1 Summary

1. When Ibn Sīnā says that the subject of a science is \( S \), he means that the science establishes propositions of the form

\[
\text{If } x_1, \ldots, x_n \text{ are } Ss, \text{ then } \phi(x_1, \ldots, x_n).
\]

This can be read off from \textit{Najāt} p. 136 (Daneshpazuh) or from various more diffuse statements in \textit{Burhān}. Ibn Sīnā describes the contents of \( \phi \) as \( al\text{wāl} \) of the subject. This distinction between the subject and its \( al\text{wāl} \) is very basic in Ibn Sīnā’s account of sciences. His definitions of the subjects of sciences often contain a further clause beginning \textit{min haytu}. These clauses refine the account above in ways that we will discuss below, but I don’t think they contradict it.

2. Already we can compare 1 with the examples that Ibn Sīnā himself gives of \( masā’il \) of logic, and with what he says when he is actually doing logic. From these we can make a first guess at what the subject of logic ought to be. A typical proposition established in logic takes the form

\[
\text{If } x_1, \ldots, x_n \text{ are ideas (ašyā’, ma'ānt) then their combination in such-and-such a way yields (or doesn’t yield) a valid definition (or syllogism).}
\]

So prima facie the subject of logic should be ‘ideas’, and the \( al\text{wāl} \) should be about how these ideas can be combined so as to form definitions and inferences. Of course this is only a first stab, and we need to compare with what Ibn Sīnā himself says when he defines the subject of logic.
3. A comparison of 2 with Ibn Sīnā’s definition of the subject of logic in *Mašriqiyyān* p. 10 (Cairo 1910 edition) yields a perfect fit. He says that the subject of logic is *ma’ānt*, with a *min ḥayṭu* clause that clearly comes very close to the *ahwāl* just described.

4. There seems to be a discrepancy with the definition of the subject of logic in *Ilāhiyyāt* i.2, where he speaks of ‘secondary intellected meanings’. This has been read as restricting to a particular class of meanings, for example ‘being a subject or being a predicate, being a premise or being a syllogism’ (Hasse, Stanford Encyclopedia). That would be puzzling, because the definition in *Mašriqiyyān* was very probably written within a year or two of that in *Ilāhiyyāt*, and the notes in *Tā’līqāt*, which repeat the phrase from *Ilāhiyyāt*, were very probably written soon afterwards. So it’s unlikely that what Ibn Sīnā intends in *Ilāhiyyāt* is any different from what he intends in *Mašriqiyyān*. In fact the addition of ‘intellected’ (*maqūl*) probably means only that the ideas have to be sufficiently abstracted and well-defined before it’s appropriate to apply logic to them. There remains the question whether ‘secondary’ is a restriction to a particular group of meanings, and if so, which group.

5. Ibn Sīnā says in his definition at *Ilāhiyyāt* i.2 that he is referring back to an earlier discussion, which is presumably that in *Mašriqiyyān* i.2–4. Also in *Maqūlāt* he mentions the subject of logic and refers his reader back to the discussion of ‘the two *wujūds*’ (*Maqūlāt* 4.15f). This is an unusually precise back-reference in Ibn Sīnā, and it takes us straight to *Madkal* i.2 p. 15. There Ibn Sīnā describes two *wujūds* that an idea can have, and he does at one point refer to one of these as ‘the second’. So just from the text, one might guess that by ‘secondary meaning’ in *Ilāhiyyāt* i.2 he means a meaning that is in the second *wujūd*. We note that this seems not to be a restriction on the meaning itself; it’s a restriction on how the meaning is being used. Several writers have read the treatment of the second *wujūd* in a different way. For example Ibn Sīnā says at *Madkal* 15.8f:

> When we want to think about ideas and know them, it’s a necessity that we have to introduce them by conceptualisation, so that as a matter of necessity they get those *ahwāl* that attach to them in conceptualisation.

These writers (for example Hasse above) have listed under ‘the subject of logic’ some of the properties that Ibn Sīnā says attach to ideas in conceptualisation, for example ‘being a predicate’. But here Ibn Sīnā says that these
things are *ahwāl*; so they are exactly not the subject. The subject ideas are brought to a position where they can have these properties by being taken in second *wujūd*.

6. Again one should appeal to the fact that the definitions of the subject of logic in *Madkāl, Ilāhiyyāt, Taʾliqāt* and *Mašriqīyyān* were all written around the same time and should be saying the same thing. So the claim that logic puts the meanings into the second *wujūd* — if this is what Ibn Sīnā is saying — should tally with something in the definition of logic in *Mašriqīyyān*. Here is *Madkāl* explaining the second *wujūd*:

considering it in terms of its being conceptualised, so that accidents attach to it which belong specifically to its being conceptualised, for example its being a subject or a predicate, or being predicated of ‘some’ or of ‘all’, or being predicated as essence or as accident, and other things that you will learn about.

And here is what should be the parallel passage of *Mašriqīyyān*:

meanings in terms of their being subject to composition . . .

