Book 5: Chapter 2

Problems in Syllogisms.

Section 1. Introductory.

When the Terms of a Proposition are represented by words, it is said to be 'concrete'; when by letters, 'abstract.'

To translate a Proposition from concrete into abstract form, we fix on a Univ., and regard each Term as a Species of it, and we choose a letter to represent its Differentia.

[For example, suppose we wish to translate "Some soldiers are brave" into abstract form. We may take "men" as Univ., and regard "soldiers" and "brave men" as Species of the Genus "men"; and we may choose x to represent the peculiar Attribute (say "military") of "soldiers," and y to represent "brave." Then the Proposition may be written "Some military men are brave men"; i.e. "Some x-men are y-men"; i.e. (omitting "men" as explained at p. 26) "Some x are y." In practice, we should merely say "Let Univ. be "men", x = soldiers y = brave", and at once translate "Some soldiers are brave" into "Some x are y."]

The Problems we shall have to solve are of two kinds, viz.

(1) "Given a Pair of Propositions of Relation, which contain between them a pair of codivisional Classes, and which are proposed as Premisses: to ascertain what Conclusion, of any, is consequent from them."

(2) "Given a Trio of Propositions of Relation, of which every two contain a pair of codivisional Classes, and which are proposed as a Syllogism: to ascertain whether the pro- posed Conclusion is consequent from the proposed Premisses, and, if so, whether it is complete."

These Problems we will discuss separately.

Section 2. Given a Pair of Propositions of Relation, which contain between them a pair of codivisional Classes, and which are proposed as Premisses:

to ascertain what Conclusion, if any is consequent from them.

The Rules, for doing this, are as follows:–

(1) Determine the 'Universe of Discourse'.
(2) Construct a Dictionay, making m and m (or m and m') represent the pair of codivisional Classes, and x (or x') and y (or y') the other two.
(3) Translate the proposed Premisses into abstract form._(4) Represent them, together, on a Triliteral Diagram.
(5) Ascertain what Proposition, if any, in terms of x and y, x is also represented on it.
(6) Translate this into concrete form.

It is evident that, if the proposed Premisses were true, this other Proposition would also be true. Hence it is a Conclusion consequent from the proposed Premisses.

[Let us work some examples.

(1) "No son of mine is dishonest; People always treat an honest man with respect".

Taking "men" as Univ., we may write these as follows:–

"No sons of mine are dishonest men; All honest men are men treated with respect".

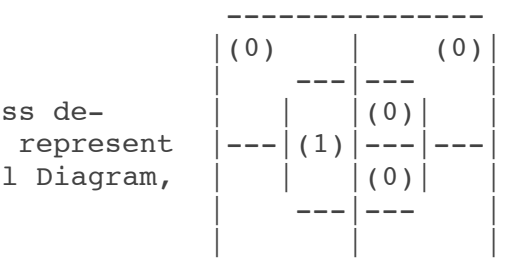
We can now contrust out Dictionary, viz. m = honest; x = sons of mine; y = treated with respect.

(Note that the expression "x = sons of mine" is an abbre- viated form of "x = the Differentia of 'sons of mine', when regarded as a Species of 'men'".)

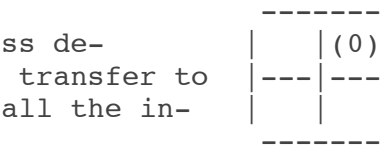
The next thing is to translate the proposed Premisses into abstract form, as follows:–

"No x are m'; All m are y".

Next, by the process described at p. 50, we represent these on a Triliteral Diagram, thus:---



Next, by the process described at p. 53, we transfer to a Biliteral Diagram all the information we can.



The result we read as "No x are y'" or as "No y' are x," whichever we prefer. So we refer to our Dictionary, to see which will look best; and we choose

"No x are y'",

which, translated into concrete form, is

"No son of mine fails to be treated with respect.

(2) "All cats understand French Some chickens are cats".

Taking "creatures" as Univ., we write these as follows:–

"All cats are creatures understanding French; Some chickens are cats".

We can now construct our Dictionary, viz. m = cats; x = understanding French; y = chickens.

The proposed Premisses, translated into abstract form, are

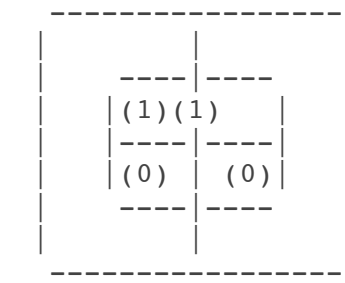
"All m are x; Some y are m".

