

*Pounding up the stairs and  
slamming into the wall:*

# Hitting verbs in directed motion event descriptions

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NAMED 2020: De/constructing motion events  
July 1, 2021

# Manner verbs in directed motion event descriptions

# Manner verbs in directed motion event descriptions

- English figures prominently in the literature on motion events.
- Why? Verbs whose meaning is unspecified for direction occur in descriptions – morphosyntactic realizations – of directed motion events.

Pat sauntered into the room.

Kim limped slowly to the chair.

- Directed motion event participants:
  - Theme (the entity that moves)
  - Path (along which the entity moves; includes a reference object)
- This option is not available to so-called verb-framed languages.

# Manner verbs in directed motion event descriptions

- English directed motion event descriptions can include either directed motion or manner of motion verbs.

Directed motion verbs: arrive, ascend, come, go, ...

Pat came into the room.

Manner of motion verbs: jog, run, swim, walk, ...

Pat sauntered into the room.

Kim limped to the chair.

# Manner verbs in directed motion event descriptions

- Manner of motion verbs do not lexicalize direction – i.e. path of motion.
- Direction is introduced in a PP (or particle).
- That is, English has morphosyntactic resources that allow manner of motion verbs in directed motion event descriptions.  
(i.e. making it a satellite-framed language)

# Manner verbs in directed motion event descriptions

- In principle, these resources should allow verbs from other manner subclasses in directed motion event descriptions.
- Indeed, members of other subclasses are attested:
  - Verbs of sound emission
    - The truck rumbled into the driveway.
    - The elevator creaked to the third floor.
  - Verbs of substance emission
    - The water gushed into the gutter.
    - The grease seeped out of the paper bag.

# Manner verbs in directed motion event descriptions

- The availability of these resources is not always sufficient to allow such uses of manner verbs.
- Some manner verbs cannot be used in directed motion event descriptions.
  - \*The clowns laughed out of the room.
  - \*The politician boasted onto the podium.
  - \*Smith muttered to the counter.
  - \*The dog barked over to the intruder.

# Manner verbs in directed motion event descriptions

- In contrast, the *way* construction can be used for a wide range of manner verbs.

The clowns laughed their way out of the room.

The politician boasted his way onto the podium.

The dog barked his way to the fence.

- This ‘complex’ construction can be used to express directed motion events, as well as more abstract event types.



# Manner verbs in directed motion event descriptions

- Thus, there are constraints on manner verbs in (simple) directed motion event descriptions.
- An investigation of verbs from other manner subclasses in directed motion event descriptions should help better understand these constraints.
- **This talk:** Examines a subset of contact verbs:  
Hitting verbs: bang, batter, bump, hit, pound, slam, slap, smack, ...

# Manner verbs in directed motion event descriptions

- Hitting verbs lexicalize the exertion of a force on a 'surface'.
- They are usually used in the description of simple surface contact events:

The angry customer slammed the door.

The mugger hit the passerby.

- But aren't limited to such event descriptions.

# Manner verbs in directed motion event descriptions

Hitting verbs occur in two types of directed motion event descriptions:

- Motion involving **multiple** instances of contact over a spatially extended ground:

The tired hiker pounded up the steep trail.

The truck bumped along the rutted track.

- Motion involving **one** instance of contact with the ground:

The ball slammed into the fence.

The run-away truck banged into the wall.

# Manner verbs in directed motion event descriptions

- Some manner verbs occur in putting event descriptions, a type of caused directed motion. (These uses will not be a focus of this talk.)

Verbs of force exertion: pull, push, shove, tug, yank, ...

Pat shoved the clothes into the closet.

Kim pushed the trolley into the room.

- Hitting verbs are among them.

Pat pounded the nail into the board.

The chef banged a dish into the rack.

The pilots smacked the planes onto the deck.

# Manner verbs in directed motion event descriptions

Understanding why hitting verbs are found in directed motion event descriptions requires identifying their lexicalized meaning.

## **Lexicalized meaning:**

The meaning associated with a verb across all its uses.

Lexicalized meaning is best identified by looking at both:

- the whole range of uses available to hitting verbs
- the entire hitting verb inventory

# Manner verbs in directed motion event descriptions

## A preview of the conclusion:

- Hitting verbs lexicalize a force, which must be instantiated in an event participant.
- Some of these ‘force bearers’ engage in directed motion by virtue of being imbued with the relevant force.
- Hence, the presence of hitting verbs in directed motion event descriptions.

# Manner verbs in directed motion event descriptions

## Roadmap:

- Uses of hitting verbs
  - Contact uses
  - Directed motion uses
- The lexicalized meaning of hitting verbs
- Contact uses revisited
- Directed motion uses revisited
- Final thoughts

# Uses of hitting verbs



# Uses of hitting verbs

- Fillmore's (1971) seminal study contrasts English hitting verbs and breaking verbs.

