The Prepositional Passive in LFG*

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1 Introduction

- Prepositional passive: subject in the passive corresponds not to the object of the *verb* in the active, but to the object of a *preposition*:

  (1) a. Scott relies [on Logan].
       b. Logan is relied on (by Scott).

- Typologically highly restricted—attested in only about half a dozen languages, mostly in the Germanic family (Truswell 2008).[1]

2 Explananda

2.1 Type I vs. Type II

- For verbs like *rely (on)*, not so surprising: idiosyncratically selected semantically inert preposition, semantically unified transitive meaning, etc.

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[1]The non-Germanic languages include Vata, Gbadi (Koopman 1984), some North American varieties of French, especially those spoken on Prince Edward Island (King & Roberge 1990), and potentially Papiamentu (Abels 2003) and Macedonian (van Riemsdijk 1978).

- But preposition need not be (uniquely) specified by verb:

  - Semantically contentful argument PPs:

    (2) a. Scott spoke to/about Jean.

         b. Jean was spoken to/about (by Scott).

  - Adjunct(?) PPs:

    (3) When I'm on the bus I don't like being sat next to.
         (https://twitter.com/spencernickson/status/654923013285126144)

    (4) Charles Dickens' quill pen has been written with by me.
         (http://www.bustle.com/articles/117731-10-amazing-margaret-atwood-
         quotes-from-the-2015-texas-book-festival-from-the-future-library-
         project)

    (5) To come back, and not get turned around for. . . .
         (Will.i.am on an episode of The Voice, 7 Feb. 2014)

- Huddleston & Pullum (2002:1433–1434) describe the first as Type I, and the second as Type II. We would like an explanation which carries over to both.

- If there is a subtype of Type II which involves adjuncts, this is a challenge to the passive as an *argument* alternation.

2.2   Relation to the regular passive

- The prepositional passive "has all the features of a canonical passive construction, except for one" (Alsina 2009:45), *viz.* that the subject corresponds to a prepositional, not verbal, object in the active.

- Same morphology, same auxiliary choices.

- Very productive, used with verb+preposition combinations that have surely not been lexicalised, including relatively recent neologisms:

  (6) a. We can't bring you everything that is being blogged about.
          (COCA)

       b. Sean was tweeted at by Molly Mesnick.
          (http://hollywoodlife.com/2013/03/12/catherine-giudici-sean-lowe-
          secret-engagement/)

       c. This will definitely be facebooked on!
          (http://thenaturalnutritionist.com.au/coconut-oil-the-scoop/)

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2.3   Adjacency

- One common observation: V+P must be adjacent in the passive, but not the active:

  (7)   a.   We rely increasingly on David.
        b.   * David is relied increasingly on.

- However, others have pointed out this is inadequate (e.g. Tseng 2006); PP specifiers like *right*, *straight* or *clear* can intervene, for example:

  (8)   a.   I've stood there [on the London Underground], heavily pregnant (and obviously so), and been looked straight through.
             (`https://londondigitalmum.wordpress.com/category/commuting-2/`)
        b.   You've been walked right by. / A real nice guy, / Overlooked and shoved aside.
             (Song lyrics: *Take a Stand* by Youth of Today)

- In fact, it is not too difficult to find a wide variety of adverbs between the verb and the preposition:

  (9)   a.   The other thing that he sees in winter time is that a lot of the services are relied hugely on by other people in need over the festive season.
             (`http://www.thejournal.ie/sick-homeless-drug-users-ireland-christmas-1805324-Dec2014/`)
        b.   Yerba mate is consumed in nearly 100% of Argentine households. It is considered a staple food, and is relied especially on by poor Argentines when food is scarce.
             (`https://www.tni.org/files/download/47_bowles_2013_0.pdf`)
        c.   Gas turbines have rapid transient response capabilities and, thus, will be relied increasingly on in markets with large intermittent sources.
             (Lieuwen et al. 2013)

- Context important—invented examples difficult to come up with.

- What about direct objects?

- Generally bad:

  (10)   a.   They put some books on the table.
         b.   * The table was put some books on (by them).