In both cases Ibn Sīnā is describing the kinds of composition that occur in logic — ‘essence or accident’ must refer here to modal logic. The parallel discussion in *Taʾliqāt* has a similar list with ‘modalities’ in place of ‘as essence or accident’.

7. What should worry us is Ibn Sīnā’s implication that in order to say certain kinds of thing about an entity, you have to massage the entity itself. This seems to be an implication of what he says about taking ideas in second *wujūd*, and it certainly looks as if he is pressing the point home when he distinguishes between primary and secondary meanings. It turns up again in the *Mašriqīyyān* definition of the subject of logic, where the *min hayṭu* reads like a qualification of the meanings rather than of the *ahwāl*. Ibn Sīnā raises the issue directly in some places where he asks whether a *min hayṭu* clause can be read as qualifying the subject rather than the predicate. (And Ibn Ruḍ waves the question aside with a comment that it’s obvious the clause goes just with the predicate. There are several similar remarks in Jonathan Barnes. These remarks are indications that Ibn Sīnā is striking out on his own here.)

8. A typical example (mine, not Ibn Sīnā’s):

Zayd is subject in “Zayd hit ʾAmr”.
The question is whether we can reword this as

Zayd in “Zayd hit ‘Amr” is subject.

Is there such an entity as ‘Zayd in “Zayd hit ‘Amr” ’? Well yes there is, it’s the occurrence of ‘Zayd’ in “Zayd hit ‘Amr”. It’s well recognised in both logic and linguistics that we need to be able to talk not just about words, but also about occurrences of those words in particular contexts. Ibn Sinā raises a number of formally similar questions, for example whether the sentence

Zayd won’t be singing tomorrow.

can be paraphrased as

Zayd tomorrow won’t be singing.

where the subject is ‘Zayd tomorrow’. Barnes rejects such a move; but I’ll bet that even Barnes has sometimes talked about ‘the views of the early Wittgenstein’, which uses the same device.

9. In Madkāl and Ilāhiyyāt v, Ibn Sinā makes some pronouncements about meanings having their properties changed by having things attached to them. (For example universals become universal by having universality attached to them.) These have sometimes been quoted as paradoxes at the heart of Ibn Sinā’s metaphysics. But first, Ibn Sinā is not in the habit of trading paradoxes. Second, in Madkal he says explicitly that these are the views of his predecessors. Third, no such ‘paradoxical’ pronouncements appear in Maṣriqiyūn, even though we have a part of Maṣriqiyūn where they might have been expected. Nevertheless they do appear in Ilāhiyyāt where he speaks in his own person. One possibility is that in Madkal he is doing his best to make sense of some remarks in earlier writers. More specifically, he may be aiming to give a sense to some remarks of Porphyry about ideas ‘becoming’ such-and-such, by putting them into the framework of his own theory of ṣayrūra. The key point here is Ibn Sinā’s view that we can say that

Idea A yaṣṣīru B.

to express that A forms B, or satisfies the criterion for being B, by having some other thing attached to it. In this kind of ṣayrūra there is no suggestion of changes in time. Also the description B applies to A plus the other thing, not A on its own. Nevertheless A with the thing attached still counts as A,
just as you don’t become another person through putting on a coat. This analogy is Ibn Sīnā’s own. It’s interesting that Frege uses exactly the same analogy to make a similar point.

10. The relevance of 9 is that Ibn Sīnā does treat ‘Zayd tomorrow’ as the ordered pair of Zayd and tomorrow; he spells this out in detail, and explains that this ordered pair inherits certain properties from Zayd. Similarly it makes sense to treat an occurrence of $A$ in $B$ as $A$ with $B$ in some sense attached to $A$. Ibn Sīnā himself doesn’t work this out in detail — I suspect he realised he didn’t have the technical competence. But for example Collins and Stabler, in a recent preprint following up suggestions of Chomsky, define an occurrence of $A$ in $B$ as a path through the syntactic tree of $B$, from the root to a terminal node labelled $A$. So an occurrence of $A$ is formed by attaching a certain kind of context to $A$.

11. We’re not quite home yet. There are indefinitely many different ways of attaching other ideas to $A$, but Ibn Sīnā speaks of only one second $wujūd$ of $A$, not indefinitely many. I am guessing here, but with the benefit of modern ideas that show what is possible. Also a clue is Ibn Sīnā’s remarks about how building materials need to be properly prepared if they are to be made up into the compound structure that is a house. I suspect that what he has in mind is that the idea $A$ needs to have the contexts added ‘potentially’ and ‘indeterminately’; for example we need to attach to $A$ the notion of $A$ occurring between $X$ and $Y$’, where $X$ and $Y$ are $gāy r$ $m u’ a y y a n$. Ibn Sīnā regards these attachments as something that has to be done in the intellect, and so he describes this $wujūd$ as being ‘in the mind’.

