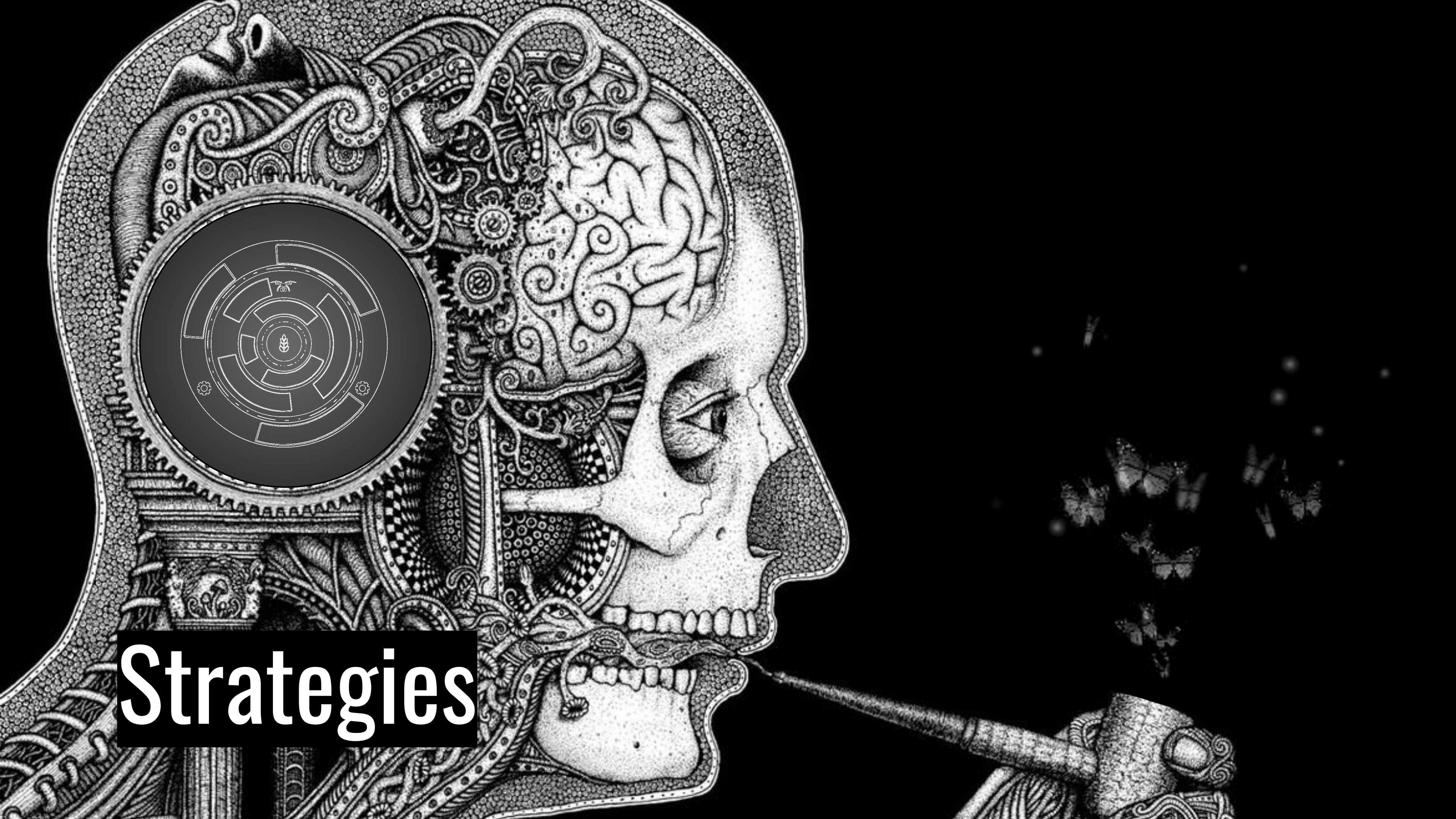
Quantifier Rules (Pt. II)


1
2
4
5
6

Strategies



When the current goal sentence can be obtained by using **non-subderivational** rules, or a series of such rules, do so.

I.e., Use &I, &E, ∨I, ⊃E, ≡E, ∀I, ∀E, and ∃I when you can.

When the goal to be derived is an existentially quantified sentence make a **substitution instance** of that quantified sentence a subgoal, with the intent of applying Existential Introduction to that subgoal to obtain the goal.

E.g., If your goal is (∃x)(Fx & Gx), then your subgoal should be something like Fa & Ga, since you are now one move away from your goal derivation.

Diddo when the goal to be derived is a universally quantified sentence.

But be careful to choose an instantiating constant that does not occur in the goal sentence and does not occur in the open assumptions.

When one of the accessible assumptions is an existentially quantified sentence, consider using Existential Elimination.

I.e., ∃ E is a **powerful** tool.

For more tips, see The Logic Book, p. 492-3.

Another thing to watch out for

Nested ∃E

1	$(\exists x)(\exists y)Fxy$	As.
2	$(\forall x)[(\exists z)Fxz \supset (\forall y)Fxy]$	As.
3	$(\exists y)Fay$	As./$\exists E$
4	Fab	As./$\exists E$
5	$(\exists z)Faz \supset (\forall y)Fay$	2 $\forall E$
6	$(\exists z)Faz$	4 $\exists I$
7	$(\forall y)Fay$	5, 6 $\supset E$
8	Fac	7 $\forall E$
9	$(\forall w)Faw$	8 $\forall I$
10	$(\exists x)(\forall w)Fxw$	9 $\exists I$
11	$(\exists x)(\forall w)Fxw$	3, 4-10 $\exists E$
12	$(\exists x)(\forall w)Fxw$	1, 3-11 $\exists E$