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- Acceptable with some idioms/light verb constructions:

  (11) a. You have been taken advantage of.
        b. Russia was declared war on (by Germany).
        c. I've been made a fool of!

- In fact, acceptable more widely; "the only real restrictions are clarity and intent" (Bolinger 1975:65; see also Ziv & Sheintuch 1981):

  (12) a. That city has been fought many a battle over.
        b. He has been burned, stuck pins in, beheaded—all in effigy, of course.
        c. To be whispered such dirty innuendos about was enough to break any girl's heart.
        d. This tool has never been used for its main purpose—in fact, it's never been done anything with at all.
        e. I don't like to be told lies about.

- Following Tseng (2006, 2007), I assume that there is nothing in principle, and certainly not in the syntax, ruling out the presence of direct objects or other intervening material in the prepositional passive.

2.4 Semantic-pragmatic constraints

- Large amount of literature on delimiting the class of predicates which can participate in the prepositional passive via non-syntactic restrictions. Usually focussed on properties borne or ascribed to the subject.

- **Affectedness:** Bolinger (1977:67): "the subject in a passive construction is conceived to be a true patient, i.e. to be genuinely affected by the action of the verb".

  (13) a. * I was approached by the train.
        b.   I was approached by the stranger.

                                                        (Bolinger 1977:68)

  (14) a. * Seoul was slept in by the businessman last night.
        b.   This bed was surely slept in by a huge guy last night.

                                                        (Kim 2009)

- Not very formally explicit, however, and potentially so broad as to be meaningless (see the exchange in Householder 1978 and Bolinger 1978 for more on this).

- But in fact not broad enough?

(15) Such a dress can't be sat down in.

(16) There the mistakes were, in their houses, pervading their lives, having to be sat with at every meal and slept with every night.

(Riddle & Sheintuch 1983:538)

- **Role Prominence:** Riddle & Sheintuch (1983:546): "all and only NPs whose referent the speaker views as being role prominent in the situation described by the passive clause occur as subjects of passive verbs".

- Schachter (1977:282): role prominence belongs to the NP whose referent the speaker views as "being at the center of events".

- But this is equally vague!

- **Characterisation:** modality can play a role in the acceptability of prepositional passives:

(17) a. * Seoul was walked around by his father.
     b.   Seoul can be walked around in a day.
(18) a. * This statue was stood beside by John.
     b.   No statue should be stood beside in this park.

(Kim 2009)

- The VP gives a general or characteristic property of the subject—it characterises it.

- Do we need both role prominence and characterisation? Crucial examples for both involve modality and negation.

2.5 Summary

- The prepositional passive is like the regular passive in most ways.

- It is subject to the same semantic-pragmatic constraints as the regular passive.

- There may also be additional constraints, such as adjacency, which relate to the prepositional passive uniquely.

3 Analysis

- The essential property of the prepositional passive (especially where the preposition is contentful, i.e. Type II) is that the clause's subject in the syntax corresponds to the stranded preposition's internal argument in the semantics.

- This is a question of the mapping from f- to s-structure.

3.1 Previous LFG analyses

- **Reanalysis** (Bresnan 1982): morphological incorporation of V+P and modification of argument list.

- Predicts that (a) the object of a preposition in a V+P sequence should (at least optionally) behave like the direct object of a normal transitive verb, and (b) the V+P complex should behave like a single morphological word, but neither of these claims are borne out by the data.

- Postal (1986) and Baltin & Postal (1996) give a number of arguments against a reanalysis approach.

- Prepositional object does not behave like a verbal object, e.g. with respect to heavy NP shift:
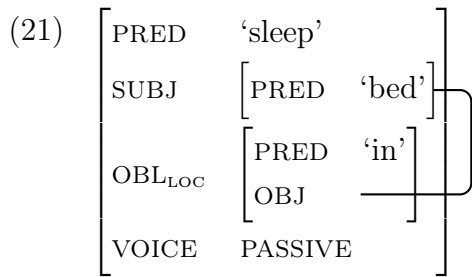
  (19) a. I discussed ___$_1$ with Lorenzo [the problems he was having with deliveries]$_1$.
        b. *I argued with ___$_2$ about such problems [the drivers' union leader]$_2$.
        (Baltin & Postal 1996:129)