In order to represent these on a Triliteral Diagram, we break up the first into the two Propositions to which it is equivalent, and thus get the three Propositions

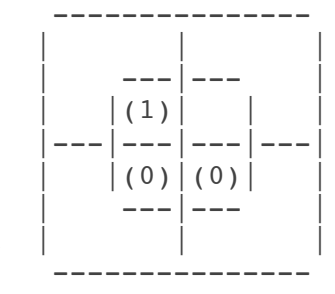
(1) "Some m are x;_(2) No m are x';_(3) Some y are m".

The Rule, given at p. 50, would make us take these in the order 2, 1, 3.

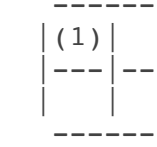
This, however, woul produce the result



So it would be better to take them in the order 2, 3, 1. Nos. (2) and (3) give us the result here shown; and now we need not trouble about No. (1), as the Proposition "Some m are x" is already represented on the Diagram.



Transferring our information to a Biliteral Diagram, we get



This result we can read either as “Some x are y” or “Some y are x”.

After consulting our Dictionary, we choose

“Some y are x”,

which, translated into concrete form, is

“Some chickens understand French.”

(3) “All diligent students are successful; All ignorant students are successful”.

Let Univ. be “students”; m = successful; x = diligent; y = ignorant.

These Premisses, in abstract form, are

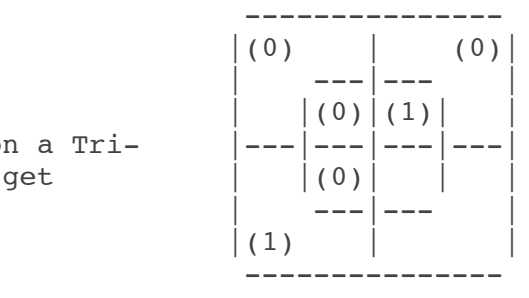
“All x are m; All y are m’ ”.

These. broken up, give us the four Propositions

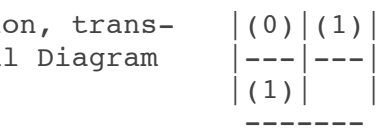
(1) “Some x are m;
(2) No x are m’;
(3) Some y are m’;
(4) No y are m”.

which we will take in the order 2, 4, 1, 3.

Representing these on a Tri-literal Diagram, we get



And this information, transferred to a Biliteral Diagram is.



Here we get two Conclusions, viz.

“All x are y’; All y are x’.”

And these, translated into concrete form, are

“All diligent students are (not-ignorant, i.e.) learned;_All ignorant students are (not-diligent, i.e.) idle”.

(4) “Of the prisoners who were put on their trial at the last Assizes, all, against whom the verdict ‘guilty’ was returned, were sentenced to imprisonment; Some, who were sentenced to imprisonment, were also sentenced to hard labour”.

Let Univ. be “the prisoners who were put on their trial at the last Assizes”; m = who were sentenced to imprisonment; x = against whom the verdict ‘duilty’ was returned; y = who were sentenced to hard labour.

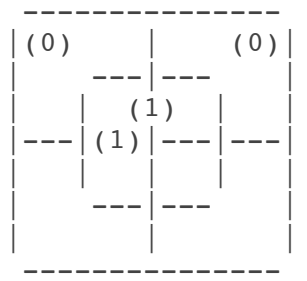
The Premisses, translated into abstract form, are

"All x are m;
Some m are y".

Breaking up the first, we get the three

(1) "Some x are m;
(2) No x are m';
(3) Some m are y".

Representing these, in the order 2, 1, 3, on a Triliteral Diagram, we get



Here we get no Conclusion at all.

You would very likely have guessed, if you had seen only the Premisses, that the Conclusion would be

"Some, against whom the verdict 'guilty' was returned, were sentenced to hard labour".

But this Conclusion is not even true, with regard to the Assizes I have here invented.

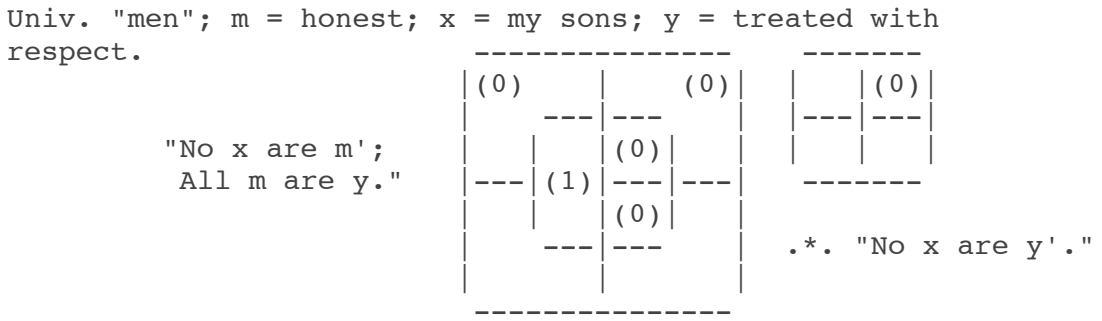
"Not true!" you exclaim. "Then who were they, who were sentenced to imprisonment and were also sentenced to hard labour? They must have had the verdict 'guilty' returned against them, or how could they be sentenced?"