12. Something needs to be said about the discussion of the subject of logic in $M a d kā l$ i.4. This passage is a tailpiece to the definition itself, which was in $M a d kā l$ i.2. Also it is polemical, criticising alternative views; so we shouldn’t expect it to contain substantive new material. There is a near-quotation of Al-Fārābī’s description of the subject of logic, which Ibn Sīnā rejects. Ibn Sīnā then switches to the plural, suggesting that he is moving from Al-Fārābī to his followers. Ibn Sīnā presents two views, of which he rejects the first and accepts the second. The passage is odd because the views are presented as if they formed a dichotomy, but on closer inspection they don’t, they are just two different views. I think a case can be made that the first view represents Yahyā bin $c’ A dī$, and that the main criticism Ibn Sīnā has of his view is that unlike Ibn Sīnā’s definition, Yahyā’s view doesn’t have the consequence that logic is independent of contingent facts.
This makes the whole passage a parallel to the brief remark added to the
definition of the subject of logic in Mašriqiyyân, stating that logic is inde-
pendent of what is the case in the world. But I find the passage unclear.

13. In Mašriqiyyân Ibn Sīnā adds a remark implying that the categories
are irrelevant to the definition of the subject of logic. (In fact he uses the
phrase ‘substances or quantities or qualities’ twice in a row, and I suspect
that either the first occurrence is a scribal error, or some connecting text
has gone missing.) This should put paid to the view one sometimes sees,
that Ibn Sīnā’s ‘secondary intentions’ have some close link to the categories.
In fact the Mašriqiyyân passage says that the categories do have a limited
role in logic. The meaning is not entirely clear and I wonder if the text is
secure. But the point can be checked from Ibn Sīnā’s own rare uses of the
categories in logic. Mainly he uses them as a checklist in analysis, to remind
us of kinds of suppressed meaning that we may need to make explicit. In
other words, the categories are a useful tool of analysis, but they play no
role in the foundations of logic. There are many remarks to the same effect
in Maqālāt.

14. Later Arabic logicians seem to have had difficulty understanding
the aspects of Ibn Sīnā’s view of logic described above. This is hardly sur-
prising. Probably the one who comes closest is Khūnajī, who may well
have been adapting the Mašriqiyyân definition when he gave the subject as

things that become known by tašawwur or tašāq.

Thus Khūnajī makes the subject consist not of the meanings that are com-
bined, but of the compounds formed from them by way of tašawwur and
tašāq. This may not be a fundamental difference; the proposition in 2 above
can often be paraphrased into a form like

If $y$ is a compound idea consisting of $x_1, \ldots, x_n$ combined in
such-and-such a way, then $y$ yields (or doesn’t yield) a valid def-
inition (or syllogism).

Examples in Ibn Sīnā himself suggest that he knew this. But Khūnajī does
show evidence of confusion about the relation between subject and ahwāl,
so one shouldn’t try too hard to reconcile his view with Ibn Sīnā’s. Also
Khūnajī’s definition does lay itself open to being misquoted as

tašawwur and tašāq.

Tūsī has a nice essay pointing out why this reading is incoherent.
15. Sabra’s essay can’t reasonably be read as an attempt to discover what Ibn Sīnā understood the subject of logic to be, because Sabra doesn’t mention either (a) what Ibn Sīnā means by the subject of a science, or (b) the definition in Mašriqiyyūn, or (c) Ibn Sīnā’s own practice in logic. These have to be the prime evidence. But Sabra’s essay does have another value, namely to reconstruct what people might take Ibn Sīnā’s view to be if — like the Scholastics — they only had Madkāl and Ilāhiyyat to go on. They would have to bolster these texts by reading Al-Fārābī for example. Some of Ibn Sīnā’s wording comes too close to Al-Fārābī for it to be a coincidence. But almost none of the ideas discussed above appear in Al-Fārābī, and frankly I doubt that Al-Fārābī had the subtlety for such things. Also, if we can trust the texts, Ibn Sīnā drops a large hint that he is not following Al-Fārābī, when he refers in Taʾlīqāt to secondary ideas which tastanidu ʿilā primary ideas. In Ḥurūf Al-Fārābī uses the same word but to say the opposite: secondary intellected ideas do not tastanidu ʿilā the perceptible things to which they are secondary. Ibn Sīnā’s hint hits the nail on the head: Al-Fārābī’s secondary intellected ideas are a new collection of ideas, whereas Ibn Sīnā’s secondary intellected ideas are not new ideas, they are a processed version of the primary ideas.

16. It would have been an anachronism to say this earlier. But Ibn Sīnā’s definition of the subject of logic, as he presents it in Mašriqiyyūn, lines him up with the mainstream of later European accounts of the nature of logic and its role in theoretical sciences. Apart from the fact that he talks of meanings where Tarski talks of meaningful symbols, Ibn Sīnā’s account is particularly easy to compare with Tarski’s account of ‘Deductive Theories’ in his 1936 textbook. The further details that constitute the move from primary to secondary ideas would have been entirely foreign to Tarski. But the idea of objects carrying their own vocabulary and ‘methods’ is now familiar in object-based programming languages. Likewise the idea that we can add new ‘methods’ to an existing object.