Causation: The Perspective from Resultatives

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"Yes. If anything happens to me, he gets everything. Oh my God, Kat, he could murder me dead and get all my money."
    Murder me dead? Somewhere a grammar teacher rolled over in her grave.
(K. Kijewski, *Stray Kat Waltz*, Putnam, New York, 1998, p. 64)

1 Introduction

• Most discussions of the semantics of English transitive resultatives refer to the notion 'cause'.

(1)   The waitress comes back, **wiping the silverware dry** with a cloth napkin before laying it out. (M.G. Jaffe, *Dance Real Slow*, Farrar Straus Giroux, New York, 1996, p. 24)

(2)   Last night, the dog **poked me awake** every hour to go outside. (G. Dunford, "Charity's for the Birds", *The Toronto Sun*, November 27, 1994, p. 6)

• **Why?** They have a readily available paraphrase of the form '*causing event* CAUSE *result event*'.

(3)   *The waitress wiped the silverware dry* is paraphrasable as 'The waitress wiped the silverware causing it to be dry' or more colloquially 'The waitress dried the silverware by wiping it'.

• In general, in transitive resultatives the referent of the postverbal NP comes to be in the state denoted by the XP as a result of the action denoted by the verb.

• In fact, transitive resultative constructions are often analyzed as causative events (e.g., Dowty 1979, Goldberg & Jackendoff 2004, Jackendoff 1990, RH&L 2001).

• Yet, resultatives contain no overt causative element; they are 'concealed causatives' (Bittner 1999).

• In this respect, they are like lexical causatives, which also lack an overt causative element.

(4)   The waitress dried the silverware.

• But there is a difference:

— Lexical causatives explicitly refer to the caused event (the verb), but the causing event is implicit.

– Resultatives explicitly refer to both the causing event (the verb) and the caused event (the XP).

• **Goal of this talk:** To exploit this property of resultatives to illuminate the notions of causation that matter to language, as well as the analysis of the resultative construction.

2   Why transitive resultatives provide a good domain for exploring causation: A closer look

Focus: Transitive resultative constructions whose result XP is headed by an adjective,
      i.e. constructions of the form 'NP1 V NP2 AP', where AP is predicated of NP2;
      — ignore constructions of the form 'NP1 V NP2 PP', where PP is predicated of NP2
      — ignore intransitive constructions of the form 'NP1 V XP', where XP is predicated of NP1

2.1   Two types of transitive resultatives

- In the resultatives in (1) and (2), the causing and caused events share a participant:
      the postverbal NP is understood as the object of their verb.

- The shared participant might seem to offer an explanation of the causative interpretation, but it does not, as this property does not extend to all transitive resultatives.

- Some resultatives, although equally amenable to a causative paraphase, lack this property:

(5)   . . . the roosters that scratch in the yard of Brastagi's best hotel **crowed me awake** that dawn a few months ago . . . (T. Robbins, "Treks for the Sophisticated Traveler", Section 6, Part 2, *The New York Times*, March 16, 1986, p. 8)

(6)   A CAUSATIVE PARAPHRASE: 'The roosters crowed causing me to wake up'.

- In such 'nonselected NP' resultatives, the NP after the verb cannot be understood as its object when it is used outside the construction.

(7)   ∗ The roosters crowed me.

- In fact, in (5), the causing event—the crowing—describes an action not carried out on a particular entity, and certainly not on the entity that attains the result state.

- Nonselected NP resultatives too make reference to the causing event, so they too should contribute to understanding the notion 'cause'.

- Further, nonselected NP resultatives have not received sustained attention in the context of a theory of causation (Kratzer 2005 is the exception).

- The selected and nonselected NP subtypes are recognized for their usefulness to the goals of this talk; many formal accounts analyze all resultatives as having nonselected NPs; see Hoekstra (1988, 1992a, 1992b) for syntactic arguments and Grône (2014) for semantic arguments.

2.2   Transitive resultatives and lexical causatives involve the same type of causation

- The subevents constituting both selected and nonselected NP resultatives show the same special tightness of integration that lexical causatives show (Goldberg 1995).

- Lexical causatives are taken to involve a special type of causation, which is characterized by a fairly tight relation between the causing and caused subevents.

• This tightness is said to enable two causatively related events to form a single, but complex event.

• Specifically, the link between the subevents in lexical causatives is tighter than in periphrastic causatives: some situations can be described by a periphrastic causative, but not by the corresponding lexical causative (e.g., Dowty 1979, Hall 1968, Shibatani 1976)

(8) a. The low air pressure caused the water to boil.
   b. ∗ The low air pressure boiled the water.
   (Hall 1965:28, (2-33), (2-34))

• The relation between subevents in lexical causatives is said to require 'direct causation', while in periphrastic causatives it also allows for 'indirect causation' (e.g., Bittner 1999, Fodor 1970, McCawley 1978, Shibatani 1976, Smith 1970, Wolff 2003, but see Neeleman & van de Koot 2012).

• Resultatives are also said to involve 'direct causation' (e.g., Bittner 1999, Carrier & Randall 1993, Dowty 1979, Goldberg 1995, Jackendoff 1990, Kratzer 2005, L&RH 1999, RH&L 2001).

