • Explosion | • Loss of Control |

Psychological Evidence

- Ask people to describe mental image evoked by idioms and non-idiomatic phrases
Blow your stack, flip your lid, hit the ceiling
Blow your tire, flip your hat, hit the wall
- Idioms
 - Share similar characteristics because all involve the involuntary release of pressure that causes an object to move in an upward trajectory
- Non-idiomatic phrases
 - Mental images more varied because no metaphor unites them

(Gibbs & O'Brien, 1990)

Shared Inference Schemas

Sealed Container w/Liquid

- What would cause the container to explode?
- Does the container explode on purpose or does it explode through no volition of its own?
- Does the explosion of the container occur in a gentle or a violent manner?

Anger

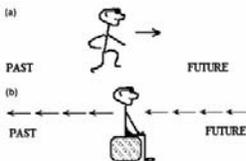
- What causes someone to blow their stack?
- When someone flips their lid, do they get angry intentionally?
- When someone hits the ceiling, do they express their anger in a gentle or a violent manner?

(Gibbs, 1992)

Priming Effects

- | | |
|--|--|
| <ul style="list-style-type: none"> • Carol had borrowed Bob's car to take her brother to the airport. Unfortunately, Carol was rear-ended in the parking lot. When he found out about the car • <i>Bob blew his stack.</i> <ul style="list-style-type: none"> – heat (744 ms) – lead (886 ms) | <ul style="list-style-type: none"> • Carol had borrowed Bob's car to take her brother to the airport. Unfortunately, Carol was rear-ended in the parking lot. When he found out about the car • <i>Bob bit her head off.</i> <ul style="list-style-type: none"> – heat (884 ms) – lead (877 ms) |
|--|--|

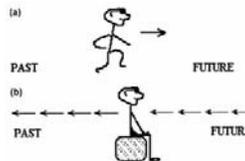
Time Metaphors



- Ego-Moving
 - We're approaching the end of the quarter.
 - We're coming up on Christmas.
- Time-Moving
 - The end of the quarter is almost here.
 - Christmas is coming up.

Ambiguous Temporal Statement

Wednesday's meeting has been moved forward 2 days.
What day is it on?

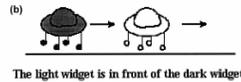
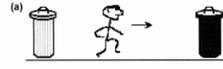


- Ego-Moving
 - Friday
- Time-Moving
 - Monday

Do people use spatial concepts to think about time?

- If yes, thinking about space in a particular way should affect the way you think about time.
- If no, it shouldn't.

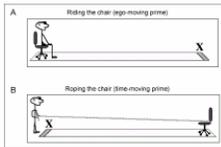
Metaphoric Structuring



- Wednesday's meeting has been moved forward 2 days. What day is the meeting on?
- Ego-Moving
 - 73.3% Friday
 - 26.7% Monday
- Object-Moving
 - 30.8% Friday
 - 69.2% Monday

(Boroditsky, 2000)

Imagined Motion



Imagine you are the person in the picture. Notice there is a chair on wheels, and a track.

- A You are sitting in the chair. While sitting in the chair, imagine how you would maneuver the chair to the X. Draw an arrow indicating the path of motion.
- B You are holding a rope attached to the chair. With the rope, imagine how you would maneuver the chair to the X. Draw an arrow indicating the path of motion.

Time Conception

- Next Wednesday's meeting has been moved forward two days. What day is the meeting now that it has been rescheduled?
- Ego Moving
 - 43% Monday
 - **57% Friday**
- Chair Moving
 - **67% Monday**
 - 33% Friday

(Boroditsky & Ramscar, 2002)

Lunch Line

- Can your experience moving through space affect the way you think about time?
- Ask people waiting in lunch line the Wednesday meeting question
- People closest to the food have experienced the most motion and are more likely to adopt an ego-moving perspective
 - Does position in line affect the way the question is answered?



Results

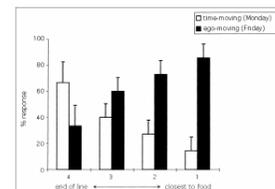


Fig. 2. Results of Study 2, in which 70 people waiting in a lunch line answered the ambiguous time question. The percentage of responses reflecting the ego-moving and time-moving perspectives is plotted as a function of position in line from the end of the line to the queue closest to the food.

(Boroditsky & Ramscar, 2002)

Airport



- Does experience of moving through space make you more likely to assume ego-moving perspective on time?
- Is actual experience of motion required, or does just thinking about it do it?
- Ask 3 groups Wednesday meeting question:
 - Just flown in
 - Waiting to depart
 - Waiting to pick someone up

Results

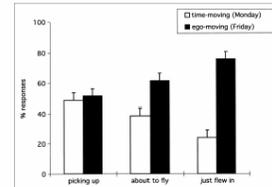


Fig. 3. Results of Study 3, in which 353 people at an airport answered the ambiguous time question. The percentage of responses reflecting the ego-moving and time-moving perspective is plotted as a function of whether respondents had just flown, were about to depart on an airplane, or were just picking someone up.

