Aristotle on the Syllogism (*Prior Analytics*, Book I)

According to Aristotle a syllogism is a"discourse in which certain things being proposed, something other than them results of necessity ". Syllogisms have at least two premises. Assuming just two, one term (the "middle term") occurs in both premises. Depending on how the middle term is distributed, the syllogism may be in one of three "figures". We'll look at the first figure, where the middle term ("G" below) is once predicate and once subject. The four "perfect" syllogism are below. The terminology is medieval, correponding to a mnemonic verse: Barbara, Celarent, ... that named nineteen valid categorical syllogisms.

BARBARA: F belongs to all G and G belongs to all H, so F belongs to all H.
All Gs are Fs and all Hs are Gs, so all Hs are Fs.
$\wedge x(Gx \rightarrow Fx), \wedge x(Hx \rightarrow Gx) /\therefore \wedge x(Hx \rightarrow Fx)$

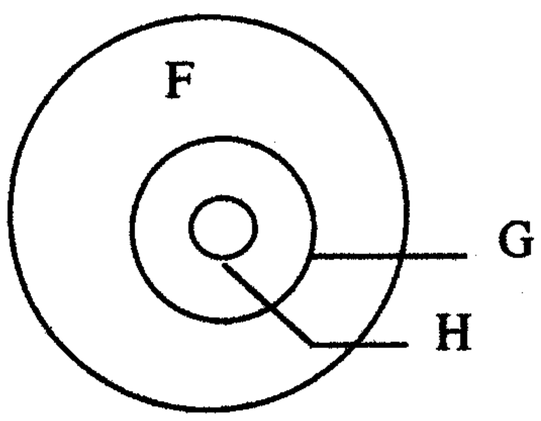
CELARENT: F belongs to no G and G to all H, so F belongs to no H.
No Gs are Fs and all Hs are Gs, so no Hs are Fs.
$\wedge x(Gx \rightarrow \sim Fx), \wedge x(Hx \rightarrow Gx) /\therefore \wedge x(Hx \rightarrow \sim Fx)$

DARII: F belongs to all G and G to some H, so F belongs to some H.
All Gs are Fs and some Hs are Gs, so some Hs are Fs.
$\wedge x(Gx \rightarrow Fx), \vee x(Hx \wedge Gx) /\therefore \vee x(Hx \wedge Fx)$

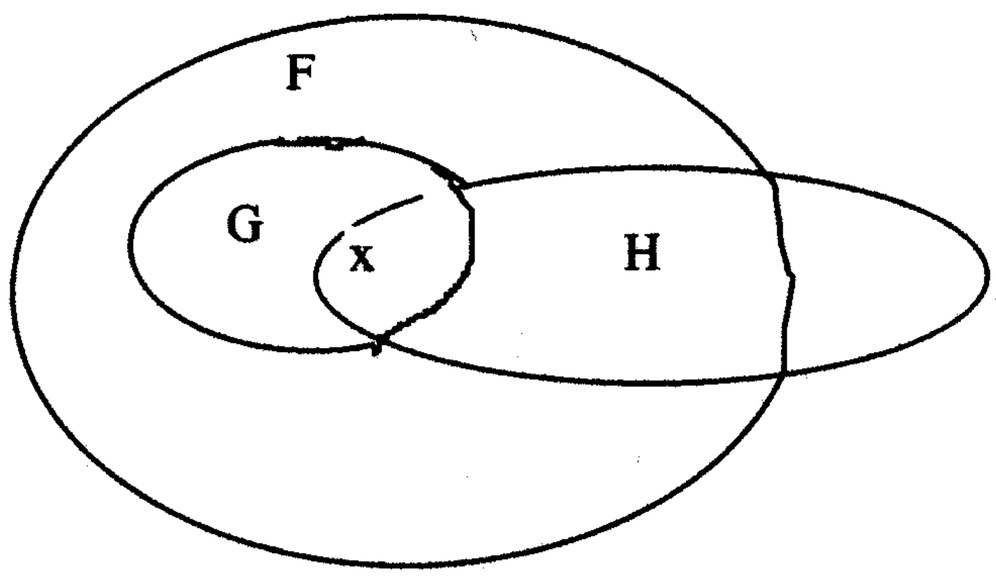
FERIO: F belongs to no G and G to some H, so F does not belong to some H.
No Gs are Fs and some Hs are Gs, so some Hs are not Fs.
$\wedge x(Gx \rightarrow \sim Fx), \vee x(Hx \wedge Gx) /\therefore \vee x(Hx \wedge \sim Fx)$

Venn/Euler Diagrams

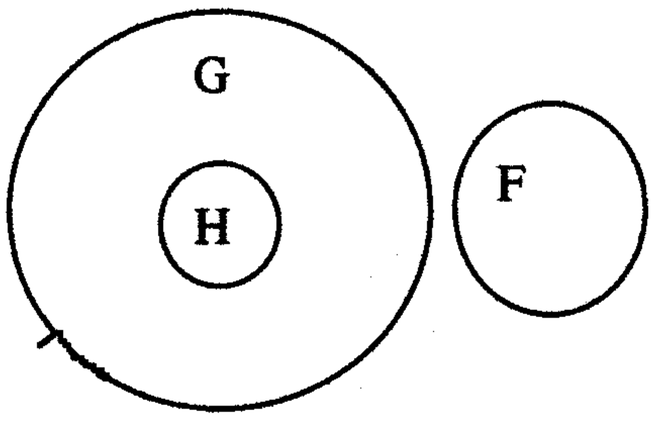
BARBERA



DARII



CELARENT



FERIO