• Bittner hypothesizes that this tight link is characteristic of concealed causatives:

(9) If a causal relation is syntactically concealed (only its arguments are overtly expressed), then it is semantically direct (no intermediate causes). (Bittner 1999:2, (C))

2.3   How has the tightness relation between subevents been characterized?

• The term 'direct causation' figures prominently in discussions of concealed causatives, particularly lexical causatives, and has received various overlapping definitions (see Wolff 2003:4).

• Often-adopted is Wolff's (2003) definition of direct causation:

(10) Direct causation is present between the causer and the final causee in a causal chain (1) if there are no intermediate entities at the same level of granularity as either the initial causer or final causee, or (2) if any intermediate entities that are present can be construed as an enabling condition rather than an intervening causer. (Wolff 2003:4–5)

(Wolff (2003) takes 'facilitating' instruments to qualify as enabling conditions, contrasting them with 'intermediary' instruments, which can perform an action independently; see Marantz 1984:247, Ono 1992, Wojcik 1976, Wolff et al. 2010).

• Other attempts to define direct causation refer to a lack of 'intermediate' or 'intervening causes' (Bittner 1999, Kratzer 2005:196–198) or 'intervening events' (RH&L 2001:783)

• Such no-intervening-cause conditions ensure a tight link between the causing and caused subevents.

• These intuitions are reflected in Shibatani's (1976:31) proposal that lexical causatives involve 'manipulative' causation: the causer physically manipulates the causee.

— In fact, in its most prototypical form, direct causation involves a volitional, animate agent physically manipulating an entity to bring about a physically instantiated state in it (Croft 1991:168).

• It is unsurprising that existing characterizations of direct causation reference notions like 'intermediate' or 'intervening event', 'intervening causer', or 'intermediate entity' as they pertain to the 'middle' of a causal chain—where the causing and caused events come together.

• Yet as lexical causatives leave the causing event implicit, they are not an optimal domain for exploring the middle part of the causal chain.

• As transitive resultatives explicitly reference the causing event, they provide a better laboratory for exploring this part of the causal chain.

• This talk uses the term 'tightness condition' to stay open about the best characterization of 'direct causation' (cf. Neeleman & van de Koot 2012) and to avoid any accompanying preconceptions.

Goal of the talk (refined): To explore the nature of the tightness condition as it governs the well-formedness of resultatives through case studies involving naturally occurring data.

Conclusions previewed: The tightness relation demonstrated by the resultatives in the case studies conforms to direct causation in the sense of a causer directly affecting a causee, often via physical manipulation; an intervening cause disrupts well-formedness.

3   The result state constrains the causing event—and the verb—in the resultative

• As the result state is brought about by the causing event, this event must be able to lead to that state, while conforming to the tightness condition.

• **A key observation:** Each result state constrains the set of possible cooccurring causing events—and, thus, possible verbs in the associated resultatives.

• The preponderance of result states in the corpus are physically instantiated:

(11)   PHYSICAL STATES: awake, bare, barkless, black, blank, bloody, clean, clear, closed, coarse, dark, dry, empty, flat, full, free, hoarse, open, shut, smooth, ...

(12)   MENTAL STATES: alert, calm, clueless, crazy, loopy, speechless, witless, ... (ignored here)

• As a physical state in an entity is brought about by physically manipulating it, the cooccurring causing event must necessarily involve such an action.

• Concomitantly, the verbs in such resultatives are predicted to lexicalize such actions.

• Indeed, most attested verbs lexicalize actions of surface contact, impact, or force exertion.

• Such verbs tend to be 'manner' verbs rather than 'result' verbs (L&RH 1991, RH&L 1998, 2010).

— Manner verbs: specify a manner of carrying out an action (e.g., *pound, sweep*);
     these manners are typically intentionally performed to bring about one or more result states, although the result isn't entailed (Talmy 2000).

(13)   I just wiped the counter, but it's still dirty/sticky/covered in crumbs.

— Result verbs: specify a change in a scalar valued property of an entity (HK&L 1999);
     they describe the attainment of a result state (e.g., *remove, put, cover, empty, clean*).

• A small number of resultatives have a result verb; their result APs further specify the result lexicalized in the verb (e.g., *smooth flat, fill full*), consistent with a constraint against having an action leading to two result states (Goldberg 1991:368, Tenny 1994:68).

● In most resultatives, both selected and nonselected NP, the result XP is combined with a manner verb which describes an action intended to bring about the relevant result.

(14)   # I just wiped the counter clean, but it's still dirty. (Contradiction)

(15)   # I just wiped the counter clean, but the wiping had nothing to do with the cleanness. (Contradiction)

● As such actions are typically performed by an animate, volitional agent, resultatives with a physically instantiated result AP exemplify the most unmarked type of causation, which invariably falls under core understandings of 'direct causation', suggesting the tightness condition aligns with them.

● But there are exceptions among nonselected NP resultatives.

(16)   ... the roosters that scratch in the yard of Brastagi's best hotel **crowed me awake** that dawn a few months ago ... (T. Robbins, "Treks for the Sophisticated Traveler", Section 6, Part 2, *The New York Times*, March 16, 1986, p. 8)

— Here the causing event—the crowing—describes an action carried out for its own sake.

