

8.1.s. Summary

8.1.1. Generalizations do not make claims about quantity in any very explicit way, and we are now considering sentences that do. We will refer to the claims they make as **existential claims** or **claims of exemplification**. The **unrestricted existential quantifier** says that the predicate it applies to is **exemplified**—i.e., it has a **non-empty** extension. The **restricted existential quantifier** says that its quantified predicate is exemplified within the extension of its restricting predicate—i.e., the intersection of their extensions is non-empty. Both use the sign \exists (there exists) and we will refer to sentences formed with either as **existentials**. An unrestricted existential can be restated as a restricted existential whose restricting predicate is universal, and a restricted existential can be restated by applying an unrestricted existential to a predicate formed from the **restricting** and **quantified predicates** using conjunction (note: *not* using the conditional). Although English existentials can appear with either singular or plural quantifier phrases, this does not seem to affect the proposition expressed and the difference will not be captured in our analyses.

8.1.2. To deny a generalization is to claim the existence of a counterexample, and this suggests that the negation of a universal should be equivalent to an existential with a negative quantified predicate. This is so, and the negation of an existential is also equivalent to a negative generalization. We extend the traditional term **obversion** to both principles.

8.1.3. Another traditional principle is **conversion**, which tells us that we can interchange the restricting and quantified predicates of a restricted existential. This suggests that we could regard the single predicate in an unrestricted existential as either a **restricting** or a **quantified predicate**. That provides some explanation of English **there-is existentials**, which can have class indicators without quantified predicates. A rule of thumb for handling the simpler examples of such sentences is to replace *there* by *something* (or *someone*).

8.1.4. English sentences that claim the existence of the same sort of example can vary widely in the way the properties this example is said to have are distributed between the quantifier phrase and quantified predicate. The logical equivalence of different ways of distributing this information explains why the difference between restrictive and non-restrictive relative clauses does not matter when they modify the class indicator of an existential quantifier phrase. Other forms of equivalent restatement are the result of **confining** the scope of an existential to a formula in which all its bound variables appear. Confinement principles sometimes require a change between universal and existential quantifiers, and this explains why *any* can sometimes be treated either by a universal with wide scope or an existential with narrow scope.

8.1.5. Any existential sentence—indeed **any sentences that entail an existential**—can be said to involve an **existential commitment**, but the examples whose existence make existentials true can be any **referential values**, even the nil value. This may seem to conflict with the **substantive**

existential commitment, to objects rather than mere referential values, that many find in English existentials. This commitment might be traced to the logical properties of non-logical vocabulary; but, if that account is rejected, it is possible to introduce a logical predicate that carries the commitment (through a stipulation that its extension includes only non-nil values).

8.1.x. Exercise questions

- Analyze the sentences below in as much detail as possible. For the most practice using existentials, avoid using universals in your analyses.
 - Someone is missing.*
 - No one found the loot.*
 - There is a tavern in the town.*
 - Some winner of the lottery has not come forward.*
 - Tod watched a dance troop from India.*
 - The search turned up no car fitting the description.*
 - There is a button behind you that will open the door.*
 - If Tom doesn't find anything, he'll be disappointed.*
 - Al went to a restaurant no one he knew had heard of.*
- Synthesize idiomatic English sentences that express the propositions associated with the logical forms below by the intensional interpretations that follow them.

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|----|---------------------------------------|---|
| a. | $\exists x Bx$ | [B: λx (x <i>is burning</i>)] |
| b. | $(\exists x: Px) Axd$ | [A: λxy (x <i>is at</i> y); P: λx (x <i>is a person</i>); d: <i>the door</i>] |
| c. | $(\exists x: Fx) Rtx$ | [F: λx (x <i>is a fire</i>); R: λxy (x <i>reported</i> y); t: <i>Tamara</i>] |
| d. | $\neg (\exists x: Px \wedge Nxr) Kxs$ | [K: λxy (x <i>knew</i> y); N: λxy (x <i>was in</i> y); r: <i>the room</i> ; s: <i>Sam</i>] |
| e. | $(\exists x: Vx) (Tvx \wedge Sx)$ | [S: λx (x <i>shattered</i>); T: λxy (x <i>touched</i> y); V: λx (x <i>is a vase</i>); v: <i>Vic</i>] |
| f. | $\exists x (Hx \wedge Ljx)$ | [H: λx (x <i>had happened</i>); L: λxy (x <i>left to deal with</i> y); j: <i>Jane</i>] |
| g. | $\exists x (Fax \wedge Rbx)$ | [F: λxy (x <i>forgot</i> y); R: λxy (x <i>remembered</i> y); a: <i>Ann</i> ; b: <i>Bill</i>] |
| h. | $(\exists x: Fx \wedge Hx) Dix$ | [D: λxy (x <i>detected</i> y); F: λx (x <i>was fast</i>); H: λx (x <i>was heavy</i>); i: <i>the instrument</i>] |

Homework assigned Mon 11/28 and due Wed 11/30

Analyze the following, and restate it with unrestricted quantifiers. Avoid using universal quantifiers—you should end up with 3 existential quantifiers.

There was a leak in a pipe, but Al didn't see anything