Well, it happened like this, you see. They were three ruffian, who had committed highway-robbery. When they were put on their trial, they pleaded 'guilty'. So no verdict was returned at all; and they were sentenced at once.]

I will no work out, in their briefest form, as models for the Reader to

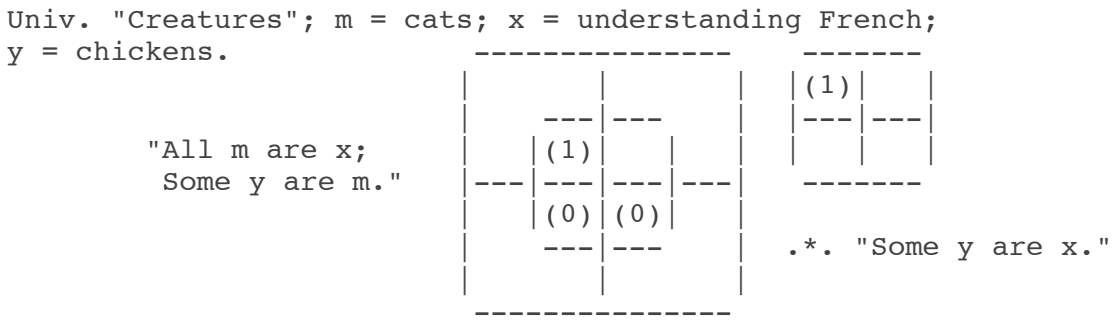
imitate in working examples, the above four concrete Problems.

(1) “No son of mine is dishonest;_People always treat an honest man with respect.”



i.e. “No son of mine ever fails to be treated with respect.”

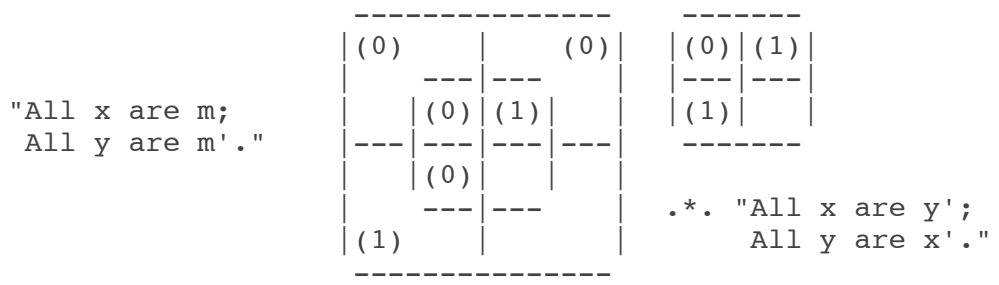
(2) “All cats understand French;_Some chickens are cats”.



i.e. “Some chickens understand French.”

(3) “All diligent students are successful;
All ignorant students are unsuccessful”.

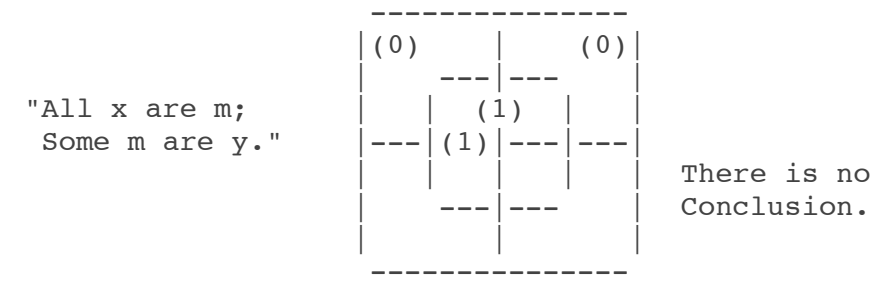
Univ. “students”; m = successful; x = diligent; y = ignorant.



i.e. All diligent students are learned; and all ignorant stu- dents are idle".

