1.

Ibn Sīnā's semantics
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2.

Abu Ali Ibn Sīnā c. 980–1037

Born in Bukhara, Uzbekistan.
Worked in Baghdad and Persia;
he was fluent in Arabic and Persian.

Wrote voluminously, particularly on logic;
his textbook of modal logic runs to 580 pages
(compare Blackburn, De Rijke and Venema, 567 pages).

3.

Intellectual character:

- Strong emphasis on methodology and the structure of knowledge.

- Rigorous firewalls, e.g. separating logic/semantics from psychology, linguistics, metaphysics. (P. 5)

- Existing concepts taken deeper, and existing terminology used in new ways.

4.

Sources for his semantics:

- Aristotle and his commentators, both Greek and Arabic.

- Theological debates on the nature of the language of the Qur'an.

- Highly sophisticated schools of Arabic linguistics.

5.

In 12th century Toledo the Jewish scholar Ben-Dawid reads
Ibn Sīnā's commentary on the Eisagoge,
and notices remarks about universals.
He translates them into Latin for the Bishop of Toledo,
who arranges for the full Eisagoge commentary to be
translated ('Logyca Avicennae').
It influences Roger Bacon, Kilwardby, Aquinas, Scotus etc.,
but no other logical works of his are translated.

6.

Noone's translation of Ben-Dawid's translation:

> Animal in itself . . . is neither universal nor singular.
> For if it were itself universal in such a way that
> animality as such were universal, then it would
> necessarily be the case that no animal is singular, but
> rather every animal would be universal. . . .

7.

My translation of Ibn Sīnā's original:

> [ANIMAL] . . . is not in itself universally quantified
> or specialised to some individual. If it was
> universally quantified in itself, so that
> [ANIMALNESS] as such was universally quantified,
> then [ANIMAL] couldn't be used of an individual.
> Rather, 'every animal' is universally quantified. . . .

8.

IS's preliminary version of the aristotelian notion of a word:

sound
↓   points to (*dalla ᶜalā*)
mental content (*maᶜnā*)
↓   is instantiated by (*mawjūd li*)
things

9.

Ibn Sīnā is a cognitive semanticist.
He starts from the mental contents.

A typical mental content is descriptive: things or situations that fit the description *instantiate* it.

The content is complex; it typically contains

- a *taḥqīq* or criterion for verifying whether a thing instantiates it;

10.

- a *rasm* or depiction of the things that instantiate it;
- a *ḥadd* or definition which records how it is constructed from its parts, and ultimately from atomic contents.

The simplest contents are *affirmative*, but negation can appear in definitions.

11.

Two binary features:

- A content is *a particular* if it carries a feature [+part] requiring it to be instantiated by just one thing; otherwise it is *a universal*.

- A content is *declarative* if it carries a feature [+decl] allowing it to be assessed as true or false. (P. 32)

An affirmative content with [+decl] is *true* if at least one thing or situation instantiates it; otherwise it is *false*.
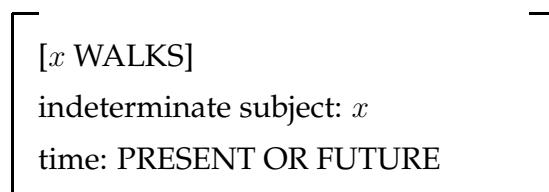
Contents with [+decl] are never atomic. (No clear reason for this.)

12.

Example: *yamšī* ('he-is-walking') has the feature [+decl], together with a three-part content

$$
\begin{bmatrix}
[x \text{ WALKS}] \\
\text{indeterminate subject: } x \\
\text{time: PRESENT OR FUTURE}
\end{bmatrix}
$$

An instantiation is a present or future situation containing an object which fits the description $[x \text{ WALKS}]$.

Hence *yamšī* is true because there is someone in the world who is walking or will walk. (P. 22)

13.

Remark on terminology:

The Toledo translators translated *maᶜnā* as *intentio*, and *wujūd* (the verbal noun from *mawjūd*) as *existentia*.

The word *intentio* survives in 'intentionality', but its connection to IS's notion of content is rather accidental.

The word *existentia* represents a common usage of the Arabic word, but not IS's technical usage in his semantics. (The example above shows that there is a connection of sorts.) The notion of existence is crucial in IS's metaphysics, but he himself separates this from his semantics.

14.

Contents are built up from atomic contents by *constructions* (*tarkīb*).

An example is *restriction* (*taqyīd*, I write ∩), where the depictions are conjoined.

Thus without [+decl]:

[[ZAYD [+part]] ∩ [SCRIBE]]

is the concept of a thing that is Zayd and a scribe.

15.

Adding [+decl] to restriction gives us *predication* (*ḥaml*, I write ⊆):

[[ZAYD [+part]] ⊆ [SCRIBE] [+decl]]

i.e.

[[ZAYD [+part]] ∩ [SCRIBE] [+decl]]

is the concept that something is Zayd and a scribe, i.e. that Zayd is a scribe.

16.

The lefthand content in predication can be given features that control the predication. For example the content [ANIMAL [+∀]]: an instantiation of

(⋆)   [[ANIMAL [+∀]] ⊆ [MOVES] [+decl]]

is a family of instantiations of [[ANIMAL] ∩ [MOVES]], which includes all instantiations of [ANIMAL].
So the content (⋆) is true if and only if all animals move.