— Still, the causing and caused events are conventionally linked: loud noises can cause awakening, with no intervening entity or event needed.

4 On the relation of the nonselected NP to the causing event

● The selected vs. nonselected NP resultative contrast is critical to understanding the middle of the causal chain—the key area for characterizing the tightness condition.

● This section zooms in on nonselected NP resultatives, highlighting properties of such resultatives that illuminate how the causing and caused events can meet the tightness condition when the postverbal NP is not selected by the verb representing the causing event.

● To review, the two types of transitive resultative constructions differ according to whether the postverbal NP is understood to be the verb's object when it is used outside the construction.

(17)   SELECTED NP RESULTATIVE CONSTRUCTION:
         Necessarily found with transitive verbs:

         a.   Last night, the dog **poked me awake** every hour to go outside. (G. Dunford, "Charity's for the Birds", *The Toronto Sun*, November 27, 1994, p. 6)
         b.   The dog poked me.

(18)   NONSELECTED NP RESULTATIVE CONSTRUCTION:
         Found with intransitive verbs ...

         a.   He had set an alarm, which rang at five thirty the following morning, **shrilling them both awake**. (R. Pilcher, *Voices in Summer*, St. Martin's, New York, 1984, p. 116)
         b.   ∗ The alarm shrilled them.

and with transitive verbs:

    c.   "Before you go, **crank me flat**." (L.M. Roberts, *Almost Human*, Ballantine, New York, 1998, p. 17)

    d.   ∗ You cranked me.

• In selected NP resultatives, the entity denoted by the postverbal NP participates in both the causing and caused events: this shared participant is in itself a sign of a tight relation between the subevents.

• In nonselected NP resultatives, the causing and caused subevents do not obviously share a participant, yet their acceptability means that they still meet the tightness condition.

• **Question:** What properties of the link between their subevents allow this?

• The nature of this link, which constitutes the 'middle' part of the causal chain, has received some attention in the literature in the context of discussions of:

— unexpressed participants in the causing event, particularly understood objects of the verb
— the relation of certain nonselected NPs to the causing event.

4.1   Unexpressed participants in the causing event

• When the verb in a nonselected NP resultative is transitive, its object although unexpressed, is still understood (Carrier & Randall 1993, Iwata 2014, Kaufmann & Wunderlich 1998, L&RH 1995)

(19)   Audrey flipped a mug into the air, caught it by its handle, and **poured it full**. (L. Greenlaw, *Fisherman's Bend*, Hyperion, New York, 2008, p. 219)

In (19) there is an understood, but unexpressed participant in the event: the liquid poured.

• Resultatives with understood objects always involve manner verbs.

• As discussed in Levin (1999) and RH&L (1998, 2010), two-argument manner verbs need not express their non-subject—or non-effector (Van Valin & Wilkins 1997)—argument.

• This property is just the prerequisite needed to give rise to a nonselected NP resultative, and RH&L (1998, 2010) tie it to argument realization differences inherent to manner and result verbs.

• Although these understood participants are 'intermediate entities' in the causal chain, the acceptability of these resultatives means that they do not count as 'intervening' or 'intermediate causes'.

• Thus, they are like instruments, which also do not count as 'intervening causes' which could 'disrupt' the causal chain, i.e. lead to the ill-formedness of a concealed causative.

• The case studies examine this property further.

4.2   On the relation of the nonselected NP to the causing event

• The link between the subevents in nonselected NP resultatives must conform to the tightness condition.

• Some researchers suggest that the postverbal NP, although not the object of the verb in the causing event, may nevertheless sometimes be a participant in it and may bear a relation to the unexpressed participant, if available (Kaufmann & Wunderlich 1998:32).

— Jackendoff (1990:226–227) and Sato (1987:93) propose the postverbal NP qualifies as an 'adjunct' of the verb in the causing event.

(20)   They poured coffee **into the mug**.

— Yet in some instances although this option might seem to exist, on closer scrutiny it may not capture the precise sense of the resultative.

(21)   a.   ... the roosters that scratch in the yard of Brastagi's best hotel **crowed me awake** that dawn a few months ago ... (T. Robbins, "Treks for the Sophisticated Traveler", Section 6, Part 2, *The New York Times*, March 16, 1986, p. 8)
         b.   The roosters crowed at me that dawn a few months ago.

Questions for investigation raised by nonselected NP resultatives:
— What is the nature of the relation between the postverbal NP and causing event?
— How does the understood causing event participant, if there is one, relate to the postverbal NP?

Next step: Present case studies intended to illuminate these questions.

As the result state constrains the causing event, the case studies are organized around result APs.

The source of the data: A collection of just under 1300 naturally occurring transitive resultative constructions predominantly drawn from newspapers and fiction written since the mid-1980s; some recent web examples have been added to explore particular verb–result AP combinations further.

A caution: Since the examples are not drawn from a 'balanced' corpus designed to be representative of current English, they bear primarily on claims about posssible options.

5   The first case study: Result APs headed by the adjective *dry*

• This result AP, unlike many others, is prevalent in both selected NP and nonselected NP resultatives in the corpus, allowing the conditions on each to be compared.

• The corpus data reveals that the type of resultative overwhelmingly correlates with the nature of the entity that the result *dry* is predicated of: is it a **surface** or a **container**?