(Boroditsky & Ramscar, 2002)

Train



- For people in motion, does thinking about moving affect the way you understand statements about time?
- Ask 3 groups Wednesday meeting question:
 - Just got on train
 - Middle of journey
 - About to get off

Results

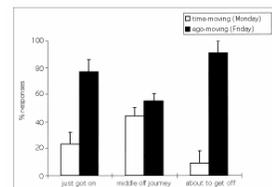


Fig. 4. Results of Study 4, in which 120 passengers on a train answered the ambiguous time question. The percentage of responses reflecting the ego-moving and time-moving perspective is plotted as a function of point on the journey.

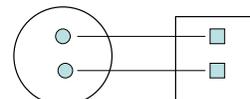
(Boroditsky & Ramscar, 2002)

Conceptual Metaphor Theory

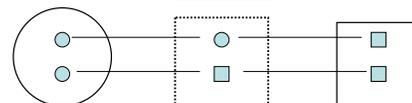
- Pervasive
- Exhibits Systematicity
- Cross-Domain (Analogical) Mapping
- Metaphoric language reflects conceptual structure
- Abstract concepts understood by mapping from more concrete, experientially motivated ones

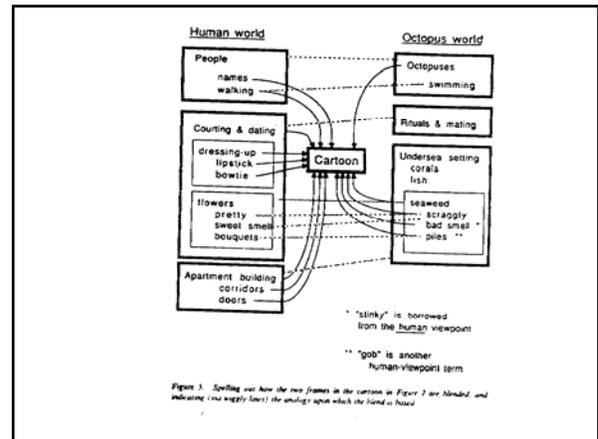
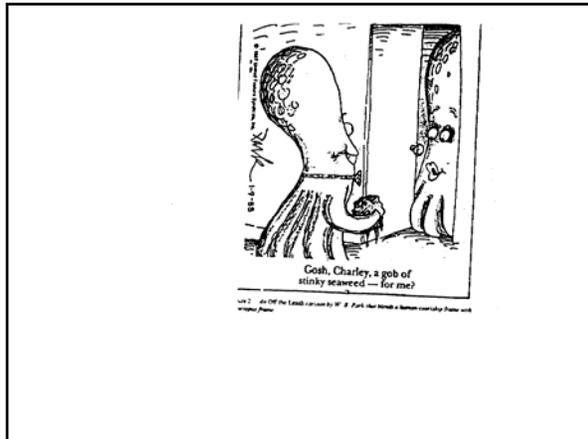
Frame Blends

Analogy



Frame Blend





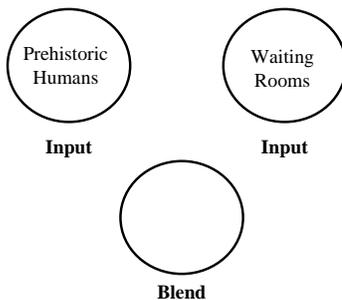
Conceptual Blending Theory

- Spaces
 - WM buffer
 - “Contain” activated frames from LTM
- Frames
 - Go in spaces
- Mappings – correspondences between elements and relations in spaces
 - Analogy
 - Similarity
 - Identity

Primitive Waiting Rooms



Primitive Waiting Rooms



Murphy Brown

Murphy: let's just say that the man and I have very strong feelings for each other. I was trying to avoid a physical relationship so my judgment wouldn't get clouded. But you know me, Frank, I have sex about as often as we get a Democrat for president. *I was a walking time bomb.*

Frank: Oh God, Murph.

Murphy: Then one afternoon the man came to my office to take me to lunch. It was totally spontaneous. *I was like Mount Saint Helens, Frank!*

Time Bomb Input



- Bomb that detonates at a predetermined time
 - Dormant
 - Ticking
 - Explodes

Human Input



- Person
 - walks
 - rational behavior
 - can be overwhelmed by emotions

Walking Time Bomb



- Person who is about to lose control of his emotions any minute

Murphy Brown

Dormant	Not Sexually Active
Ticking	Sexual Tension Building
Explodes	Has-Sex
Explosion Predetermined	Sex Inevitable

Walking Time Bomb – explodes when alone in its office with a man it is attracted to

“I was like Mount Saint Helens, Frank!”



Volcano Blend

Mt. St. Helens
 Volcano
 Long Inactive
 Pent up lava
 Huge Eruption
 Deterministic

Murphy Brown
 Woman
 Sexually Inactive
 Pent up desires
 Sex with “the man”
 Voluntary

Blend
 Woman/Volcano
 Sexually Inactive
 Pent up desires
 Erupts & Has Sex with “the man”
 Deterministic

Conceptual Blending

- Some metaphoric language involves conceptual blends
 - structure of target domain not completely determined by source
- Analogical reasoning often involves a hybrid world (blended space) that
 - combines frames from different domains
 - contains emergent structure of its own