Breaking verbs: break, crack, shatter, ...

- Hitting verbs specify contact with an entity, but unlike breaking verbs do not entail any change in this entity.

The ball hit the window, but luckily it didn't break.

# Uses of hitting verbs

- Draw on a study of 6 hitting verbs in COCA:  
*bang, batter, bump, pound, slap, smack*
- Identify recurring classes of examples – ‘uses’ – that should figure in the analysis.
- ‘Use’ is being used pretheoretically here.
- The following slides introduce these uses in a descriptive fashion.

# Uses of hitting verbs

- Will present the uses in groups:
  - Uses involving contact event descriptions
  - Uses involving directed motion event descriptions
- Within each group will consider transitive and intransitive uses separately.
- Will largely ignore unintentional actions.
- Not every verb will show every use.

# Uses of hitting verbs

- Event participants are given informal names inspired by nature of the event description:
  - Contact: agent, surface, instrument or body part, natural phenomenon
  - Directed motion: theme of motion, path (subsuming source and/or goal)

**A goal:** Identifying the facet of a hitting verb's meaning that allows (many of) these verbs to be found in both types of event descriptions.

# Uses of hitting verbs: Contact

- Transitive: subject – agent; object – surface  
Pat banged the drum.  
Pat pounded the meat.  
Pat slapped the intruder.
- Transitive: subject – agent; object – surface; *with* PP – instrument or body part  
Pat banged the drum with her palm.  
Pat pounded the meat with the hammer.  
Pat slapped the intruder with her right hand.

# Uses of hitting verbs : Contact

- Transitive: subject – agent; object – instrument or body part; unexpressed – surface  
Pat banged the gavel/her fist.  
Pat pounded the gavel/her fist.
- Transitive: subject – agent; object – instrument or body part; locative PP (*against, on*) – surface  
Pat banged the spoon on the table.  
Pat pounded her fist against the armrest.

# Uses of hitting verbs : Contact

- Transitive: subject – non-agent (theme?; e.g., natural phenomenon, physical object, body part); object – surface

The shutters banged the wall.

The rain pounded the roof.

The waves battered the cliffs.

The truck smacked the sedan.

Note: Usual semantic roles don't fit subject well.

# Uses of hitting verbs : Contact

- Intransitive: subject – agent; locative PP (*on, ?against*) – surface; unexpressed – body part or instrument

Pat banged on the table.

Pat pounded on the table/door.



# Uses of hitting verbs: Contact

- Intransitive: subject – non-agent (theme?; body part, natural phenomenon, physical object); locative PP (*against, on*) – surface

The shutters banged against/on the window.

The waves pounded against the cliffs.

Kim slammed against the wall.

Note: Usual semantic roles don't fit subject well.

Note: Entire entity makes contact with surface.

# Uses of hitting verbs: Contact

**Key point:** These uses do not involve 'directed motion'.

- None describe the necessary displacement of an event participant to a new position.
- Even though an instrument, body part, or other entity moves into contact with the surface, this motion does not qualify as 'directed motion'.
- This entity may still return to another position.  
    The shutters banged against the window.
- In fact, due to its nature, this entity may not be truly displaceable: e.g., branches, shutters.

# Uses of hitting verbs: Contact

- Most often the final location of this entity is left unspecified, even if sometimes inferable.

Pat pounded the meat with a hammer.

Pat pounded her fist against the table.

- When the surface is expressed in a PP, it is a locative (not directional) PP (cf. Rohde 2001):

Pat pounded on/\*onto the desk.

The shutters banged on/\*onto the wall.

The baby banged the spoon on/\*onto the table.

# Uses of hitting verbs: Contact

- More evidence that the PP is locative.
  - Prepositions allowing locative and directional interpretations show the first interpretation:  
*Lieutenant Scheisskopf smacked his hands **over** his eyes in exasperation. (COCA)*  
*Ivan Drake slapped his palm **across** the offender's reedy neck ... (COCA)*
  - The PPs describe the hand's/hair's configuration with respect to the eyes/face and not the path traversed by the hands/hair (cf. Rohde 2001).

# Uses of hitting verbs: Contact

## **Additional observations:**

- Contact matters more than the motion or final position of the entity that comes into contact with the surface.
- Reflected in the oddness of those bare transitive uses with a body part/instrument object (and the surface unexpressed).

Pat banged the gavel/her fist.

# Uses of hitting verbs: Directed motion

- Intransitive: subject – theme of motion;  
directional PP – path of motion  
The car smacked into the retaining wall.  
The ball banged off the wall.  
The truck slammed into the pedestrian.

Note: Theme ends up at new location.

# Uses of hitting verbs: Directed motion

- Intransitive: subject – theme; PP – (extended) path

The car banged through the potholes.