(4) "Of the prisoners who were put on their trial at the last Assizes, all, against whom the verdict 'guilty' was returned, were sentenced to imprisonment; Some, who were sentenced to imprisonment, were also sentenced to hard labour".

Univ. "prisoners who were put on their trial at the last Assizes", m = sentenced to imprisonment; x = against whom the verdict 'guilty' was returned; y = sentenced to hard labour.



Section 3. Given a Trio of Propositions of Relation, of which every two contain a Pair of codivisional Classes, and which are proposed as a Syllogism; to ascer- tain whether the proposed Conclusion is consequent form the proposed Premisses, and, if so, whether it is complete.

The Rules, for doing this, are as follows:–

(1) Take the proposed Premisses, and ascertain, by the pro- cess described at p. 60, what Conclusion, if any, is con- sequent from them.
(2) If there be no Conclusion, say so.
(3) If there be a Conclusion, compare it with the proposed Conclusion, and pronounce accordingly.

I will now work out, in their briefest form, as models for the Reader to imitate in working examples, six Problems.

(1). "All soldiers are strong;
All soldiers are brave.
Some strong men are brave."

Univ. “men”; m = soldiers; x = strong; y = brave

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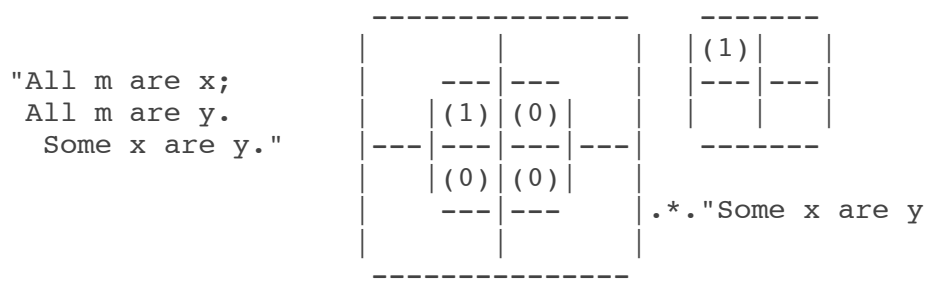
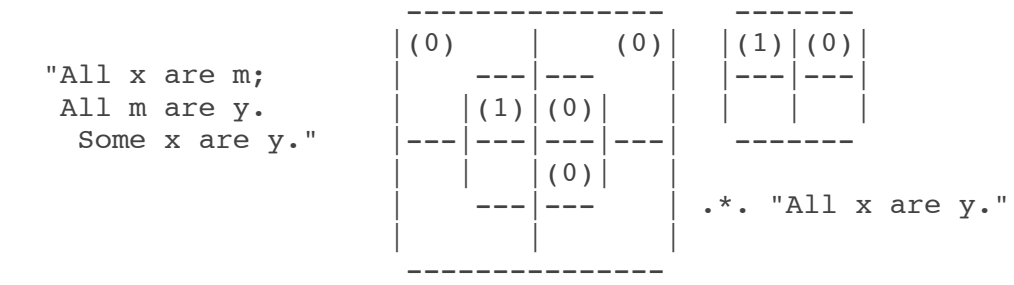


Hence proposed Conclusion is right.

(2) “I admire these pictures; When I admire anything I wish to examine it thoroughly. I wish to examine some of these pictures tho- roughly.”

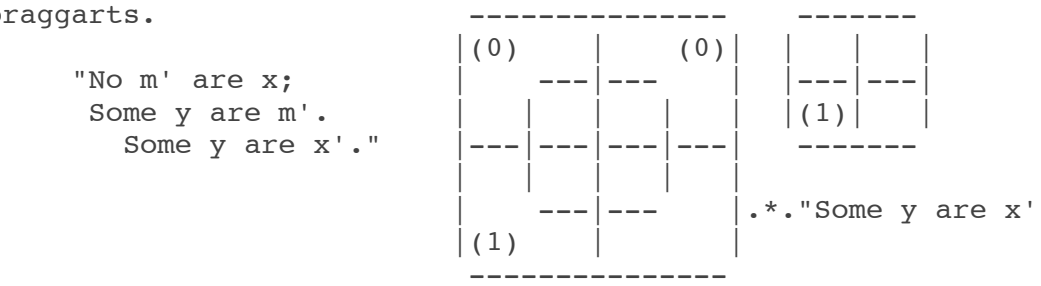
Univ. “things”; m = admired by me; x = these pictures; y = things which I wish to examine thoroughly.



Hence proposed Conclusion is incomplete, the complete one being “I wish to examine all these pictures thoroughly”

(3) “None but the brave deserve the fair;_Some braggarts are cowards._Some braggarts do not deserve the fair.”

