
(1) Our Current ‘Toy’ Semantics: GEN = ‘Usually’

- As a temporary stopgap, we’ve been assuming that the GEN operator simply states that the majority of things satisfying its restriction also satisfy its scope.
  a. Our ‘Frequentist’ Semantics for GEN

(i) \[[\text{GEN}]_{<st>,t}]^{w,g} = \\
[\lambda p_{<st>} : [\lambda q_{<st>} : \text{MOST } s . s \leq w & p(s) = T : q(s) = T ] ]

(ii) \[[\text{GEN}]_{<set>,t}]^{w,g} = \\
[\lambda p_{<set>} : [\lambda q_{<set>} : \text{MOST } s, x . s \leq w & p(s)(x) = T : q(s)(x) = T ] ]

(iii) \[[\text{GEN}]_{<seet>,t}]^{w,g} = \\
[\lambda p_{<seet>} : [\lambda q_{<seet>} : \text{MOST } s, x, y . s \leq w & p(w')(x)(y) = T : q(w')(x)(y) = T ] ]

- Such treatments of GEN and generics are sometimes referred to as ‘frequentist,’ since they hold that the truth of a generic depends (primarily) upon the frequency with which the scope property is true of the entities in the restrictor.

Before we review the problems this basic account in (1) faces, let’s first review some of the things it gets right about generics…


(2) Less-Than-Fully-Universal Force of Generics
We easily predict that (2a) is true despite the existence of mute dogs. The predicted truth-conditions in (2b) only require that most dogs (in normal barking situations) are barkers.

a. Sentence: Dogs bark.

b. Truth-Conditions:
MOST s, x . s \leq w & *dog(x)(x) & s is normal w.r.t ‘barking’: x is barking in s

(3) Intensionality

- In virtue of quantifying over situations, our semantics for GEN in (1) is intensional
- Cohen (1999) notes that this makes a variety of non-trivial and accurate predictions
(4) **Intensionality Prediction 1: Generics / Habituals Need Not be Realized (Yet)**

- Our theory rightly predicts that a sentence like (4b) can be true in a scenario like (4a).

- The truth-conditions in (4c) only require that Mary handles mail from Antarctica in *normal* such situations (i.e., where such mail exists and has arrived)
  - In our world w, such ‘normal situations’ for the VP may all exist in the future

a. **Scenario:** At this mail-processing facility, Mary has been assigned the task of handling any mail that comes from Antarctica (when and if such mail arrives)

b. **Sentence:** Mary **handles** the mail from Antarctica.

c. **Predicted Truth-Conditions:**
   
   MOST s, x . s ≤ w & x is Mary in s & s is normal w.r.t handling mail from Antarctica :
   
   x handles in s the mail from Antarctica in s

(5) **Intensionality Prediction 2: Generics / Habituals Create Opaque Contexts**

- In the scenario in (5a) below, the habitual in (5bi) is intuitively true. However, the habitual in (5ci) is intuitively false.

- *This is despite the fact that in this scenario the NPs ‘the weather forecast’ and ‘the main news item’ are co-referent (co-extensional).*

a. **Scenario:**
   
   At the Hampshire Gazette, they always use a computer to figure out what the weather forecast should be. Today, the weather forecast is the main news item, since (as usual) a huge Nor’easter is blowing in.

b. (i) **Sentence:** The weather forecast **is calculated** by a computer.

   (ii) **Truth-Conditions:**
   
   MOST s, x . s ≤ w &
   
   x **is the weather forecast in** s & s is normal w.r.t. calculation:
   
   x is calculated by a computer

c. (i) **Sentence:** The main news item **is calculated** by a computer.

   (ii) **Truth-Conditions:**
   
   MOST s, x . s ≤ w &
   
   x **is the main news item in** s & s is normal w.r.t. calculation:
   
   x is calculated by a computer

- As shown by the truth-conditions in (5bii)-(5cii), this follows under our account, which requires evaluation of the generic/habitual subject in multiple situations…
(6) **Intensionality Prediction 3: Generics / Habituals ‘Project into the Future’**

- We accurately predict that sentence (6b) is not true in scenario (6a).