The pickup truck bumped along the trail.

Pat pounded up the stairs.

The PP is headed by a preposition such as *along*, *over*, *through*, that can be used to define a spatially extended path over the ground.

Note: Theme ends up at new location.

# Uses of hitting verbs: Directed motion

Directed motion uses are distinct from intransitive *against* uses:

- The moving entity – the theme – ends up at a new location, contrasting with the moving entity in the *against* uses.
- Verbs that aren't contact verbs, e.g., manner of motion verbs, are found in directed motion event descriptions, but aren't always felicitous with *against* on the relevant meaning.

I ran to/\*against the wall.

The bird flew into/\*against the window.



# Uses of hitting verbs: Caused motion

- Transitive: subject – agent, object – theme; PP – path; (*with* PP – instrument or body part)

He banged the dish into the rack.

He pounded the nail into the wall  
(with a hammer/his fist).

Note: theme ends up at new location.

# Hitting verbs: Lexicalized meaning

# Hitting verbs: Lexicalized meaning

The uses of hitting verb surveyed differ across several dimensions:

- Presence of an agent
- Whether the surface is expressed
- Whether the entity (e.g., instrument, body part) which makes contact is expressed
- Whether there is a locative or directional PP
- Alternate expressions of the event participants

# Hitting verbs: Lexicalized meaning

However, these uses share facets of meaning:

- All involve an entity imbued with a force which comes into contact with another entity.
- Without this **force bearer**, there would not be an event nameable by a hitting verb.
- But the presence of a **force bearer** can play out in different ways; hence, the various uses of hitting verbs.

# Hitting verbs: Lexicalized meaning

- **Proposal:** A hitting verb lexicalizes a force vector that ends in contact at a point (Goldschmidt & Zwarts 2016)
- A force has an origin, a magnitude, and a direction. (G&Z 2016)
- Each hitting verb lexicalizes a distinct type of force.
- This force vector must be instantiated in a participant in the event, the **force bearer**.

# Hitting verbs: Lexicalized meaning

- A consideration of the English hitting verb inventory shows that the meanings of hitting verbs differ along several dimensions.
- These dimensions reflect properties of forces.
- Thus, they provide further support to the force analysis.

# Hitting verbs: Lexicalized meaning

## Relevant dimensions:

- **Magnitude of force:** pat, tap vs. slap, smack
- **Necessarily repeated contact:** pound vs. slap
- **Force bearer is a body part:** elbow, kick, peck
- **Force bearer is an instrument:** bat, club, whip
- **Contact is characterized by a specific sound:**  
bang, thud, whack

# How hitting verb uses arise



# How hitting verb uses arise

- Certain event types may have a participant ‘construable’ as a **force bearer** and, thus, involve a force vector.
  - Contact events, by their very nature
  - Directed motion events, in some circumstances
- Instances of such events can be named by the hitting verb that lexicalizes the characteristics of the relevant force vector.

# How hitting verb uses arise

- Since a particular force vector may be found in different event types, the hitting verb that lexicalizes its characteristics will occur in different types of event descriptions.
- Will now revisit the hitting verb uses from this perspective.
- Will pay special attention to the **force bearer**.

# How contact uses arise

When an agent is involved in the event:

- When an agent uses a body part or an instrument to make contact with a surface, the body part or instrument is the **force bearer**.
- That is, the force vector is instantiated in the body part or instrument.

# How contact uses arise

- English has two distinct morphosyntactic realizations for this scenario, as reflected in two choices of object:
  - Instrument/body part – i.e. **force bearer** – as object:

The vandal banged **the stick** against the car.
  - Surface as object:

The vandal banged the car with **the stick**.

# How contact uses arise

Agent uses (cont.):

Pat pounded **the gavel**./Pat banged **her fist**.

- Just the instrument/body part – i.e. **force bearer** – and not the surface is expressed.
- This expression is often dispreferred perhaps because information is left out.
- It mainly occurs in frequent collocations, which may show additional connotations.

# How contact uses arise

Agent uses (cont.):

Pat banged the drum./Pat pounded the meat.

- The **force bearer** is not expressed but may be inferable from the type of activity that the agent usually engages in (cf. Talmy's 'metonymic clipping' 2000; Van Valin & Wilkins 1996).
- In some languages this option is only available with animate surfaces.

# How contact uses arise

Agent uses (cont.):

Pat banged on the drum.

- The **force bearer** is not expressed.
- In some languages this is the preferred argument realization option, at least with inanimate surfaces.

# How contact uses arise

When an agent is not involved in the event:

The car bumped the truck.

The hurricane pounded the coast.

- A natural phenomenon, machine, or other physical object imbued with kinetic energy is the **force bearer** and makes contact with a surface.
- Unlike scenarios with an agent, the **force bearer** must be expressed.



