EPISODE 7

THINKING LIKE A HISTORIANS

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This article is dedicated to the memory of our dear friend Vagish Jha. (See Endnote 1)

1 Looking Back

In Episode 1 in this series, we introduced the concept of *knowledge systems*, as distinct from *bodies of knowledge*. In Episode 2, we gave an outline of the knowledge system of experiential knowledge, shared across human and non-human life forms, and pointed to what is unique about *the system of academic knowledge* within the human knowledge system.

In Episodes 3 to 6, we gave a brief sketch of what would help learners think like mathematicians and like scientists. We now proceed to thinking like historians.

Before we do that, however, it is important to clarify what we — the authors of this article — mean by the terms 'history' and 'historical Inquiry'.

2 History vs. Historical Inquiry

History deals with the past, not the present. The statement, "Megamu ruled the kingdom of Segona from 1512 to 1569," is part of the history of Segona. The statement, "The current king of Segona is Yumagu," is not about its history, but about its present. Likewise, a theory of the formation of the planets in the solar system and the other star systems is about the past; but a theory of the solar system as it exists today is about the present.

In the context of *academic knowledge*, we define ***historical inquiry*** *as the* ***investigation of the past***. We use the term ***history*** to mean the body of conclusions (i.e., what the community of investigators of the past accept as 'knowledge') from that investigation.

We may now say that ***historians*** are:

> *academics who are professionally engaged in arriving at conclusions about the past, and providing evidence and arguments for (i.e., 'proving) those conclusions to the satisfaction fellow inquirers, to establish them as knowledge.*

If so, thinking like historians requires:

> *the capacity to arrive at and prove/justify conclusions about events and states of affairs in the past.*

How do we design a history curriculum that goes beyond the ***understanding*** of history, to develop the *capacity to* ***think like*** *historians*?

3 Examples of Historical Inquiry

Consider the following project that a secondary school teacher can ask her students to engage in.

Project Description:

This is a project to help you develop the capacity to think like historians and engage in historical inquiry. For this, we choose recent history as our topic.

> Step 1: Interview your parents, as well relatives and friends of approximately the same age; ask them about what their life was like when they were the age as you are now. Did they have smart phones, TV, and tap water? Did they live in villages without roads and a plumbing system? Were boys and girls treated the same way? Was school education compulsory? Did their parents help them with school work?

Step 2: Form groups of four or five fellow students, write individual reports on the life of your parents' generation when they were secondary school students, then synthesize the data from all the members of the group. You will be asked to present your group reports in class.

Step 3: Synthesise the reports of all the groups and come up with a single project report on what life was like for the generation of the parents of your class when they were secondary school students,

Step 4: Now interview your grandparents, and go through Steps 1-3.

Step 5: On the basis of the above, write a report on the ***historical changes***, from the ***states*** of affairs during your grandparents' generation, through your parents' generation, to your generation.

This project has a number of significant differences from what is usually presented as history.

First, it involves gathering data, and arriving at conclusions based on the data. In this, the students are engaging in inquiry, behaving like budding researchers.

Second, they have to arrive at shared conclusions within their inquiry community. In situations where the conclusions of different students are in conflict, they have to find ways to resolve the conflict. In this, they are collaborating, to behave like a research community.

Third, their data is grounded in their own time and space.

Fourth, the data is that of oral testimonies, not written records.

Even though standard history courses and textbooks do not include learning tasks of the kind illustrated above, it is easy for readers to see that what students develop by engaging with such tasks is indeed the capacity to engage in historical inquiry.

The following example is taken from a different domain, namely, the investigation of the causes of the death of a particular individual. Readers may find it difficult to label this example as coming from the domain of 'history'. However, if we go back to our definition of historical inquiry as an investigation of the past, the use of the word *history* makes sense.

Suppose Zeno is a medical doctor. He has just finished examining a dead body found in a well. He sends Athena an email with his report, and an email exchange follows:

Z: Hi Athena, I've just examined the body I told you about. This death was not an accident or a suicide: it was a murder.

A: What makes you say that, Zeno?

Z: There is no water in the lungs.

A: So?

Z: When a person dies by drowning, there is always water in the lungs, because the victim gasps for air. Water doesn't get into the lungs if the person is already dead. So it has to be that this person died first, and the body hit the water afterwards.