- Preposition displays a high degree of syntactic mobility not expected if it is morphologically incorporated:

  (20) a. The bridge was flown (both) over and under.
        b. Communism was talked, argued, and fought about.
        c. Fascism was fought for by Goebbels and (then) against by De Gaulle.
        d. Fascism was fought for by Goebbels and then, but I assure you, only then, against by De Gaulle.
        (Postal 1986:223, fn. 14)

- **Structure sharing** (Lødrup 1991; Alsina 2009): prepositional passive is analysed as a structure sharing relation between the subject and the object of the OBLique:

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(21)
$$\begin{bmatrix} \text{PRED} & \text{'sleep'} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'bed'} \end{bmatrix} \\ \text{OBL}_{\text{LOC}} & \begin{bmatrix} \text{PRED} & \text{'in'} \\ \text{OBJ} & \underline{\qquad} \end{bmatrix} \\ \text{VOICE} & \text{PASSIVE} \end{bmatrix}$$

- Shares the observation that there needs to be a connection between the subject and the argument of the preposition, which is usually its object. But is it right to place this purely in the syntax, rather than in the mapping between syntax and semantics?

- Two arguments against, one empirical, one theoretical:

  1. Makes the wrong predictions with respect to case-marking. In the proposed structure-shared relation, we would expect case identity between the two positions, since the f-structures which are shared must be (token) identical. However, this is not what we observe:
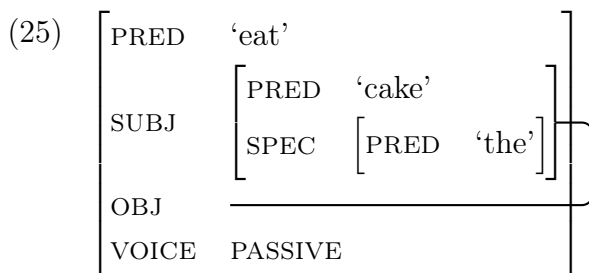
     (22) I rely on him.
       NOM ACC

     (23) a. He is relied on.
          NOM

       b. * Him is relied on.
         ACC

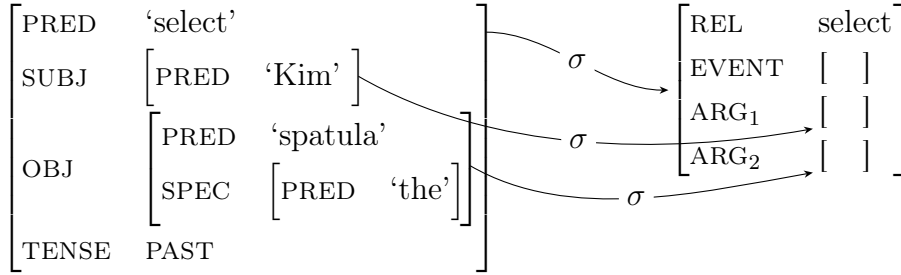   (A case for the restriction operator (Kaplan & Wedekind 1993)?

     (24) $(\uparrow \text{SUBJ})/\text{CASE} = (\uparrow \text{OBL}_\theta \text{ OBJ})/\text{CASE}$

     But there are formal problems here for Alsina, at least.)

  2. Makes the prepositional passive very different from the regular passive. We might wonder why the latter does not look like (25), for example:

     (25)
     $$\begin{bmatrix} \text{PRED} & \text{'eat'} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'cake'} \\ \text{SPEC} & \begin{bmatrix} \text{PRED} & \text{'the'} \end{bmatrix} \end{bmatrix} \\ \text{OBJ} & \underline{\qquad} \\ \text{VOICE} & \text{PASSIVE} \end{bmatrix}$$

     Since the prepositional passive is identical to the passive in most respects, we should strive for a parallel analysis.