# How contact uses arise

Uses not involving an agent (cont.):

Pat whirled suddenly and **her elbow** bumped the apparatus.

- The **force bearer** is a body part of a human acting unintentionally; these uses are analogous to those on previous slide.

**Pat** whirled suddenly, bumping the apparatus.

- A human is acting unintentionally; the subject refers to the person's whole body, which is the **force bearer** (cf. DeLancey 1984); these uses too are comparable to those one slide back.

# How contact uses arise

The **force bearer** plays distinct parts in the different uses:

- an instrument an agent brings into contact with a surface
- a body part which an animate entity brings into contact with a surface (either intentionally or unintentionally)
- a natural phenomenon/force or self-energetic entity, which due to its intrinsic energy moves into contact with a surface
- an animate entity that unintentionally brings its whole body into contact with a surface

# How directed motion uses arise: Single contact

The car slammed into the wall.

- Certain **force bearers** move autonomously due to the kinetic energy that the force imparts to them.
- Such **force bearers** are ‘projectiles’ (Kearns 2000; cf. Cruse 1973, Wolff et al. 2010).
- They move along a path determined by the force until they make contact with a ground in their path – the goal of motion.
- A hitting verb that lexicalizes the appropriate force can be used in the description of such a directed motion event.

# How directed motion uses arise: Multiple contact

A car bumped along the trail./Pat pounded up the stairs.

- As it moves, the theme of motion necessarily makes contact multiple times with the ground constituting the path of motion.
- The theme is the **force bearer** in each instance of contact.
- A hitting verb that lexicalizes the appropriate type of force can be used in the description of such an event.

# How directed motion uses arise: Multiple contact

A car bumped along the trail./Pat pounded up the stairs.

- The multiple instances of contact characteristic of such events require a spatially extended path.
- This constrains:
  - the preposition; e.g., *across, along, over, through*.
  - the ground: must have natural spatial extent; e.g., *field, stairs, track, trail*.

# How directed motion uses arise: Multiple contact

A car bumped along the trail./Pat pounded up the stairs.

- The contact is a necessary concomitant to theme's motion.
- Thus, these uses are the hitting verb analogue of motion event descriptions with verbs of sound emission.

The truck rumbled down the street.

- In some instances, the contact is even associated with a characteristic sound; e.g., *bang, pound, thud*.

# How directed motion uses arise

**Prediction:** Given their lexicalized meaning, certain hitting verbs should show only the multiple contact directed motion uses.

- Some hitting verbs lexicalize necessarily repeated contact; others are indifferent and may apply to one or more instances of contact:  
*batter, pound vs. bang, bump, slam, slap*
- A hitting verb which lexicalizes repeated contact should only be found in those directed motion event descriptions which involve multiple instances of contact.
- A corpus study confirms this: *batter* and *pound* are only attested in such descriptions.

# How directed motion uses arise: Continuous contact

Hitting verbs occur in directed motion event descriptions where a **force bearer**/theme moves while making either single or multiple instances of contact with the ground.

**Question:** Are there directed motion event descriptions where a **force bearer**/theme is in continuous contact with the ground?

**Answer:** Yes!

A **chair** scraped across the floor.

A **storm** swept through the valley.



# How directed motion uses arise: Continuous contact

Attested instances involve another subclass of contact verbs:

Wiping verbs: rub, scrape, sweep, wash, wipe, ...

- Wiping verbs lexicalize contact with a ‘region’, unlike hitting verbs, which lexicalize contact at a ‘point’ (Levin 2017).
  - i.e. the force can’t be described with respect to a point on the surface.
- Thus, the **force bearer** is in contact with a spatially extended surface, allowing for continuous contact directed motion uses.

# Final thoughts

- A hitting verb lexicalizes a specific force vector and form of contact.
- What unifies the contact and directed motion uses of a hitting verb is the presence of the lexicalized force vector and the **force bearer** instantiating the force.

# Final thoughts

- The **force bearer** ‘aligns’ with a participant in each event type, as determined by the nature of the event type:
  - Contact: (agent), force bearer (i.e. instrument, body part, natural phenomenon, ...), surface
  - Directed motion: theme, path
- Thus, from the perspective of event type, the **force bearer** shows distinct ‘semantic roles’.

# Final thoughts

- This study should help us better understand what allows manner verbs to be used in the expression of directed motion.
- It could be fruitful to look at hitting verbs in other languages:
  - Predict they would be unlikely to be found in directed motion event descriptions in verb-framed languages.
  - Perhaps even some satellite-framed languages would be less permissive than English, given variation in this respect with verbs of sound emission.

# Thank you!

**Acknowledgments:** I am grateful to Cass Kramer for collecting, coding and organizing the corpus data. I also thank Cass and Malka Rappaport Hovav for discussing the material in this talk.

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