A: Makes sense. That rules out the suicide hypothesis. But...

Z: But what?

A: It only means that he died first and hit the water later. He could have fallen into the well because he had a heart attack when standing at its edge. What makes you say that someone killed him? What evidence do you have?

Z: Well, let us see. If you are right, this was an accidental death. If so, he must have been standing close to the edge of the well when he had the heart attack, and death must have been instantaneous, before he hit the water.

A: That's right.

Z: Hmmm, this is not impossible. But the probability is very low.

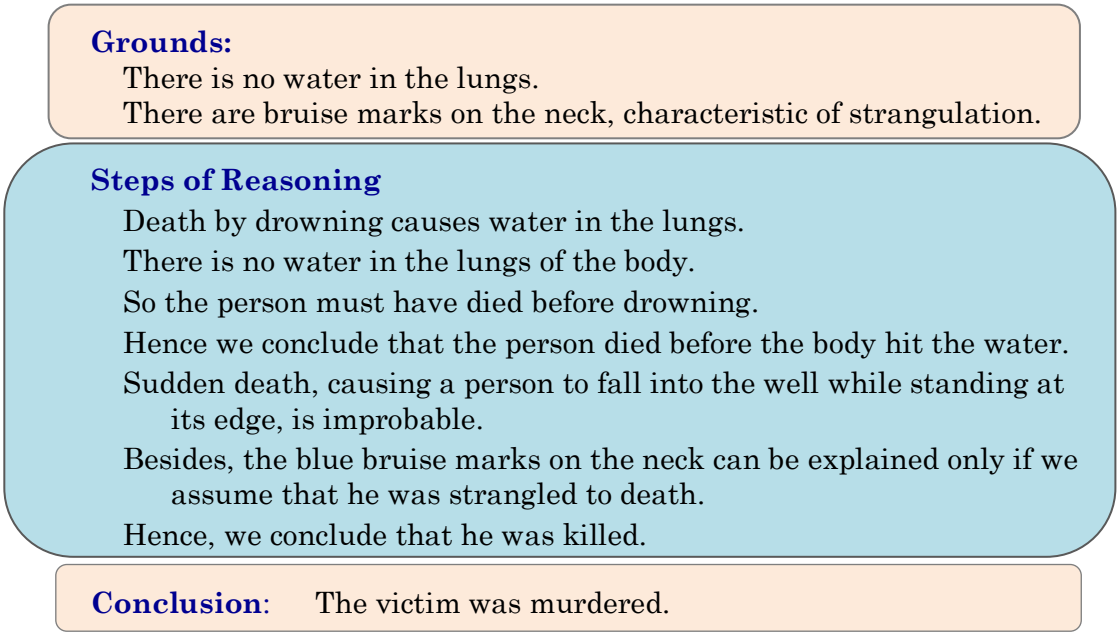
A: Oh! (About to say something, but Zeno interrupts.)

Z. Also during the postmortem, I found blue bruise marks around his neck, the kind that we find when a person is strangled.

A: Ah, I see now! If we assume that he was strangled, we have an explanation for the bruise marks.

Z: Exactly. And otherwise, there is no explanation. Bruises on the neck, absence of water in the lungs: they pretty much force us to conclude that he was killed.

The example of the school project included evidence, but it did not deal with ***argumentation*** to ***justify*** the conclusions on the basis of evidence. The cause-of-death example includes the data (absence of water in the lungs, bruises on the neck) and the conclusion (killing through strangulation), but also the *extended* form of ***reasoning*** that mediated between the data and the conclusion. The diagram below gives a visual representation of the justification.



As pointed out earlier, rational justification is central to academic knowledge, though not necessary for experiential knowledge, ethnic knowledge, or traditional knowledge.

Our third example comes the history of life on our planet, i.e., biological evolution. Charles Darwin wrote a book, ~~on the~~ *Origin of Species*, but on

hindsight, we may describe this research program as the study of origin (or birth), evolution, and extinction (or death) of biological taxa, a taxon being a category. Take the origin, evolution, and extinction of dinosaurs. Let us begin with the following propositions:

a. In the history of life on earth, dinosaurs first appeared about 245 to 230 million years ago.
b. Non-avian dinosaurs became extinct approximately 66 million years ago. (Birds are avian dinosaurs.)
c. Microsaurs (dinosaurs a few inches long) became extinct approximately 325 to 270 million years ago.