Container: an entity designed to contain something; must be 3-dimensional with an interior.
Surface: an entity conceived of as 2-dimensional, which is sometimes a matter of construal.

An example: A tub is designed to be a container, filled with water or other liquid for bathing/washing; however, it is construed as a surface when being wiped with a sponge or scrubbed with a brush.

(22)   Selected NP resultative/Result AP predicated of a surface:

         a.   The waitress comes back, **wiping the silverware dry** with a cloth napkin ... (M.G. Jaffe, *Dance Real Slow*, Farrar Straus Giroux, New York, 1996, p. 24)

b. After a quick shower, Melody had **rubbed her hair dry** with a towel ... (D. Crombie, *Garden of Lamentations*, Morrow, New York, 2017, p. 45)

(23) Nonselected NP resultative/Result AP predicated of a container:

a. "I could **drink the whole punch bowl dry**." (E. Richards, *A Truth for a Truth*, Berkley, New York, 2010, p. 206)

b. One of them [=tea kettles] must've **whistled itself dry** ... (S.J. Conant, *Ruffly Speaking*, Doubleday, New York, 1995, p. 76)

5.1 Selected NP resultatives: The entity is a surface

• When predicated of a surface, *dry* indicates the surface has no liquid on it (e.g., *a dry floor/driveway*).

• This state is brought about by removing any liquid from a surface.

• This is usually accomplished through actions involving contact with and motion over the surface; some involve an instrument which can absorb or remove the liquid on the surface (e.g., *wipe, dab*).

• In fact, the attested verbs lexicalize precisely such actions—actions directed at the surface and these verbs take the surface as object.:

(24) VERBS INCLUDE: blot, brush, dab, lick, pat, rub, spin, wipe, ...

• Thus, the postverbal NP is understood as both a participant in the action denoted by the verb and the holder of the result state, giving rise to a selected NP resultative.

• Such resultatives involve direct causation in the strong sense; the entity that changes state is directly manipulated in the causing event, and the only intermediary entities are instruments used in the causing event to effect the result state.

5.2 Nonselected NP resultatives: The entity is a container

• When predicated of a container, *dry* indicates the container is empty of liquid (e.g., *a dry well*).

• This state is usually brought about by actions directed at the liquid in the container—the container's contents—rather than at the container itself.

• The relevant actions are of two types, depending on the nature of the container:

Type 1: A 'true' or prototypical container or something construed as such:

(25) "I could **drink the whole punch bowl dry**." (E. Richards, *A Truth for a Truth*, Berkley, New York, 2010, p. 206)

— The actions are designed to (re)move the liquid, perhaps using an instrument.

— Thus, they are lexicalized by verbs that take the liquid as their object.

(26) VERBS INCLUDE: drain, drink, pump, slurp. suck, ...

— The container then is not the object of the verb lexicalizing the action denoted in the causing event; it qualifies as a nonselected NP.

Type 2: A body part (e.g., lungs, vocal tract) or even the whole body, which can be construed as a container; occasionally, even certain inanimate entities are treated as bodies (e.g., bowl/kettle).

(27) Davina and I erupted from the knife-sharp grass, **shrieking our lungs dry** ... (M. Meyers, *Swimming in the Congo*, Milkweed, Minneapolis, MN, 1995, p. 29)

— When the container is the body, the postverbal NP is a reflexive pronoun which stands in for it.

(28) One of them [=tea kettles] must've **whistled itself dry** ... (S.J. Conant, *Ruffly Speaking*, Doubleday, New York, 1995, p. 76)

— The actions involved in 'drying' (i.e. emptying) the body (part) involve the secretion of a substance or the emission of a substance or sound—actions which may result in a body (part) becoming dry.

— Thus, they are lexicalized by verbs of bodily process or of sound or substance emission.

(29) VERBS INCLUDE: boil, cry, shriek, sweat, talk, whistle, ...

— The secretion, substance, or sound is unexpressed, but outside such constructions, it may be the object of such verbs even though some are considered 'intransitive' (e.g., *shriek an ear-shattering shriek*, *cry a mournful cry*).

— The container then is not the object of the verb lexicalizing the action denoted in the causing event; qualifies as a nonselected NP.

— The causing event brings about the result state even though the container is not a basic participant in the causing event and, thus, the NP expressing it, which the result state is predicated of, qualifies as a nonselected NP.

• In both types, the container and the understood contents are spatially contiguous, so that removing the liquid proceeds in tandem with bringing about the dryness of the container.

• Due to this relation, these resultatives, despite the nonselected NP, meet the tightness condition.

5.3   What *dry* tells us about the tightness condition

• The actions causing the type of dryness holding of a surface vs. a container differ, and this differences gives rise to selected vs. nonselected NP resultatives when *dry* heads the result AP.

• Nonselected NP resultatives emerge as states of containers can be altered by affecting the contents.

• That is, dryness need not be brought about by acting directly on the entity that it holds of; it may be brought about by acting on an entity that is contiguous to that entity.

• Resultatives involving both types of dryness conform to a tight relation between the causing and caused subevents, relations that fall under prototypical understandings of direct causation.

9

Note: The container–contents relation is privileged conceptually, if not linguistically.