We saw IS's claim in the Eisagoge commentary that [ANIMAL] ≠ [ANIMAL [+∀]].

17.

We turn to the pointers from expressions to contents.

For IS, pointers from words are fixed by conscious acceptance by the community; but drift can occur. (P. 4)

Pointers from compound expressions are to corresponding compound contents.
What corresponds is determined by the usage of the language,
but there are certain basic mental compounds (like those above) that must be represented.

18.

The doctor who is enthusiastic about dressmaking (pp. 99, 101f): Is he an enthusiastic doctor?

IS's answer: The restriction construction is fundamental, so prima facie it applies here.

$$[\text{ENTHUSIASTIC ABOUT } x]$$

is relational, as shown by the indeterminate x.
So an instantiation is a person who is enthusiastic about something.
Hence 'enthusiastic doctor' prima facie means 'doctor who is enthusiastic about something'.

19.

But Arabic usage (*āda*) contains the rule that 'enthusiastic Y-er' has the content

$$[[\text{ENTHUSIASTIC ABOUT Y-ING}] \cap [\text{Y-ER}]]$$

so that 'enthusiastic doctor' would be understood as 'doctor enthusiastic about medicine'.

(Cf. Bäck in Klaus Jacobi, Argumentationstheorie 1993. Bäck thinks that IS saves an inference by appealing to ordinary language. It seems to me that here IS saves the inference by setting aside normal Arabic usage.)

20.

Three characteristic views of IS deserve comment:

- Deflection.

- Absolute versus conditional.

- Indeterminates.

21.

Deflection

IS believed that (as above) certain constructions can alter their components, or more precisely alter the pointings of expressions used to point to the components.

This is *deflection* (*taḥrīf*).
Special cases are *metaphor* (*majāz*) and *borrowing* (*istiᶜāra*).

22.

IS's contemporary Abdul Qāhir al-Jurjānī denied that any deflection occurs in metaphor;
the words keep their meaning but the context sucks different things out of it.

Cf. also the dispute between William of Champeaux and Abelard on whether context can alter meanings of words. (Champeaux yes, Abelard no.)

23.

IS's use of deflection needs thorough analysis.

Partial cause: lack of the notion of a function.
$f(x)$ can differ from x without x being altered.

Curious example: in exclusive disjunction of declarative contents [C1 [+decl]] and [C2 [+decl]],

$$[[C1] \triangle [C2] [+decl]]$$

IS claims that the construction deflects the components from being declarative. Why?? (P. 33f. He repeats this in Logic of the Easterners.)

24.

Absolute versus conditional

Recall 'He is walking', true provided someone somewhere is walking.
IS calls this the *absolute* (*muṭlaq*) reading of the sentence.

IS explains normal usage by the addition of *conditions* (*šarṭ*). I can only restrict the instantiations of 'He' to Nissim Francez by a mental content which identifies Nissim, say [NISSIM].

25.

But I can either

- say 'Nissim is walking', or

- say 'He is walking', but mean [NISSIM IS WALKING].

For IS the difference between these lies in how I convey my thoughts to the hearer;
like most Aristotelians (and unlike the Islamic jurists) he regards the topic as uninteresting.

26.

Thus every sentence (i.e. expression pointing to a declarative content) is in fact either true or false, read absolutely.

IS allows a sentence to change truth-value only through change of pointing or through change of time (since sentences in general contain pointers to past, present or future).

But unlike most Aristotelians, he freely uses change of pointing where we would talk of indexical features.

27.

Indeterminates

IS claims that certain contents contain indeterminates. These indeterminates can't be specialised by change of pointing (p. 22). Their role is to link up the arguments in a compound content.

Every verbal content has an indeterminate subject argument, which survives into the participle content and distinguishes participles from ordinary nouns. (P. 18)

There seem to be three strands in this notion.

28.

1. When instantiations of two contents are combined, in general we need to know which parts of one instantiation to 'identify' with which parts of the other.

2. Relational concepts like [FATHER] contain not an actual father and an actual son, but representations of them: [x IS FATHER OF y].
The variables must be distinguishable from outside; IS claims we can distinguish x from y in the content [x IS A NEIGHBOUR OF y], in spite of symmetry.

29.

3. Arab linguists regard verbs as containing their subjects in the form of the verb inflections.

Thus

    inna Zaydan yamšī ('Zayd is walking')

is heard as 'A fact about Zayd is that he-is-walking' (*ya-mšī*).

IS notes that here parts of a word carry contents, including parts unpronounceable on their own. (P. 19)

Elsewhere he lapses into nonsense through not noticing that any phrase replacing 'Zayd' here must be definite.

30.

Work to do

We need translations (into any Western language!) of IS's main semantic works,

- *ᶜIbāra*, the commentary on De Interpretatione in his *Šifaᶜ*.

- Logic of the Easterners.

Fortunately we do have Inati's translation of the Logic section of Remarks and Admonitions.

I suspect it will emerge that Ibn Sīnā's semantic views had much less influence in the West than one would expect from the frequent mentions of him e.g. by Bacon. More's the pity.