These are knowledge claims that one can glean from the literature. As critical thinkers, we need to doubt and question them — 'interrogate' them. To begin with, there is a logical contradiction between (a) and (c) in the dates of appearance and extinction of dinosaurs. Given that microsaurs are dinosaurs, the logical consequence of the combination of (a) and (c) is that some dinosaurs became extinct even before they appeared on earth. We might avoid this contradiction by revising the dates, or alternatively, revise the classification such that microsaurs are not dinosaurs.

Sidestepping that issue, we still need to ask: What evidence and arguments support these claims? For instance, "What caused the extinction of non-avian dinosaurs?" The standard explanations of the extinction of dinosaurs include asteroid impact, volcanic eruptions, and climate change. There appears to be no agreement among researchers on this issue. The causal factors that led to the extinction of dinosaurs is part of historical inquiry.

To return to human history, consider the Punnapra-Vayalar uprising in the state of Travancore in 1946, described as "a militant communist movement." According to the Wikipedia entry on the uprising:

> "Historians like Prof Sreedhara Menon (though it is claimed that he had retracted his views later) maintain this was a proper struggle against the declaration of 'Independent Travancore' by the then Travancore." (https://en.wikipedia.org/wiki/Punnapra-Vayalar_uprising))

Here is an assignment that can be set for Year 1 Bachelor's students in Kerala.

> What exactly did Sreedhara Menon claim in his earlier work? What exactly did he 'retract"? What were the reasons (evidence and arguments) for (a) his earlier claim, and (b) his retraction?
>
> On the basis of the evidence available to you now, three quarters of a century later, what rational conclusion would you draw on the retraction?

Our learning task in our first example, for school students and college students alike, was on recent history. The above assignment for college students is on the history of pre-independence India. The first one is a preparation for the second.

Let us review the four examples of historical inquiry discussed above:

i. School children interviewing their parents and grandparents;
ii. Forensic investigation of the cause of an individual's death;
iii. Extinction of dinosaurs;
iv. Punnapra-Vayalar Uprising.

These examples exhibit differences along three parameters:

(i) is located in human history: it asks about the states of affairs at two points of time, and changes during a stretch of time.

(ii) is located in forensics in the context of criminal law: the cause of the death of a particular individual.

(iii) is located in biology: it has to do with the extinction of a category of life forms.

(iv) is also located in human history: it asks about the causes of a particular socio-political event.

4 Two Approaches to History

History as states of affairs and events in the past vs. history as conclusions about the past, are two perspectives that stem from radically different attitudes towards what we regard as knowledge. Compare the following statements:

"Ancient Egyptian civilisation from 2700–2200 BC was one of the Golden Ages in human history."

"Many historians claim that Egyptian civilisation from 2700–2200 BC was one of the Golden Ages in human history."

The first statement takes it for granted that it is a ***fact***, that it is true beyond doubting and questioning. If it appears in a textbook, learners are expected to accept it as truth without doubting and question. Let us call this ***textbook history***.

The second statement makes it clear that it is a conclusion asserted by historians, and not by all historians. It encourages doubting, questioning, inquiring, and thinking critically, and is an invitation to the learners to ask:

What is a 'civilization'?

How is it connected to the concept of being civilised?

'The period from 2700–2200 BCE in ancient Egypt was a civilisation."

What evidence and arguments support this conclusion?

What is a golden age?

'The period from 2700–2200 BCE in ancient Egypt was a golden age."

What evidence and arguments support this conclusion?

We will use the term ***academic history*** to refer to the second approach.

One of the dangers of teaching history as textbook history is that it lends itself to indoctrination. If we do not insist on evidence and arguments in historical inquiry in our curricula, the result would be that academics would be replaced by prophets or godmen who claim that they have had knowledge

revealed to them, to be accepted by others without questioning. (See Endnote 2.)

5 The Big History Perspective

History as taught in University Departments by those who regard themselves as historians is typically not the same as what has been called Big History, which offers an integrated perspective on the investigation of the past, and which includes the origin and evolution of:

the universe,
the solar system and the earth,
life on earth, and
the systems and institutions of the human species.