— The ambiguity of *a cup of milk*: 'a cup filled with milk' or 'a quantity of milk equal to a cup'.

— A spatial relational term which encodes a figure contained in a ground (e.g., English *in*) is found in even small inventories of such terms (Levinson et al. 2003). There is evidence that the relevant relation is functional and not purely geometric: such terms apply equally to partial and full inclusion of the figure by the ground (e.g., flowers in a vase, an apple in a bowl).

5.4 Result APs headed by the adjectives *empty* and *full*

Prediction: Result APs headed by *empty* and *full*—respectively a near-synonym and an antonym of container *dry*—should pattern like it in resultatives.

• Indeed, *empty* and *dry* occur in nonselected NP resultatives with the container—the NP they are predicated of—as postverbal NP.

(30)   Tom waggled the bottle at me, and **swigged it empty** when I declined. (S.W. Boneham, *The Money Bird*, Midnight Ink, Woodbury, MN, 2013, p. 11)

(31)   I unloaded Bobby Lee and **poured his dish full of water**. (V. Lanier, *A Brace of Blood-hounds*, HarperCollins, New York, 1997, p. 184)

• Again, the verbs' understood object is the contents of the container denoted by the postverbal NP.

• The importance of the contents–container contiguity is underscored by a nonselected NP resultative example discussed by Kratzer (2005:196).

• Kratzer considers the interpretation of the German counterpart of *They drank the teapot empty*; her observations hold of English too.

Available interpretation: Drinking the contents of the teapot, thus causing it to be empty.

Unavailable interpretation: Drinking from a well to such an extent that there is no water left in the well to fill the teapot, so it remains empty.

• In the unavailable interpretation, the unexpressed NP denotes the water in the well, so there is no contiguity relation between it and the container.

• These examples show again that container–contents contiguity is critical to the well-formedness of these nonselected NP resultatives—it ensures that the tightness condition between the causing and caused subevents is satisfied.

Why? Due to contiguity, affecting the contents of a container is affecting the container.

5.5 Result APs headed by the adjectives *bare/barkless/clean/clear/free*

• The pattern observed with *dry* carries over to other result states.

- The adjectives *bare/barkless/clean/clear/free* denote states that are typically externally caused:
    — the absence of any covering on a surface (*bare, barkless*)
    — the absence of impurities from some entity (*clean*)
    — the absence of obstructions on a surface (*clear, free*)

Predictions about resultatives:
— If the action is directed at the relevant entity, expect a selected NP resultative.
    Why? cf. surface *dry*
— If the action is directed at the impurities, expect a nonselected NP resultative.
    Why? cf. container *dry*

- The following minimal pair verifies the predictions.

(32) a. The ice scraped the land bare (of grass). [Selected NP]

  b. The goats ate the land bare (of grass). [Nonselected NP]

A more detailed explanation:

- When the state in the entity denoted by the postverbal NP is brought about by an action that involves contact with it through the exertion of a force of some kind, having as a side effect the removal of stuff/impurities/obstructions on this entity, the postverbal NP is selected.

(33) The ice, in moving to the south, **scraped the land bare** of its overlying mantle of weathered rock. (Canadian Shield, *Encyclopaedia Britannica*)

- When the state in the entity denoted by the postverbal NP is brought about by an action directed at the impurities/stuff/obstructions on it, and as a consequence the entity is now in the desired result state, the postverbal NP is not selected.

(34) … **the outside land** which had been **eaten bare** by goats and horses … (A.W. Upfield, *Sinister Stones*, 1954; Collier Books reprint, New York, 1986, p. 172)

6   Result APs headed by the adjective *awake*

- Wakefulness, a state of animates, can be brought about by actions that impinge on the sleeper.

- Ways of bringing this state about:
— A causer can cause a sleeper to wake up through physical contact or manipulation.
— A causer can cause a sleeper to wake up by making a sound or even by gazing at the sleeper.
    (Subcase) A sleeper as causer might wake him/herself through an involuntary bodily
    process or through a deliberate activity intended to restore wakefulness.

- Events of the first type are expressed in selected NP resultatives and those of the second type in nonselected NP resultatives.

6.1   Selected NP resultatives

- In attested selected NP resultatives causers awaken the sleeper through physical contact.

• They have verbs of impact or force exertion, which lexicalize such actions and, in isolation, would take their 'force recipient' argument as object.

(35)   VERBS INCLUDE: bump, hug, jerk, kiss, poke, slap, tickle, tug, . . .

(36)   a.   Last night, the dog **poked me awake** every hour to go outside. (G. Dunford, "Charity's for the Birds", *The Toronto Sun*, November 27, 1994, p. 6)
       b.   . . . the moment he was deeply asleep Vinck was **tugging him awake** . . . (J. Clavell, *Shogun*, Atheneum, New York, 1980, p. 652)

• In the resultatives, the sleeper is the force recipient, so it is both a core participant in the action denoted by the verb and the holder of the result state: hence, these are selected NP resultatives.

6.2   Nonselected NP resultatives

6.2.1   The basic scenario found in the corpus

• Many of the attested nonselected NP resultatives involve the causer emitting a sound.

• Attested verbs lexicalize such actions: they are manner of speaking or sound emission verbs that involve loud or high-pitched sound, precisely the types of sounds most likely to wake someone.