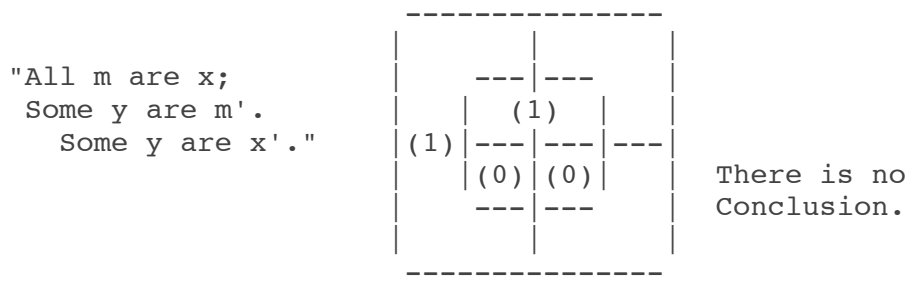
Univ. "persons"; m = brave; x = deserving of the fair; y = braggarts.



Hence proposed Conclusion is right.

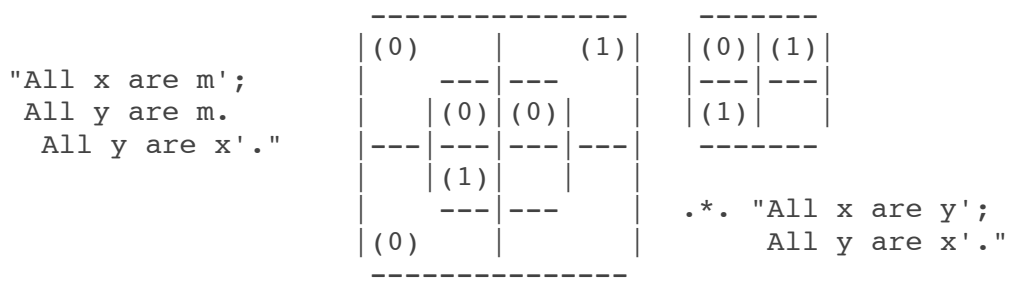
(4) “All soldiers can march;
Some babies are not soldiers.
Some babies cannot march”.

Univ. “persons”; m = soldiers; x = able to march; y = babies.



(5) “All selfish men are unpopular;
All obliging men are popular.
All obliging men are unselfish”.

Univ. “men”; m = popular; x = selfish; y = obliging.

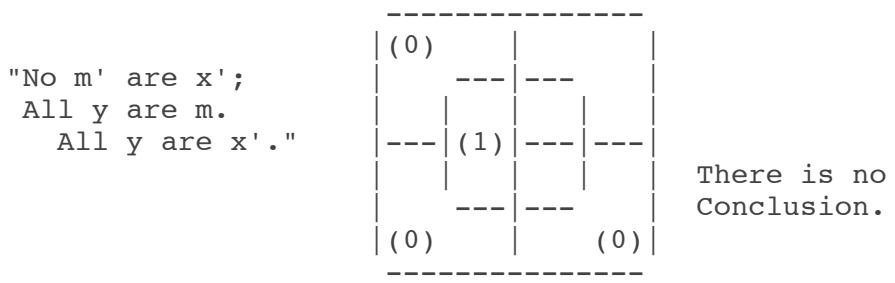


Hence proposed Conclusion is incomplete, the complete one containing, in addition, “All selfish men are disobliging”.

(6) “No one, who means to go by the train and cannot get a conveyance, and has not enough time to walk to the station, can do without running; This party of tourists mean to go by the train and cannot get a conveyance, but they have plenty of time to walk to the station. This party of tourists need not run.”

Univ. “persons meaning to go by the train, and unable to get a conveyance”; m = having enough time to walk to the station; x = needing

to run; y = these tourists.



[Here is another opportunity, gentle Reader, for playing a trick on your innocent friend. Put the proposed Syllogisim before him, and ask him what he thinks of the Conclusion.

He will reply “Why, it’s perfectly correct, of course! And if your precious Logic-book tells you it isn;t, don’t believe it! You don’t mean to tell me those tourists need to run? If I were one of them, and knew the Premisses to be true, I should be quite clear that I needn’t run—-and I should walk!”

And you will reply “But suppose there was a mad bull behind you?”

And then your innocent friend will say “Hum! Ha! I must think that over a bit!”

You may then explain to him, as a convenient test of the soundness of a Syllogism, that, if circumstances can be invented which, without interfering with the truth of the Premisses, would make the Conclusion false, the Syllogism must be unsound.]