For a brief overview, see https://en.wikipedia.org/wiki/Big_History

For a sense of the Big History perspective, consider the work in biology on the origin and evolution of life. Charles Darwin was a biologist, but if we take the Big History perspective, in T*he Origin of Species*, he was also a historian. Likewise, Albert Einstein was a physicist, but the Big History perspective recognises him as a historian in *The Evolution of Physics*. (See Endnote 3)

Closer to home, let us not forget that while George Gheverghese Joseph is a mathematician, his extensive work on the history of mathematics in India and in Kerala shows that he is also an important historian. (See Endnote 4)

Finally, Litty Chacko, who teaches in a Department of Malayalam but has worked on the Kerala Mathematician Sangamagrama Madhavan should also be recognised as a historian. (See Endnote 5)

In sum, the Big History perspective expands the scope of history and historians from the Departments of History to all of academia.

If we accept the above view, what would we say about individual contributions to our understanding of history that provide insights without rigorous proofs for their knowledge claims? Would we classify them as examples of journalism, as distinct from works within academic inquiry?

That takes us to two categories of writers of history:

Category A: Academics who function as journalists: they advance insights without proofs.

Category B: Journalists who function as academics: they attempt to provide proof for their claims.

Perhaps a good example of B is Manu S. Pillai, who is a journalist who works on history. (See Endnote 6)

6 What is Historical Inquiry?

Before we outline our view of historical inquiry from the Big History perspective, we should make it clear that we distinguish between ***historical inquiry*** and what is called ***historiography*** in history departments. (See, for

instance, what Romila Thaper calls historiography in the YouTube video "Romila Thapar (Historian) in Conversation with KP Mohanan (Scientist and Thinker)" at https://www.youtube.com/watch?v=8DnAINSAo8A&t=1240s) Historiography is an empirical study of how historians write history. Historical inquiry, on the other hand, is part of the epistemology of academic inquiry as applied to the investigation of the past.

To make this distinction clearer, let us begin by noting that historical inquiry includes the following components, not necessarily in the order given:

A. Questions to investigate
B. Methodological strategies to gather evidence/data relevant to the question
C. Arriving at answers, and conclusions based on the answers
D. Justification of the conclusions to the satisfaction of a sceptical jury of fellow inquirers, to establish them as knowledge.

Textbooks on history as taught in History Departments often make a distinction between so-called primary sources and secondary sources. Both of them are written records; but the so-called primary source includes eyewitness testimony, as in the case of the statements of the students' parents and grandparents discussed in section 3. Secondary sources are the conclusions or interpretations based on the primary sources. If the students' project is published in a school magazine, that article would be an instance of a secondary source for a group of school students of a subsequent time.

Given the concept of Big History, we need to rethink the traditional distinction of primary and secondary sources as follows:

I. Primary Sources

A) Physical objects of the kind used in forensics, archeology, paleontology, genomic evidence, animal tracks in forests, and so on.

B) Written Texts in the original language (e.g., PaaNini, Maadhava, and Naagaarjuna in Sanskrit)

C) Translations of original texts (e.g., translations of (B))

II. Secondary Sources:

What various individuals in the present have said about the past (e.g., what Litty Chacko has said about Maadhava).

This view of evidence for historical claims abandons the concept of 'prehistory' in textbooks. The term does not mean 'before history': all that it means is 'before the invention of writing in human history', reflecting a bias based on the assumption that the only sources of evidence for knowledge claims about the past are written records.

7 Reasoning in Historical Inquiry

As outlined above, developing the capacity to think like historians calls for the capacity to prove knowledge claims about the past. Now, we can experience (observe) the states of affairs and processes in the present. We can also access our *memory* of states of affairs and processes we have experienced in the past. But we can neither experience nor call up from memory the states of affairs and processes in the past *before our birth*. For this, we need to depend on reasoning from the present.

What forms of reasoning do we employ to prove conclusions about the past? Consider the proposition: "Socrates is not alive now, in 2026 CE."

Here is a proof in gory detail, to give a sense of what it means to be rigorous:

To be proved: Socrates is not alive now, in 2026 CE.

