Logic . . . a single historical development?

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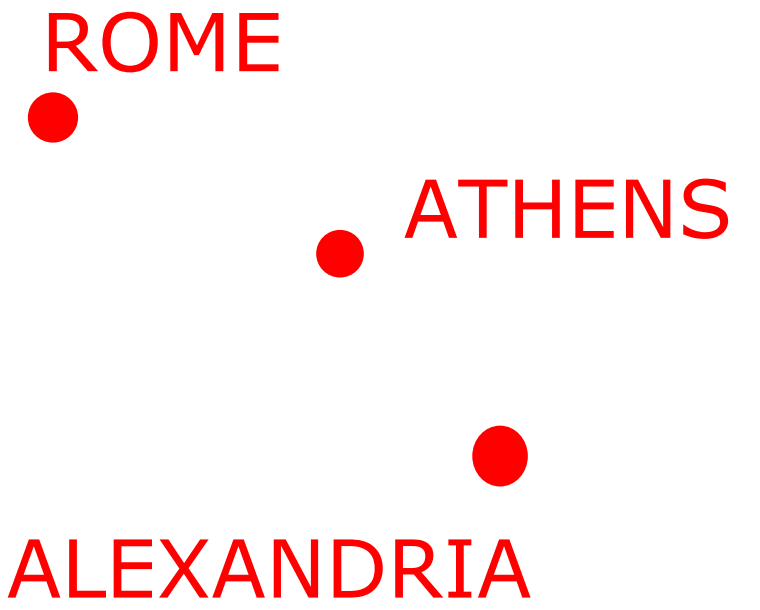
Logic from Greece (Athens) to Central Asia (Bukhara) to Western Europe and then global.

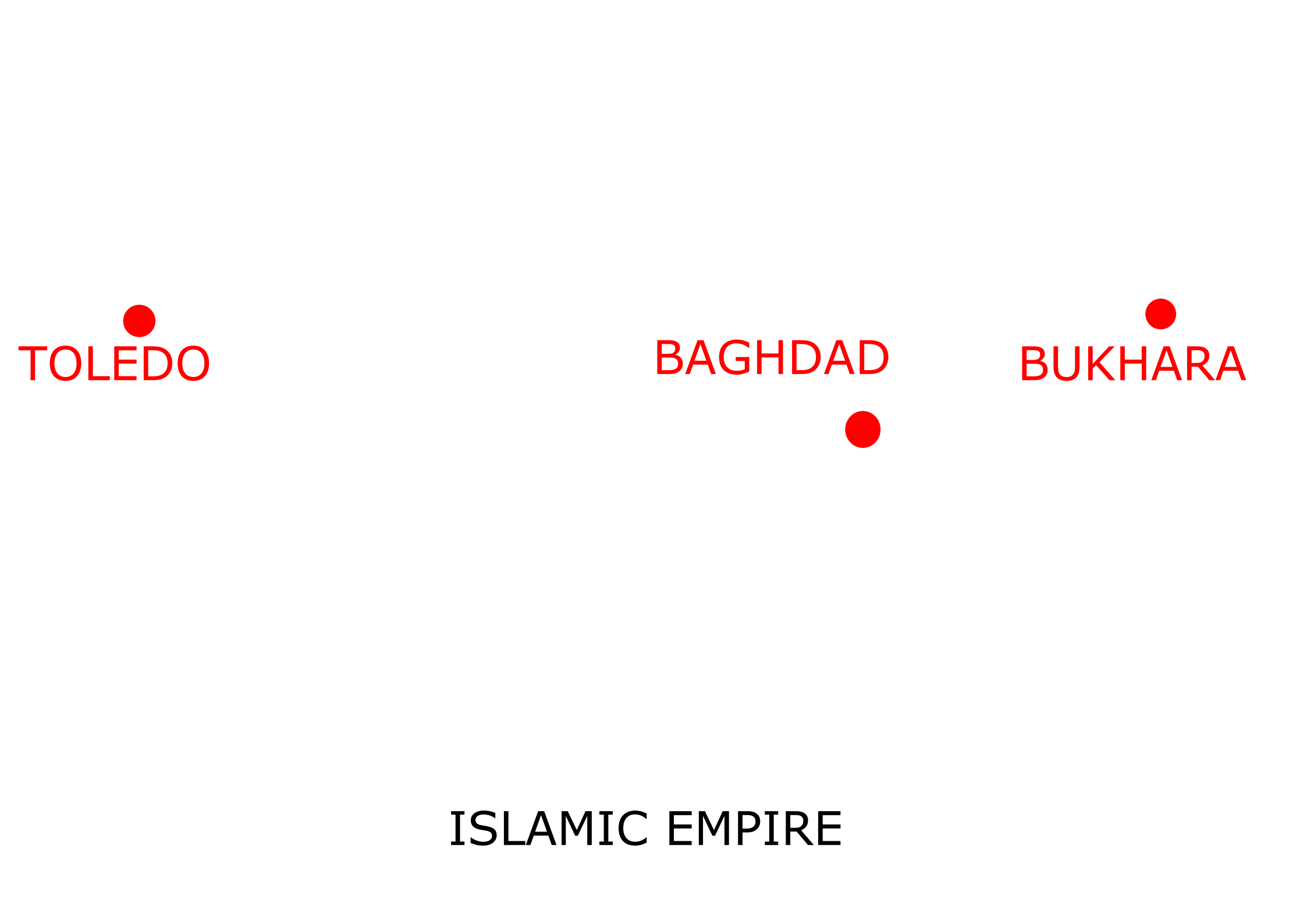
The following maps show the main progression,
making it clear that logic from Greece to Global is
an organic whole, even though it sometimes splits like a tree.