$$\begin{bmatrix} \text{PRED} & \text{'select'} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'Kim'} \end{bmatrix} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'spatula'} \\ \text{SPEC} & \begin{bmatrix} \text{PRED} & \text{'the'} \end{bmatrix} \end{bmatrix} \\ \text{TENSE} & \text{PAST} \end{bmatrix} \quad \begin{array}{c} \sigma \\ \sigma \\ \sigma \end{array} \quad \begin{bmatrix} \text{REL} & \text{select} \\ \text{EVENT} & [\ ] \\ \text{ARG}_1 & [\ ] \\ \text{ARG}_2 & [\ ] \end{bmatrix}$$

Figure 1: Mapping from f-structure to a connected semantic structure for *Kim selected the spatula*

3.2 Proposal

3.2.1 Machinery

- For mapping between arguments and GFs, we use the model of Asudeh et al. (2014) (see also Asudeh & Giorgolo 2012, Findlay 2014a).

- Mapping is handled via various functional descriptions, primarily through defining equations like (26), ultimately to be provided by some version of Lexical Mapping Theory (LMT: Bresnan & Kanerva 1989; Kibort 2007; Findlay 2014a).

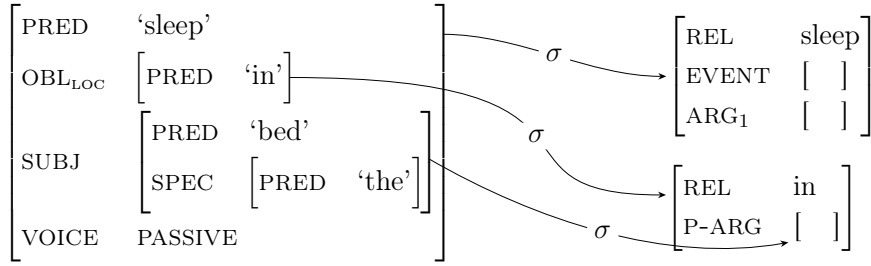   (26) $(\uparrow \text{OBJ})_\sigma = (\uparrow_\sigma \text{ARG}_2)$

- These define the possible links, via the sigma projection function, between the values of GF features in the f-structure and argument positions in a connected s-structure. The latter represent resources to be used in the Glue Semantics (Dalrymple 1999, 2001; Asudeh 2005, 2012).

- For the passive, we use the model of Kibort (2001), whereby the highest argument of a predicate, ARG_1, is marked as semantically restricted.[2] In the present model this means it must appear as an OBL_θ if it is realised syntactically.

- The regular passive can thus be described via the following template:[3,4]

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[2] In LMT terms, it is marked $[+r]$.

[3] On templates, see Dalrymple et al. (2004). This version of the passive template is based on that in Asudeh & Giorgolo (2012).

[4] The ADDMAP template is responsible for restricting the first argument in the manner described by Kibort (2001). For reasons of space I leave the inner workings of some of the mapping theory to one side. See Asudeh et al. (2014:76–77) for a definition of the ADDMAP template, and for more on this version of mapping theory generally.

$$\begin{bmatrix} \text{PRED} & \text{'sleep'} \\ \text{OBL}_{\text{LOC}} & \begin{bmatrix} \text{PRED} & \text{'in'} \end{bmatrix} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'bed'} \\ \text{SPEC} & \begin{bmatrix} \text{PRED} & \text{'the'} \end{bmatrix} \end{bmatrix} \\ \text{VOICE} & \text{PASSIVE} \end{bmatrix}$$
σ $\quad$ $\begin{bmatrix} \text{REL} & \text{sleep} \\ \text{EVENT} & [\quad] \\ \text{ARG}_1 & [\quad] \end{bmatrix}$
σ $\quad$ $\begin{bmatrix} \text{REL} & \text{in} \\ \text{P-ARG} & [\quad] \end{bmatrix}$
σ

Figure 2: Mapping from f-structure to s-structure for *The bed was slept in.*

(27) PASSIVE :=
$\quad$ ($\uparrow$ VOICE) = PASSIVE
$\quad$ @ADDMAP(PLUSR, ARG$_1$)

$\quad$ ($\lambda P \exists x.[P(x)] : [(\uparrow_\sigma \text{ARG}_1) \multimap \uparrow_\sigma] \multimap \uparrow_\sigma$)

3.2.2 Expanding the passive template

- The information we need to add for the prepositional passive is that the subject of the clause at f-structure is the argument of the stranded preposition at s-structure, i.e. what we see in Figure 2.