- Our predicted truth-conditions in (6c) quantify over *all situations* of a Supreme Court justice having a SSN in the actual world, **including those in the future**.

a. **Scenario:** By total accident, every Supreme Court justice has had an even SSN.

b. **Sentence:** Supreme Court justices **have** even Social Security numbers.

c. **Predicted Truth-Conditions:**

\[
\text{MOST } s, x . \ s \leq w \ & \ x \text{ is a Supreme Court justice in } s \ & \ s \text{ is ‘normal’ w.r.t having an SSN:} \\
& \ x \text{ has an even SSN in } s
\]

(7) **Intensionality Prediction 4: False Generics / Habituals are Contingently False**

- Although our account predicts that (7a) will be false, we do predict that there are possible worlds where it is true…

- As shown in (7b), this is because – like all intensional operators in natural language – the value of GEN depends upon the evaluation world w

a. **Sentence:** Dogs fly.

b. **Predicted Truth-Conditions:**

\[
\text{MOST } s, x . \ s \leq w \ & \ *\text{dog}(s)(x) \ & \ s \text{ is normal w.r.t flying:} \ x \text{ is flying in } s
\]

On the other hand, there are of course a great many, deeper puzzles regarding generics that the simple semantics in (1) offers no explanation for...

2. **Some Challenges for the ‘Toy’ Frequentist Semantics (Cohen 1999)**

(8) **Vagueness and Truth-Value Indeterminacy**

- According to Cohen (1999), speakers seem to have differing intuitions regarding the meanings of the sentences in (8a) and (8b)

- Reportedly, everyone agrees that (8a) is clearly true…

  o *But some people either feel that (8b) is false, or not (as) obviously true as (8a), because of the existence of penguins and ostriches…*

a. Birds **usually** fly.  
b. Birds fly.
Generics that are False, Although the ‘Frequentist’ Truth-Conditions Hold

- In each of the pairs below, the generic sentence is intuitively false, while the sentence with ‘usually’ is intuitively true.

- Furthermore, the sentence with ‘usually’ is intuitively true because a majority of things satisfying the restrictor also satisfy the scope...
  - Consequently, our semantics in (1) wrongly predicts these generics to be true

a. (i) Buildings are less than five stories tall.  (False)
    (ii) Buildings are usually less than five stories tall.  (True)

b. (i) Books are paperbacks.  (False)
    (ii) Books are usually paperbacks.  (True)

c. (i) Bees are sexually sterile.  (False)
    (ii) Bees are usually sexually sterile.  (True)


Cohen’s (1999) Intuition About the False Generics in (9)

- With the intuitively false generics in (a,b,c), there is a salient, characterizeable subset of the restrictor for which the generic claim doesn’t hold.

a. One salient subclass of buildings is skyscrapers, and those aren’t mostly less than five stories...

b. One salient subclass of books is reference works, and those aren’t mostly paperbacks...

c. One salient subclass of bees is queens, and those aren’t mostly sterile...

- For true generics like (2a), the subset of the restrictor for which the generic claim fails are (arguably) not psychologically salient (or independently characterizeable)...
  - That is, mute dogs are (for whatever reason) just not salient to us as a subclass of dogs...

d. The Hypothesis, Informally Stated
   Perhaps in addition to the ‘frequentist’ truth-conditions in (1), a generic also requires that those truth-conditions hold for all contextually salient subsets of the restrictor...
   - That is, in a sense, the restrictor must homogeneous with respect to the generic statement
(11) Cohen’s (1999) Homogeneity Requirement on Generics

An LF of the form “[ [ GEN C ] XP ]” is only true if there is no contextually salient partition π of [[C]]\(^1\) such that there is a P ∈ π([[C]]) such that [[GEN]][P([[XP]])] = F

- That is, all the contextually salient ways of dividing up (partitioning) the restrictor [[C]] into subsets will still make the generic statement true…

(12) Ancillary Hypothesis: No Homogeneity Requirement for Overt Adverbs

- The homogeneity requirement in (11) is only a feature of the special GEN operator.
- Overt adverbs like ‘usually’ are not subject to this requirement.

Key Prediction:
The sentences in (9a,b,c) with overt ‘usually’ will be true, since they aren’t subject to the falsifying homogeneity requirement that the generics are subject to!