During most of the Roman Empire period,
logic survived only through the use of Aristotle's *Organon*
as a teaching aid.
But there was a continuity of texts.

4th to 3rd c. BC



ROMAN EMPIRE


TOLEDO
BAGHDAD
BUKHARA
ISLAMIC EMPIRE

SCHOLASTICISM

Last year I reviewed for *History and Philosophy of Logic* a book *The Origin and Nature of Language and Logic: Perspectives in Medieval Islamic, Jewish, and Christian Thought*, ed. Nadja Germann and Steven Harvey.
A nicely produced book. But it struck me that there were at most one or two of the sixteen chapters that a typical reader of *History and Philosophy of Logic* would have recognised as belonging to logic at all.

For example two chapters study disputes about whether a posteriori truths can be used as premises in logical arguments.
For modern logicians this is not an issue of logic.

QUESTION. Are there issues that arise naturally at different stages in the history of logic, so that we can regard them as 'canonical' features of an underlying thread in logic, and not just as an idea which is copied from time to time? (In such cases we will speak of 'convergence'.)

Possible example: Both Avicenna c. 994 and John Wallis 1687 showed, independently, that Aristotle's syllogisms can be adapted to create a new logic of 'cases and conjunctures of circumstances', by quantifying not over classes but over 'cases or times when p'.

George Boole's logic of 'secondary propositions', which his successors developed into propositional logic, was based on Wallis, as Boole admits. So the agreement of Avicenna and Wallis is a convergence in our sense, but that of Wallis and Boole is not.

Another example of convergence is the method used by both Aristotle and Hilbert to prove non-deducibility. For both of them the method consists of finding meaningful classes or relations to interpret the formal letters in an inference, so that when the formal letters are interpreted this way, the premises of the inference are true and its conclusion is false.

It is not clear how far Hilbert was independent of Aristotle—we know Hilbert was informed about the history of logic. What we can say is that before Hilbert, nobody gave a satisfactory foundation for the method. The nearest was Alexander of Aphrodisias around AD 200, who was alerted to the question by his teacher Herminus.
But later writers always misread Alexander's account.

There is a mass more to be said, for example about failure of convergence in modal logic.
But best left to the questions.

Thank you!