- P-ARG is the name of a feature at s-structure standing for the internal argument of the preposition.

- Assume for the moment that only OBLiques can be involved (I turn to the apparent adjuncts shortly).

$\quad$ (28) $\quad$ ($\uparrow$ SUBJ)$_\sigma$ = (($\uparrow$ OBL)$_\sigma$ P-ARG)

- We need to limit the OBL in question to the *nearest* PP to the verb:

$\quad$ (29) $\quad$ a. $\quad$ Victor has been spoken to about this.
$\quad\quad\quad\quad$ b. $\quad$ * Victor has been spoken about this to.

- Then the relevant description is as follows:

$\quad$ (30) $\quad$ ($\uparrow$ OBL$_\theta$) = %STRDD-PREP
$\quad\quad\quad\quad$ $\neg$($\uparrow$ OBL$_\theta$) $<^{\text{VP}}_f$ %STRDD-PREP
$\quad\quad\quad\quad$ ($\uparrow$ SUBJ)$_\sigma$ = (%STRDD-PREP$_\sigma$ P-ARG)

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- OBL$_\theta$ represents a disjunction over all OBL functions, i.e.
  OBL$_\theta \equiv \{$OBL$_{\text{GOAL}}|$OBL$_{\text{LOC}}|\ldots|$OBL$_{\text{TO}}|$OBL$_{\text{ON}}|\ldots\}$.

- Using a local variable (Crouch et al. 2012), we name the oblique we are interested in %STRDD-PREP, and require of it that no other oblique f-precedes it within the VP.[5]

- We then add the mapping information, relativised to the correct oblique.

- The passive template is thus augmented as follows:

  (31) PASSIVE :=
  $\qquad$ ($\uparrow$ VOICE) = PASSIVE
  $\qquad$ @ADDMAP(PLUSR, ARG$_1$)
  $\qquad \left(\begin{array}{l} (\uparrow \text{OBL}_\theta) = \%\text{STRDD-PREP} \\ \neg(\uparrow \text{OBL}_\theta) <^{\text{VP}}_f \%\text{STRDD-PREP} \\ (\uparrow \text{SUBJ})_\sigma = (\%\text{STRDD-PREP}_\sigma \ \text{ARG}_2) \end{array} \right)$

  $\qquad (\lambda P \exists x.[P(x)] : [(\uparrow_\sigma \text{ARG}_1) \multimap \uparrow_\sigma] \multimap \uparrow_\sigma)$

- As we saw in Section 2, there are a number of other potential semantic and pragmatic constraints on the passive in general.

- Whatever the ultimate consensus on their exact nature, they can easily be accommodated in the present approach, simply by adding the requisite constraints to the passive template:

  (32) PASSIVE :=
  $\qquad$ ($\uparrow$ VOICE) = PASSIVE
  $\qquad$ @ADDMAP(PLUSR, ARG$_1$)
  $\qquad \left(\begin{array}{l} (\uparrow \text{OBL}_\theta) = \%\text{STRDD-PREP} \\ \neg(\uparrow \text{OBL}_\theta) <^{\text{VP}}_f \%\text{STRDD-PREP} \\ (\uparrow \text{SUBJ})_\sigma = (\%\text{STRDD-PREP}_\sigma \ \text{ARG}_2) \end{array} \right)$

  $\qquad \lambda P \lambda x \lambda e.P(e,x) \wedge [\textit{affected}(e,x) \vee \textit{characterised}(e,x)] :$
  $\qquad\qquad\qquad [(\uparrow \text{SUBJ})_\sigma \multimap (\uparrow_\sigma \text{EVENT}) \multimap \uparrow_\sigma] \multimap$
  $\qquad\qquad\qquad\qquad\qquad (\uparrow \text{SUBJ})_\sigma \multimap (\uparrow_\sigma \text{EVENT}) \multimap \uparrow_\sigma$

  $\qquad (\lambda P \exists x.[P(x)] : [(\uparrow_\sigma \text{ARG}_1) \multimap \uparrow_\sigma] \multimap \uparrow_\sigma)$

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[5]On relativised f-precedence see Zaenen & Kaplan (1995).