Proof:

Premises (P)

P 1: No human being can live for more than 200 years.
P 2: Socrates was a human being.
P 3: Socrates was born around 470 BCE
P 4: It is now 2026 CE.

Steps of reasoning

Step 1: From premises 3 and 4, it follows that had Socrates been alive now, he would have been 2496 years old.

Step 2: From premises 1 and 2 and the conclusion from step 1, it follows that Socrates cannot be alive now. (QED)

[Note: QED is an abbreviation for the Latin phrase *quod erat demonstrandum* meaning "that which was to be demonstrated" or "which was to be shown." It is traditionally placed at the end of an argument to indicate that we have proved what we set out to prove.]

Now, if readers accept (a) the given premises as true, and (b) the derivation as valid, the fundamental principles of rationality demand that they also accept the conclusion as true. But what if a sceptical reader questions one of these premises?

To convince the reader, the writer will have to prove the premise under consideration. Take premise 1. We might prove it as follows:

Premises:

P1: We know a large number of instances of humans who died before they reached age 200.

P2: We have not found or heard of a single instance of a human 200 years old, or older.

Reasoning:

Until we find evidence to the contrary, therefore, it is legitimate to conclude that no human being can live for more than 200 years.

QED

While the argument for Socrates being not alive uses what is called classical deductive reasoning, the reasoning for humans not living for more than 200 years uses what is called defeasible inductive reasoning, discussed in Episode 5, "Scientific Inquiry without Mathematics and Labs."

The claim that Socrates was a human being is perhaps the trickiest proposition to prove. It presupposes that:

> The person by the name *Socrates*, mentioned in Plato's dialogues like *Apology, Meno,* and *Republic*, and other such documents from Ancient Greece, is a historical figure, an actual human being, and not a fictional character that Plato invented.

If we accept that premise, then it is easy to prove that Socrates was a human being, on the basis of the premise that only a human being can engage in rational inquiry that involves asking questions and responding to answers with further questions. But choosing between the premise that Socrates was a historical figure and the premise that he was a fictional character is somewhat complicated.

To see the difficulty, consider the problems of establishing that Jesus was a historical figure who was crucified, and not a character created in the gospels written 200 years after the alleged crucifiction. Historians do not accept the existence of Yudhishtira in the *Mahabharata* as a historical figure, so why should they accept Jesus as a historical figure? For a discussion, see the Wikipedia entry "Historicity of Jesus," at (https://en.wikipedia.org/wiki/Historicity_of_Jesus)

In the above discussion of proof in historical inquiry, we have restricted our attention to the investigation of the past in human history. Clearly, proving claims about the past in the history of life on earth, the history of the solar system, and the history of the universe will need to use strategies that go beyond what we have said here.

8 The Role of Theory in History

Suppose we subscribe to the statement that:

> The study of particular states of affairs or events in the past ought to be grounded in a theory of history.

This statement raises two important questions:

> How do we construct theories in history?
>
> How do we help students construct theories of history (e.g., a theory of the causes of wars.)

To answer the first question, we need to make two closely related distinctions within Research:

> Longitudinal vs. Cross Sectional
> Diachronic vs Synchronic

Suppose an anthropologist visits an island for an ethnographic study of the culture of the community in that island. The outcome would be a ***cross-***

sectional study of that community. But if the researcher returns to that island every year to study the changes in the community over, say, twenty years, the outcome would be a **longitudinal study.**

A longitudinal study is ***diachronic***, meaning "through time" (*dia-* 'through', *chronos* 'time'). In contrast, a cross-sectional study is ***synchronic***, meaning 'at the same time' (*syn-* 'together'). History is a diachronic study of the past.

A diachronic study ought to be grounded in a synchronic ***theory*** of the present. The study of the origin and evolution of the universe is grounded in the synchronic theories of relativity and quantum mechanics. The study of the evolution of the solar system is grounded in theories of gravity and motion, and the heliocentric theory. Similar remarks ought to apply to human history as well.

The project discussed in section 3, of school students investigating the experience of their parents and grandparents, involves both cross-sectional and longitudinal studies. They examine three cross-sections (those of their own, their parents, and their grandparents) to study the changes across three generations. This is preparation for the construction of a theory of history, beginning with a longitudinal study. The details of constructing theories in history are beyond the scope of this article.