(37)   VERBS INCLUDE: bark, crow, jangle, scream, shout, shrill, . . .

       a.   . . . the roosters that scratch in the yard of Brastagi's best hotel **crowed me awake** that dawn a few months ago . . . (T. Robbins, "Treks for the Sophisticated Traveler", Section 6, Part 2, *The New York Times*, March 16, 1986, p. 8)
       b.   Half an hour later I had finished my day's work, **shouted Howard awake**, and headed to my truck . . . (S. Andrews, *Tensleep*, Penzler, New York, 1994, p. 143)

• Such verbs are typically intransitive, with the emitter or speaker as subject, and to the extent they may take an object, it denotes sounds or speech (e.g., *shout an answer*).

• Although the sound or speech is not expressed in the resultatives, it impinges on the sleeper: the sound waves move across space and make 'contact' with the sleeper in an abstract sense.

• As 'recipient' of the transfer, the sleeper is in some sense involved in the causing event; however, the sleeper does not qualify as the object of such verbs: hence, nonselected NP resultatives arise.

• The sleeper is not always an intended 'recipient' in the causing event, either because the emitter is inanimate or because the emitter, although animate, may simply emit the sound for its own sake.

• Concomitantly, some of the attested verbs describe actions that may be directed at someone or something (e.g., *shout at Howard*), but in a given resultative that may, as in (37b), or may not, as in (37a), be the case.

6.2.2   Subtypes of the basic scenario found in the corpus

• The observations can be generalized from causing events of sound emission and speaking—the domain of sound—to causing events of light emission and looking—the visual domain.

— With the verb *stare*, a causer directs his or her gaze at a sleeper, who senses the gaze and awakens.

— With light emission verbs (e.g., *flash*, *shine*), emitted light impinges on and wakes a sleeper.

(38)   Even Charlotte had been unable to **stare her awake** as she usually did. (J. McGown, *Un-lucky for Some*, Ballantine, New York, 2004, p. 203)

(39)   My Bonamassa warning light has just **flashed me awake** . . .
       (http://theafterword.co.uk/eyes-wide-open-aynsley-lister/)

— These scenarios are analogous to those with sound emission and speaking causing events, and it is unsurprising that they too are described with nonselected NP resultatives.

— These are much less frequent than resultatives with sound emission verbs probably because sound is more effective than light as a means of waking a sleeper.

• Another subtype: scenarios where the sleeper is both the causer and the one that wakes up.

— A sleeper may wake up through an involuntary bodily process or other, perhaps deliberate activity that disrupts sleep.

(40)   a.   . . . he squirmed down, standing by her knees as he **blinked himself awake**. (S.F. Havill, *The Fourth Time Is Murder*, St. Martin's, New York, 2008, p. 221)
       b.   Margit **screamed herself awake** and sat bolt upright in bed. (T. Nunnally, *Rune-maker*, Fjord Press, Seattle, WA, 1996, p. 105)
       c.   Yarborough was "a biblio-holic" and history buff who "**read himself awake** each morning." (J. Gonzalez, "Hundreds Mourn Yarborough", Texas Section, *The Fort Worth Star-Telegram*, January 31, 1996, p. 17; Nexis)

— Concomitantly, the examples involve verbs describing bodily processes whose occurrence may cause a sleeper to wake up as well as other activities (e.g., screaming, shouting) that someone might engage in when sleeping—say, due to a nightmare—that bring back a state of wakefulness, as well as certain deliberate activities.

(41)   VERBS INCLUDE: blink, cough, puff, snort, stretch, . . . ; read, scream, shout, . . .

— The relevant verbs are typically intransitive, and to the extent some allow an object, it is a cognate object (e.g., *blink a little blink*, *cough a loud cough*) or denotes a sound or speech (e.g., the content of the communication, *shout an answer*).

— Again the sleeper is not the object of these verbs; rather, there is an understood entity—the sound or cognate object—which impinges on the sleeper.

— What sets these resultatives apart: the causer's actions impinge on the causer him/herself, so the causer is also the holder of the result state *awake*.

— Thus, there is a dissociation between the sleeper as effector in the causing event and the sleeper as the holder of the state in the caused event.

— The reflexive pronoun in these resultatives signals the shared referent. but this pronoun qualifies as a nonselected NP; these resultatives are nonselected NP resultatives of the 'fake' reflexive type.

6.3 Pulling the pieces together: Implications for the tightness condition

• When a causer directly manipulates a sleeper to wake him/her, the causing and caused events share a participant. Such scenarios are expressed by selected NP resultatives.

— Such scenarios exemplify manipulative causation, which falls under the prototypical understandings of direct causation.

• When a causer emits a sound, speech, or light, the emitted entity may impinge on the sleeper causing him/her to wake up; however, the sleeper is not a core participant of the causing event. Such scenarios are expressed by nonselected NP resultatives.

— The emitted entity does not have its own energy source, so it does not qualify as an intervening cause and does not disrupt the tightness relation between subevents.

7 When the postverbal NP is a body part: Result APs headed by the adjective *raw*

• In the literature this result AP figures often in parade examples of nonselected NP resultatives.