3.3 Type I

- Type I prepositional passives are the less problematic of the two, since the esoteric information can all be encoded locally, in a single lexical entry.

  (33)   *rely*   V $(\uparrow \text{PRED}) = \text{'rely'}$
                   $(\uparrow_\sigma \text{ARG}_2) = ((\uparrow \text{OBL}_{\text{ON}})_\sigma \text{ P-ARG})$

          $\lambda y \lambda x.rely\_on(x, y) :$
                   $(\uparrow_\sigma \text{ARG}_2) \multimap (\uparrow_\sigma \text{ARG}_1) \multimap (\uparrow_\sigma \text{EVENT}) \multimap \uparrow_\sigma$

- In the default case, the preposition's object will map to the P-ARG, while if the passive template is selected, it will be the clause's subject. Either way, that argument is identified as the second argument of the verb *rely* and passed to its semantics appropriately.

3.4 Type II

- At present, the equations which identify the stranded preposition refer to the nearest *oblique*. If the PPs which participate in Type II prepositional passives are obliques, then no more need be said: the analysis will hold of them directly. But as we have seen, it looks as though NPs can be promoted to subject out of adjuncts.

- Given that the passive is an *argument* alternation, I agree with others (e.g. Alsina 2009; Kim 2009) that the sensible conclusion is that these are not genuine adjuncts.

- No regular passives from adjuncts, for example:

  (34)   They smiled yesterday. $\sim$ *Yesterday was smiled (by them).

- True adjuncts, such as temporal phrases, also barred from participating in the prepositional passive:

  (35)   We left after dinner. $\sim$ *Dinner was left after (by us).

3.4.1 Argumenthood and relevance

- Alsina (2009:55) advocates that we "assume that certain verbs can augment their argument structures with a locative or instrumental argument".

- This is very reminiscent of the suggestion by Needham & Toivonen (2011) that certain classes of PP can be added as 'derived' arguments to a verb's argument structure, rather than being true adjuncts.

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- There is not a one-to-one match between Needham & Toivonen's list of derived arguments and those which participate in the prepositional passive, however. Instrumentals and benefactive *for*-phrases are listed as derived arguments and are productive sources of prepositional passives, but displaced themes and directionals, also listed, are not, for example. And locatives, which account for large numbers of prepositional passives, are not mentioned in the authors' list of derived argument types.

- It is certainly not true that being a derived argument is a sufficient condition for prepositional passive subjecthood. Other syntactic and semantic constraints, as discussed in Section 2, still obtain.

- If it is to be necessary, however, we need to account for the appearance of locatives.

- Note that not all locatives permit the prepositional passive:

  (36) a.   This bed has been slept in.
        b.   * This bed has been slept under.

- Heavily context-dependent.

  (37) This heavy sheet is designed to be slept under.

- One suggestion for the source of the contrast in (36) is the Affectedness Condition: beds are affected by being slept in but not by being slept under. This sort of real-world knowledge that has linguistic effects is precisely the sort of information intended by Pustejovsky (1995) to be captured in *qualia structure*.

- Thus it may be that verbs (and nouns) specify in the lexicon which kinds of relations are particularly associated with them, and these will therefore be more argument-like when they are used. In the present case, they include PPs which will be realised as OBLs rather than ADJs.

- Notions like affectedness or prominence may be epiphenomena, the result of Gricean-style inference interacting with lexically specific knowledge about the kinds of relationships with the world which words enter into.

4   Conclusion

- The prepositional passive is only minimally different from the regular passive.

- Existing analyses are either empirically inadequate or obscure this similarity.

- A minimally sufficient analysis can be incorporated into existing analyses of the passive by simply adding the crucial information that sets the prepositional passive apart, namely the mapping from f- to s-structure.

- Further semantic and pragmatic constraints can be added and elaborated on as and when needed, but ideally would be reducible to more basic principles.

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