

1.

Definitions in Ibn Sīnā's *Jadal*
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2.

Two sides of logic, from Aristotle to today:

Deduction	Definition
Syllogism	Classical 'rules of definition'
First-order proof calculi	Model theory
Mechanised deduction	Set theory
	Formal specification
	Structural lexicography

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3.

Two sides of logic, from Aristotle to today:

Deduction	Definition
Aristotle	Aristotle
Chrysippus	Ibn Sīnā
Frege, Peirce	Leibniz
Herbrand	Frege
Gentzen	Tarski
	Kleene
	Apresian, Pustejovsky etc.

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4.

Ibn Sīnā

Things are moved from unknown to known by:

- *taṣawwur* (concept formation):
aṣ-ṣay'u al-mawṣilu 'ilā at-taṣawwuri ... fa-minhu ḥaddun fa-minhu rasmun wa-naḥwuhu
 'What conveys to *taṣawwur* is ... definition and description and the like.'
- *taṣdīq* (rational assent)
 Conveyed by syllogism, induction and the like.

('Iṣārāt I.3)

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5.

Ibn Sīnā examines definitions chiefly in:

1. *Šifa^c: Burhān* (Posterior Analytics)
2. *Šifa^c: Jadal* (Topics)
3. The Easterners
4. *Risāla fī al-ḥudūd* (Treatise on Definitions)
5. *ʿIšārāt* (Pointers)

Not doublets. In *Šifa^c* Ibn Sīnā puts into *Burhān* questions about discovery of definitions, and into *Jadal* questions about correctness of definitions.

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6.

In *Jadal* Ibn Sīnā devotes Chapter VI (forty-nine pages) to definitions. This chapter chiefly consists of about sixty-five ‘places’. The correspondence with Aristotle’s *Topics* VI is very close, in the places discussed, and in the examples given, and in the order of discussion.

As in Aristotle, the main points of discussion are:

- Use of genus, species and differentiae in definitions.
- Definitions of things that are compound (either in name or in substance).
- Definitions of relations.

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7.

We will look at:

- (a) How Ibn Sīnā uses his source.
- (b) How Ibn Sīnā deviates from his source.
- (c) Ibn Sīnā’s later thoughts on the same topics.

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8.

(a) Ibn Sīnā’s use of his source

Ibn Sīnā shows no evidence of depending on any source except *Topics* VI (though at Extract 5 he implies that the principles explained in his Chapter VI are standard for logic books).

The chapter mentions no other commentators or their views.

It maintains a fiction that reader is engaged in a dispute (‘If he says ...’), though the points made are all about assessment of definitions in general.

The closing remarks (Extract 5) forget the connection with debate.

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9.

Extract 4 (275.17–276.2)

Ibn Sīnā clearly has the full text in front of him,
and he partly copies it verbatim ('If not there has been a mistake').

The original is very obscure,
and Ibn Sīnā makes no attempt at all to remove the obscurity.

hupólēpsis has become 'dogmatic conviction' ('*i'ctiqād*).

This is clearly not from Abu 'Uṭmān,
and presumably not from the later translation of Yaḥyā ibn-^cAdī.
(The only other translation known is by Patriarch Timothy I,
c. AD 782, which doesn't survive.)

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10.

Extract 1 (246.11–247.4)

Somebody has misread 'cubit' as 'forearm'
and then left it out as a doublet for 'leg'.

The result is an example irrelevant to Aristotle's own explanation.
Ibn Sīnā says so, and replaces with a trivial explanation.

Ibn Sīnā also suggests a copying error.
But his only suggested emendation
seems to impute the error to Aristotle.

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11.

Extract 5 (289.14–290.7)

Aristotle notes that definitions can be improved by discussion,
and makes an analogy with improvement of laws
by debate in the assembly.

Read literally, Ibn Sīnā says that definitions are improved,
and old ones abrogated, by the *Šarī'a*.

Burton, *The Sources of Islamic Law: Islamic Theories of Abrogation* p. 18:

By *naskh*, the *uṣūlis* understood in the most general terms
a revelatory process by which certain divine decisions,
enacted at a given date, had been overtaken and superseded
by other divine decisions enacted at a later date.

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12.

(b) Extract 3 (258.16–259.12)

Aristotle says briefly that individuals are identified
not directly but by way of some quality that they have.
(Maybe he overlooks identification by map reference.)

Ibn Sīnā gives a much fuller account of what it is
to identify an individual.

Throughout, he regards identifying an individual as
the extreme case of identifying a class of things;
so Aristotle's conclusion is Ibn Sīnā's starting point.

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13.

Also Ibn Sīnā limits himself (why?) to questions about the ‘whatness and thingness’ of an individual.

For example in answer to the question ‘What thing is Zayd?’, Ibn Sīnā accepts the answer ‘He is rational’, but only in the sense in which it is completely uninformative.

Clearly we are miles away from any kind of debate, except between hardened metaphysicians.

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14.

Extract 2 (251.8–252.10)

Aristotle discusses situations where it is hard to avoid defining something in terms of something else no better understood.

He slips from

- (i) definition of a quality in terms of its opposite, to
- (ii) definition of a relation in terms of its converse.

Ibn Sīnā rightly separates (i) from (ii). Extract 2 deals only with (ii).

Ibn Sīnā presents two solutions.

The first is what Ibn Sīnā takes to be Aristotle’s own solution:

You can regard either relation as prior, because knowledge of both comes simultaneously.

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15.

Ibn Sīnā’s second solution needs some background (not all of which is clear in Ibn Sīnā).

A *parametrised disposition* is what today we call a binary relation, but expressed as a property of the first argument:

father of Zayd
father of x
neighbour of so-and-so

Here ‘Zayd’, ‘ x ’ etc. are the parameter.

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16.

An *existential disposition* is a property that we can explicate with ‘There is ...’ or ‘some’.

father = male who has some child
neighbour = person who has someone living next door
odd = number such that some number is exactly halfway between it and 1

Ibn Sīnā’s question is about existential dispositions, not parametrised ones.

It’s unclear to me that this is true of Aristotle too.

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17.

On any reasonable notion of priority, a parametrised disposition is prior to the existential disposition got from quantifying out the parameter.

Thus 'father of' is prior to 'father'.

This observation throws Aristotle's problem back to the parametrised disposition.

How can 'father of' be prior to 'son of', or vice versa?

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18.

Ibn Sīnā solves the problem as follows.

(1) Take the existential disposition, and remove the quantifier so as to replace it by a parametrised disposition.

(2) Define the parametrised disposition in terms of more fundamental notions.

(3) Restore the existential quantifier in the appropriate place.

This defines the relation without any mention of its converse.

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19.

Ibn Sīnā uses the example 'neighbour'.

This is a weird example to use.

The relation ' x is a neighbour of y ' is a symmetric relation, so that the relation *is* its own converse.

Hence the question of priority vanishes.

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20.

(1) Go from 'neighbour' to 'person who is neighbour to such-and-such a person' (cf. Ibn Sīnā's 'second person').

(2) 'Neighbour to such-and-such a person' means 'person living in a house which is next door to a house in which such-and-such a person lives'.

(3) Quantify out the such-and-such person:

person living in a house which is next door to a house in which some other person lives.

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21.

(c) Extract 6 from *'Iṣārāt* ii.11

The extract covers the same ground as Extract 2.

In spite of Ibn Sīnā's efforts to make the *'Iṣārāt* esoteric, this explanation is much clearer than the one in Extract 2.

This is partly because Ibn Sīnā concentrates on the essentials, and partly because he chooses a more sensible example (father rather than neighbour).

But the substance is the same as in *Jadal*.