(42)   Cinderella **scrubbed her hands raw**. (L&RH 1999)

(43)   She **worked them [=her hands] raw** some days. (M. Logue, *Poison Heart*, Ballantine, New York, 2005, p. 224)

• But in the corpus this result AP is overwhelmingly found in selected NP resultatives.

(44)   a.   Aunt Essie … **scoured her fingertips raw** with a brush to get all the tar out from under her nails … (M. Maron, *Home Fires*, Mysterious Press, New York, 1998, p. 39)

          b.   … the wiry grasses that would **whip her legs raw** within minutes. (V. McDermid, *Booked for Murder*, The Women's Press. London, 1996, p. 7)

• In resultatives the adjective *raw* shows the sense 'abraded, chafed'—a sense predicated of body parts—rather than the senses 'uncooked' (e.g., *raw meat*) or 'unprocessed' (e.g., *raw materials*).

• Concomitantly, the postverbal NP in such resultatives is almost invariably a body part.

• This state is externally caused to hold of a body part and comes about as a result of certain actions involving repeated, usually back and forth, contact with this body part.

• Such actions are typically lexicalized by verbs of surface contact which take the surface—in these examples, the body part—as their object, giving rise to selected NP resultatives.

(45)   VERBS INCLUDE: bite, burn, floss, flay, lick, pluck, rub, scour, scrape, scrub, …

• These examples involve manipulative causation.

• In the nonselected NP examples, the result AP is still predicated of a body part.

• The verb denotes an action performed on some unexpressed entity using that body part as a 'facilitating' instrument; it is in performing this action that the body part becomes abraded or chafed.

• In the nonselected NP resultatives, then, there is no intervening cause.

8 Intervening causes are disallowed in resultative constructions

• There are certain scenarios that the verb–AP combinations in the corpus are not used to describe.

• Specifically, some verb–AP combinations found in selected NP resultatives are not attested with certain nonselected NP interpretations and, in fact, such interpretations seem unavailable.

• Will show that these interpretations involve causal chains with true intervening causers.

• NOTE: At least certain verb–AP combinations can be found in both selected and nonselected NP resultatives, so the lacunae cannot be attributed to this possibility.

EXAMPLE: '*rub* NP *raw*' is found with selected and nonselected NP interpretations.

(46)   The salt [in the ocean water] **rubbed their feet raw**. (L. Alvarez, "For Cubans in Miami, the Gulf to their Homeland Narrows", *The New York Times*, December 21, 2014, p. 21)

(47)   She **worked them [=her hands] raw** some days. (M. Logue, *Poison Heart*, Ballantine, New York, 2005, p. 224)

An example: No nonselected NP interpretation of '*kick* NP *open/closed/shut*' is found in the corpus.

• (48), like comparable corpus examples, allows the selected NP interpretation in (48b); on this interpretation a causer makes physical contact with the entity denoted by the postverbal NP.

• (48) does not allow the nonselected NP interpretation in (48a), although the intended scenario is plausible—and might have been described by such a resultative.

(48)   Sam kicked the door open.

    a.   Impossible interpretation: Sam kicks a ball which hits the door, causing it to open.
    b.   Possible interpretation: Sam's foot makes contact with the door, causing it to open.

The reason: On the impossible interpretation the ball qualifies as a causer, so there is an intervening cause between Sam's action and the change of state.

— A launched ball is what Kearns (2000:241), drawing on Cruse (1973:19-20), terms a projectile: an entity that moves due to an imparted force; see also Wolff et al. (2010).

— Such an entity may itself impart this force to another entity through contact, just like other causers—agents, natural forces, and certain instruments—may (Wolff et al. 2010:96).

— Projectiles pattern with other causers with respect to common diagnostics (Cruse 1973:19-20):

(i) They pass the '*what* X *did*' test:

(49)   a.   What the ball did was break the window.

        b.   What Cameron/the crane did is break the window.

(ii) They may be subjects of certain transitive verbs:

(50)   a.   The ball broke the window.

        b.   Cameron/the crane broke the window.

Another example: In (51) too a nonselected NP interpretation is not possible, and again this interpretation would involve an intervening causer.

(51)   Tracy pushed the door open.

        a.   Impossible interpretation: Tracy pushed on a red button that sets a mechanism in operation that opens the door.

        b.   Possible interpretation: Tracy pushed on the door, causing it to open.

The button, (a proxy for) a mechanism with its own energy source, qualifies as an intervening cause.

(52)   a.   What the red button did is open the door.

        b.   The red button opened the door.

• The missing interpretations are qualitatively different from the missing interpretation of Kratzer's example *They drank the teapot empty* (see section 5.4). Her example probably lacks an interpretation because there is too large and too loose a 'gap' in the causal chain.

• The missing interpretations support a no-intervening-cause condition in the tightness condition.

• Including such a condition still allows for the types of link between subevents found in the resultatives examined in the earlier case studies, which are even tighter.

9   Implications of the case studies of transitive resultatives

The goal reiterated: To gain insight into the nature of the tightness condition on resultatives and other concealed causatives by zeroing in on the relation between the subevents.

Of particular interest: What can be learnt from nonselected NP resultatives since their causing and caused events meet the tightness condition, although their postverbal NP is not selected by the verb representing the causing event.

