

## 8.2.x. Exercise questions

1. Analyze the following in as much detail as possible. Since it is difficult to completely avoid ambiguity in English sentences that both generalize and make existential claims, alternative non-equivalent analyses are possible in some cases. You should choose an analysis that captures the most likely interpretation (or one of the most likely ones). The answers will represent my own judgment about this.
  - a. *Everyone has seen a bear.*
  - b. *Everyone was talking about a certain movie.*
  - c. *A capital was chosen by each state.*
  - d. *There is a capital that was chosen by each state.*
  - e. *Someone who no reporter knew leaked the information.*
  - f. *A head of a horse is the head of a mammal.*
  - g. *Everyone who has seen a rainbow has seen a rainstorm.*
  - h. *Every child was given a toy by each Santa.*
  - i. *There is a toy that was given to every child by each Santa.*
  
2. Synthesize idiomatic English sentences that express the propositions associated with the logical forms below by the intensional interpretations that are provided for each group.
  - a.  $\forall x \exists y Dxy$  [D:  $\lambda xy$  (x *depends on* y)]
  - b.  $\exists x \forall y Dxy$
  - c.  $\forall x \exists y Dyx$
  - d.  $\exists x \forall y Dyx$

---

  - e.  $(\forall x: Px \wedge Hx) (\exists y: Py) Axy$  [A:  $\lambda xy$  (x *admires* y);
  - f.  $(\exists y: Py) (\forall x: Px \wedge Hx) Axy$  H:  $\lambda x$  (x *is humble*);
  - g.  $\neg (\forall x: Px \wedge (\exists y: Py) Axy) Hx$  P:  $\lambda x$  (x *is a person*)]

---

  - h.  $\neg (\exists x: Px) (\forall y: Py \wedge Syx) Sxy$  [P:  $\lambda x$  (x *is a person*);  
S:  $\lambda xy$  (x *has seen* y)]

---

  - i.  $\neg (\exists x: Px \wedge (\forall y: \neg (Py \wedge Syx)) \neg Sxy) Ex$   
[E:  $\lambda x$  (x *is an extrovert*); P:  $\lambda x$  (x *is a person*); S:  $\lambda xy$  (x *has spoken to* y)]