In the section that follows, we engage with the second question: how does a curriculum empower learners to engage in historical inquiry?

9 Designing Curricula

A curriculum for a University program in human history must include the discipline specific educational goals of helping students understand the content knowledge of history, as well as the related inquiry abilities needed for that domain.

If it is a foundation program on the investigation of the past, it must go beyond that, to develop an understanding of the nature of the investigation of the past in general. It must also nurture a rudimentary capacity to think like investigators of the past, going beyond human history. It must include an introduction to the modes of thinking exemplified by the best of scientists, mathematicians, philosophers, and 'Big Historians' like Darwin, Einstein, and Big Bang theorists, who have pursued diachronic research. It should nudge students to think carefully about questions like the following:

Time: What is time? What is its relation to difference, change, and structure? What do we mean by past, present and future?

Units and Categories of Time: On what basis do we identify/measure units of time (e.g., second, minute, hour, day, year, century…)? What is the rational justification for postulating 'natural' categories of units of time such as periods, eras, and ages in our investigation of the past?

How do we distinguish between natural categories like unicellular age, multicellular age, animal age, human age, stone age, metal age, writing age, printing age, and digital technology age on the one hand,

and arbitrary categories like Elizabethan Age and Victorian Era on the other?

How do we construct theories of natural categories of units of time?

Proof: How do we construct and evaluate arguments in support of or against knowledge claims in the investigation of the past?

Reasoning: What are the forms of reasoning relevant for the investigation of the past?

[Note: On the issue of time, see Endnote 7.]

10 Concluding Remarks

This article makes the following points on education and research in the study of the past that we call History.

1. It is important to place the history of the human species within the larger picture of the history of the earth and the solar system, the history of life on earth, and the history of the universe, called Big History.

2. It is important to distinguish between
   (a) history as a set of facts about the past, and
   (b) history as a body of conclusions based on evidence available in the present.

A great deal of history as narrative gives the impression that what the historian provides are facts, even when they are interpretations of facts. The approach that we have taken in this article is that history should not be seen as a set of narratives, but as conclusions arrived at and defended on the basis of evidence.

3. Perspective (2b) lends itself to doubting and questioning not only what the historians present as conclusions, but also the evidence and reasoning in support of those conclusions.

4. Critical thinking in history, as in all academic domains, involves doubting and questioning, and demanding evidence and arguments. This is the commitment to the scientific temper — generalisable as the rational temper — based on the foundational pillars of rationality outlined in article 1 ("Knowledge and Knowledge Systems"). It calls for acceptance of the logical consequences of what we have already accepted, and rejection of logical contradictions in a body of knowledge. Within this broad picture, academic pursuits may vary in the forms of reasoning they use (e.g., classical deductive vs. inductive, defeasible, and causal reasoning) depending upon the claims they seek to defend.

We hope the discussion in this article has provided the basis for an appreciation of what is unique about the knowledge system underlying historical inquiry, against the backdrop of that of academic inquiry in general.

ENDNOTES

1. Watch "IIE 2015 Students Workshop Session 2 -Jodha Akbar TV" at https://www.youtube.com/watch?v=oRVokeQEaFU&t=441s
2. For an elucidation of this danger, watch:
   the 10-minute video, KPM WKD 2 at
   https://www.youtube.com/watch?v=UgI0X7XqotI&t=108s ,
   and a 78- minute video, "Distinguished Lecture Professor Mohanan" at
   https://www.youtube.com/watch?v=krss9ifVWf4&t=1392s
3. (https://archive.org/details/evolutionofphysi033254mbp)
4. Watch "George Gheverghese Joseph Biography" at
   https://www.youtube.com/watch?v=xmpIZzqwtPA
5. Watch "Capt Litty Chacko | Capt. Litty Chacko" at
   https://www.youtube.com/watch?v=ahgLWd2ucH8&t=7s
6. Watch the YouTube video, Ep 4: Sangamagrama Madhava | Ft. Litty Chacko | SAGA with Manu S Pillai | ARPO at
   https://www.youtube.com/watch?v=ETeBLxn3Nz0&t=140s
7. On the issue of time, watch:
   https://www.youtube.com/watch?v=LIPOR55M_P0
   https://www.youtube.com/watch?v=20KMDzbXzr8

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