9.1 Selected NP resultatives

• The result state in the entity denoted by the postverbal NP is one that a causer, perhaps using an instrument, brings about by acting directly on this entity, usually via physical manipulation.

• Concomitantly, verbs denoting actions involving contact with a surface or exertion of a force on an entity are prevalent in selected NP resultatives.

• The choice among these semantic types depends on the nature of the result state.

• There is no 'intermediate entity' (except perhaps for a facilitating instrument) and, thus, no 'intervening cause' (let alone, an 'intervening event') in selected NP resultatives.

• Thus, such resultatives satisfy the tightness condition on the well-formedness of resultatives in a way that falls under previously proposed direct causation conditions.

9.2 Nonselected NP resultatives

• The result state in the entity denoted by the postverbal NP is one that a causer, perhaps using an instrument, brings about by an action that causes a change of state in this entity.

• This can happen in several ways, with distinct types of understood entities in the causing event:

— The action may be on an understood entity which is spatially contiguous with the entity denoted by the postverbal NP, e.g., in a contents–container relation to it.

Such actions typically involve physical manipulation of the understood entity, and, concomitantly, the verb denotes such an action.

Due to the spatial contiguity relation, when the causer acts on the understood entity the causer is also acting on the entity denoted by the postverbal NP.

(53)   Having … **drunk the teapot dry** … (E. Dark, *Lantana Lane*, Virago, London, p. 94)

— The action may be on the understood entity with the postverbal NP denoting the body part used to perform this action.

Such actions typically involve physical manipulation of the understood entity, and, concomitantly, the verb denotes such an action.

Due to contact between the causer's body part and the understood entity, when the causer acts on the understood entity, the causer is also acting on the body part.

(54)   She **worked them [=her hands] raw** some days. (M. Logue, *Poison Heart*, Ballantine, New York, 2005, p. 224)

— The action may involve the production of a sound, speech, light, or gaze, which qualifies as the understood entity.

The understood entity moves into 'contact' with the entity denoted by the postverbal NP, which is in some sense a 'recipient' with respect to the causing event. Concomitantly, the verbs denote substance, light, or sound emission, manner of speaking, or looking.

(55)   He had set an alarm, which rang at five thirty the following morning, **shrilling them both awake**. (R. Pilcher, *Voices in Summer*, St. Martin's, 1984, p. 116)

• The understood entity does not constitute an 'intervening causer' since it does not have any internal energy source of its own (Wolff et al. 2010).

• Thus, nonselected NP resultatives satisfy the tightness condition in a way that comes under previously proposed direct causation conditions.

10   Conclusion

• This study has explored the two types of transitive resultative constructions in order to shed light on the nature of the tightness condition on concealed causatives.

• It confirms that something like the notions of direct causation found in the literature are indeed important to the well-formedness of resultative constructions.

• Direct manipulation of event participants falls under tightness, playing an important part in the well-formedness of both selected and nonselected NP resultatives.

• The case studies show that more abstract links that seem to generalize such notions matter, like the 'impingement' or abstract 'contact' relevant to some resultatives with *awake* as result AP.

• Intervening causers are indeed incompatible with a tight relation between subevents.

Appendix: Attested resultative subtypes

See Levin (2015) for more case studies and examples underlying these tables.

Selected NP resultatives

Result AP	Postverbal NP	Action type	Example
dry	surface	surface contact	wipe the forks dry
clean/clear/bare	surface	surface contact	wipe the table clean
empty/full	container	exerting force/ingesting	shake the bag empty
open/closed/shut	container	exerting force/impact/rupturing	tear the bag open
open/closed/shut	portal/barrier	exerting force/caused manner of motion	push the door open
flat/smooth/thin	physical entity	exerting force/surface contact/	smash the grape flat
free	attached entity	exerting force/body-internal motion	jerk the key free
raw	body part	surface contact	scrub fingers raw
awake	animate entity	exerting force/surface contact	jerk Tracy awake

Nonselected NP resultatives

Result AP	Postverbal NP	Unexpressed entity	Action type	Example
dry	container	contents	manner of liquid removal sound/secretion emission	drink the teapot dry
full/empty	container	contents	manner of putting/ ingesting	pour the dish full

Nonselected NP resultatives (continued)

Result AP	Postverbal NP	Unexpressed entity	Action type	Example
clean	body part	secretion	emission of secretion	spit one's mouth clean
clean/clear/ bare	surface	debris/stuff on surface	ingesting/surface contact	blow/eat the field bare
open/shut/ closed	container	lid/seal	action on lid/seal	pop the can open
open/shut/ closed	container	closure	action on closure/lock	click the case open
flat/thin/ smooth	force recipient	body part/ instrument	surface contact	stomp the hat flat/ run the pavement thin
free	attached entity	connection to anchor	force exertion/ surface contact	kick oneself free
raw	body part	force recipient	surface contact	scrub one's fingers raw
awake	recipient (perceiver)	sound/gaze	sound emission/ directing gaze/ bodily process	bark/snort/stare someone awake
awake	recipient (addressee)	sign/words	manner of speaking bodily process	cough/shout someone awake
hoarse	'subject'	sound/body part	manner of speaking/ bodily process	shout/cough oneself hoarse

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