

Translation

- Now that we have the elements of a formal language, we need to map them onto a natural language, such as English, so that we can use the formal language to do what it was designed to do, represent the underlying structure of real arguments.

Translation Scheme

- The first part of translating English sentences in to our formal language involves construction of a translation scheme , i.e. a pairing of sentence letters with sentences in the natural language.
- Make sure that the natural language sentences you pair with sentence letters are logically simple, i.e. they don't contain any of the words corresponding to any of our sentential connectives (\sim , $\&$, \vee , \rightarrow , \leftrightarrow)

Negations

- If we let B translate the sentence "Bob is happy," then a few stylistic variants of the logical form $\sim B$ would include:
 - Bob is *not* happy.
 - Bob is *unhappy*.
 - *It is not true that* Bob is happy.
 - *It is not the case that* Bob is happy.
 - *It is false that* Bob is happy.
 - Bob *fails to be* happy.

Conjunctions

- If we let D translate the sentence "Descartes was a rationalist," and L translate the sentence "Locke was an empiricist," then a few stylistic variants of the logical form (D & L) would include:
- Descartes was a rationalist *and* Locke was an empiricist.
- Descartes was a rationalist, *but* Locke was an empiricist.
- Descartes was a rationalist; *however*, Locke was an empiricist.
- *While* Descartes was a rationalist, Locke was an empiricist.
- *Although* Descartes was a rationalist, Locke was an empiricist.
- Descartes was a rationalist, *yet* Locke was an empiricist.
- Descartes was a rationalist; *nevertheless*, Locke was an empiricist.
- Descartes was a rationalist *even though* Locke was an empiricist.
- Descartes was a rationalist *though* Locke was an empiricist.
- Descartes was a rationalist; *also* Locke was an empiricist

Disjunctions

- Remember that the way we have defined the V is such that it's use is inclusive! So, if we were to let C translate the sentence "Carol attends college," and J translate the sentence "Carol gets a job," then the following are a few stylistic variants of the logical form (C V J):
 - Carol attends college *and/or* she gets a job.
 - Carol attends college *or* she gets a job.
 - *Either* Carol attends college *or* she gets a job.
 - Carol attends college *unless* she gets a job.*
- *-"Unless" is usually translated as "if not." Thus, in the fourth example above, we could equally translate the compound sentence as : ($\sim J \rightarrow C$).

Conditionals

- If we let R translate the sentence "It rains," and C translate the sentence "there are clouds in the sky," then some common stylistic variants of the logical form ($R \rightarrow C$) are:
- *If* it rains, there are clouds in the sky.
- *If* it rains, *then* there are clouds in the sky.
- There are clouds in the sky, *if* it rains.
- *Given that* it rains, there are clouds in the sky.
- There are clouds in the sky, *given that* it rains.
- *Assuming that* it rains, there are clouds in the sky.
- There are clouds in the sky, *provided that* it rains.
- *On the condition that* it rains, there are clouds in the sky.
- It raining *is a sufficient condition that* there are clouds in the sky.
- Clouds in the sky are *a necessary condition for* it raining.

Biconditionals

- If we let N translate the sentence "Norm is a bachelor," and M translate the sentence "Norm is an unmarried male," then some common stylistic variants of the logical form $(N \leftrightarrow M)$ are:
- Norm is a bachelor *if and only if* he is an unmarried male.
- Norm is a bachelor *is equivalent to* Norm is an unmarried male.
- Norm is a bachelor *just in case* he is an unmarried male.
- Norm is an unmarried male, which *is both sufficient and necessary* to his being a bachelor.