(13) Ancillary Hypothesis: Speaker Disagreement Over Saliency of Partitions

- It may not always be clear to speakers whether a particular partition is ‘contextually salient’ enough to run afoul of the homogeneity requirement in (11)…

a. Key Prediction, Part 1:
Speakers might find some generic sentences – like (8b) – difficult to judge.

  o Note that a partition of birds into subspecies would – combined with the requirement in (11) – render the generic in (8b) false…
    - (Since the generic statement wouldn’t hold for the subset of birds consisting of all the penguins)
  o Perhaps speakers find (8b) hard because they’re not sure whether a partition of birds in terms of subspecies is ‘contextually salient’ enough to count for (11)

b. Key Prediction, Part 2:
Again, since the homogeneity requirement in (11) is only a feature of covert GEN, there should be no doubt about the truth of sentence (8a) with overt “usually”

\(^1\) Note that, simply for expository brevity, the statement in (11) assumes that the scope and restriction of GEN are sets (rather than schoenfinkelized characteristic functions of sets of tuples).
4. Some Further (Possible) Predictions of the Homogeneity Requirement

(14) **Ancillary Hypothesis**
Whether a particular partition is ‘contextually salient’ (or salient enough) can be affected by the linguistic form of the generic statement.

(15) **Possible Example:**
According to Cohen (1999), speakers report that (15a) feels true, despite the existence of marsupials. *However, such speakers still report that (15b) is false (because, marsupials).*

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<tbody>
<tr>
<td>a.</td>
<td>Mammals have a placenta. (True)</td>
</tr>
<tr>
<td>b.</td>
<td>Mammals are placental mammals. (False)</td>
</tr>
</tbody>
</table>
| c. | **Possible Explanation**  
  o In most contexts, it’s not salient to partitions mammals into placentals and marsupials. Consequently, in most contexts, (15a) will be true.  
  o However, using the predicate “placental mammals” naturally raises the saliency of such a partition. Consequently, (15b) will end up being false. |

(16) **Possible Example:**
According to Cohen (1999), speakers report that the generic sentence in (16a) is false, while the sentence with overt “*usually*” strikes many as true.

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<thead>
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<tbody>
<tr>
<td>a.</td>
<td>Sea turtles die before they are three days old. (False)</td>
</tr>
<tr>
<td>b.</td>
<td>Sea turtles usually die before they are three days old. (True)</td>
</tr>
</tbody>
</table>
| c. | **Possible Explanation:**  
  o Using the predicate “*die before they are three days old*” raises the saliency of a partition according to ‘age during death’.  
  o Under such a partition, the sea turtles that live to 100 end up being a contextually salient subset that runs afoul of the homogeneity condition (11).  
  o Again, though, the overt adverb “*usually*” is not subject to that condition… |

5. Using Alternatives to Further Restrict the Restrictor of GEN

(17) **An Outstanding Problem**

- Intuitively, the generic in (17a) is true, while the one in (17b) is false.
- Under our current semantics, however, (17a) would seem to *entail* (17b).

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<tbody>
<tr>
<td>a.</td>
<td>Ducks lay eggs. (True)</td>
</tr>
<tr>
<td>b.</td>
<td>Ducks are female. (False)</td>
</tr>
</tbody>
</table>
(18) **Cohen’s (1999) Intuition About the Contrast in (17)**

- In sentence (17a), the VP is “lay eggs”, and so we naturally understand the restrictor of $GEN$ to be those ducks that **procreate in some fashion at all…**
  - Thus, (17a) is restricted to **female** ducks, and so it’s true…
- In sentence (17b), the VP is “are female”, and so we naturally understand the restrictor of $GEN$ to be those ducks that **have some gender at all…**
  - Thus, (17) is restricted to **all ducks**, and so it’s (presumably) false.
  - (Moreover, the predicate ‘female’ makes salient a partition of ducks by gender, and so the homogeneity condition will necessarily also be violated)

(19) **Implementing The Intuition: Alternatives in the Restrictor of $GEN$**

- In every context $c$ where a generic sentence “$GEN$ NP VP” is used, there is some contextually salient set of alternatives to the predicate VP: $Alt_c([[[VP]]])$

- It’s crucial for Cohen’s (1999) account that these are not (necessarily) the ‘focus alternatives’ to the VP… instead they come from **SOMEWHERE ELSE**

- In a generic sentence “$GEN$ NP VP”, the restrictor is always understood to include a requirement that some property from $Alt_c([[[VP]]])$ is satisfied

**The Truth-Conditions of a Generic (Cohen 1999):**

An LF of the form “[[GEN $C[[NP$] VP]]]” is true if and only if both the following hold:

a. $\text{MOST}_{s,x} . [[[NP]](s)(x) \land \exists P \in Alt_c([[[VP]]]) . P(s)(x) = T : [[[VP]]](s)(x)$

b. The ‘Homogeneity Condition’ in (11) holds.

