

### 5.7.1. Translation Problems: Existentials

**A. Translate** each of the following into the formal language of Chapter Five.

1a. There are no flying pigs.

(**G**: is a pig; **H**: flies ('is flying'))

1b. Flying pigs don't exist.

(**G**: is a pig; **H**: flies ('is flying'))

2a. There are no black cats.

(**G**: is black; **H**: is a cat)

2b. There are non-black cats.

(**G**: is black; **H**: is a cat)

3. If there are angels, then some prayers are effective.

(**G**: is an angel; **H**: is a prayer; **I**: is effective)

4a. There aren't any clients in the conference room.

(**G**: is a client; **H**: is in the conference room)

4b. No clients are in the conference room.

(**G**: is a client; **H**: is in the conference room)

5. If William James is a philosopher, then some philosophers are not Greek.

(**A**: William James; **G**: is a philosopher; **H**: is Greek)

6a. Some empiricists believe in God, and some don't.

(**G**: is an empiricist; **H**: believes in God)

6b. There are empiricists who believe in God, but also those who don't.

(**G**: is an empiricist; **H**: believes in God)

7a. Nothing that regulates voltage lacks metal parts.

(**G**: regulates voltage /is a voltage regulator; **H**: lacks metal parts)

7b. No voltage regulator lacks metal parts.

(**G**: regulates voltage /is a voltage regulator; **H**: lacks metal parts)

8a. Nothing possesses mass without exerting gravitational force.

(**G**: possesses mass; **H**: exerts gravitational force)

8b. Nothing possesses mass unless it exerts gravitational force.

(**G**: possesses mass; **H**: exerts gravitational force)

(Tricky! Hint: does (8b) mean the same as (8a)?)

**B.** Each of the following argument should seem intuitively valid or intuitively invalid. **Translate** each argument into the formal language, and then **try to construct** a model that's a **validity counterexample** for that argument, or else to explain why there couldn't be a validity counterexample for that argument.

(1) 1. Some birds are not hawks.

2. No hawks are lizards.

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∴ Some birds are lizards.

(2) 1. Some animals are birds.

2. No birds are mammals.

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∴ Some animals are not mammals.

(3) 1. There are no flying pigs.

2. No pigs are birds.

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∴ There are no flying birds.

- (4) 1. There are non-flying birds.  
2. There are non-flying pigs.
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∴ Some pigs are birds.