(20) **Truth-Conditions of Sentence (17a)**

$\text{MOST}_{s,x} . \text{*duck}(s)(x) \land \exists P \in Alt_c([\lambda s: \lambda x : x \text{ is laying eggs in } s]) . P(s)(x) = T : x \text{ is laying eggs in } s$

- By assumption, $Alt_c([\lambda s: \lambda x : x \text{ is laying eggs in } s])$ are alternate modes of procreation: $\{[\lambda s: \lambda x : x \text{ is giving live birth in } s], [\lambda s: \lambda x : x \text{ is undergoing mitosis in } s], \ldots \}$

- Thus, these truth-conditions require that most ducks that are procreating in any way, are procreating by laying eggs… and so these truth-conditions hold.
(21) Truth-Conditions of Sentence (17b)

$$\text{MOST}_{s,x} \cdot *\text{duck}(s)(x) \& \exists P \in \text{Alt}_{c}([\lambda s: \lambda x : x \text{ is female in } s]) : P(s)(x) = T : x \text{ is female in } s$$

- By assumption, $\text{Alt}_{c}([\lambda s: \lambda x : x \text{ is female in } s])$ are alternate genders:
  $\{[\lambda s: \lambda x : x \text{ is male in } s], [\lambda s: \lambda x : x \text{ is female in } s], [\lambda s: \lambda x : x \text{ is neuter in } s]\}$
- Thus, these truth-conditions require that most ducks that have any gender at all, are female… and so these truth-conditions do not hold…


(22) True Generics Without a Majority

Each of the following generics are intuitively true, even though only a very small minority of the NPs satisfy the VP.

  a. Tortoises live to be over 100.
  b. Bats carry rabies.
  c. Sharks attack swimmers.

- It’s unclear how Cohen’s (1999) analysis – even with the addition of the further mechanisms in (19) – is going to extend to these cases…

- **However, Cohen (2004) presents a theory of ‘existential readings’ of generics within his system… We should check whether that analysis could extend to these…**

(23) The Challenging Nature of Counterexamples (Greenberg 2003)

- Intuitively, it seems that a generic statement can be challenged by citing a single case where an entity from the restriction fails to satisfy the scope…

- That is, discourses like the following seem to be completely coherent.

  a. (i) **Person A:** UMass grad students love karaoke.
     (ii) **Person B:** What about Joe? He’s a UMass grad student, and he hates it.

- **But how do we make sense of such dialogs if GEN just means “usually”? Note that dialogs like the one in (23b) are incoherent…**

  b. (i) **Person A:** UMass grad students usually love karaoke.
     (ii) **Person B:** # What about Joe? He’s a UMass grad student, and he hates it.
A Possible Response (Not Cohen’s, To My Knowledge)

- In a challenge like (23aii), Person B is pointing out that there’s a salient partition of UMass grad students whereby one subset violates the generic statement…

- Thus, ‘counterexample’ statements (23aii) are challenges to generic statements (23ai) because they show that the Homogeneity Condition in (11) is violated!

A Skeptical Reply

But, what exactly is the partition that the challenge in (23aii) makes salient?

- As Cohen (1999) points out, if we allow either the following as possible partitions, it would make generics ‘too easy’ to falsify, and so he rules them out on principle.

Illegitimate Partitions of the Restrictor (Cohen 1999):

a. Partitioning the restrictor into singleton subsets
   (e.g., partitioning UMass grad students into the individual students, like Joe)

b. Partitioning the restrictor into the subset that satisfies the scope, and the subset that doesn’t
   (e.g., partitioning UMass grad students into the ones that like karaoke and the ones that don’t)

- It seems, though, that one can issue a ‘counterexample’ challenge like (23aii) without there being any independent, contextually salient subset of the restrictor that violates the generic (other than the trivial, disallowed ones in (25a,b))

  o That is, you can say (23aii) without Joe being a member of some salient subset of UMass students S such that “S likes karaoke” is false…

    ▪ It’s simply enough that Joe doesn’t like karaoke….

Greenberg’s (2003) Conclusion:

Dialogs like (23a) show that generics are more like universal statements (26a) than statements with “usually”

a. (i)  Person A:  UMass grad students always love karaoke.
   (ii) Person B:  What about Joe? He’s a UMass grad student, and he hates it.

- Consequently, we’re going to need a much more complex and nuanced theory of how generics allow for ‘counterexamples’ (i.e., contrasts like the following):

b. (i)  Dogs bark.  (True)  (ii)  Dogs always bark.  (False)