CHAPTER 4

Medieval Medical School:

A Primary Source Critical Reading Activity

Anna Dysert and Mary Hague-Yearl

Introduction

What can blood, phlegm, and bile teach us about critical thinking? The Medieval Medical School activity, developed at McGill University's Osler Library of the History of Medicine, provides an engaging way to teach critical reading and historical literacy to participants from grade school through university. A library and primary source-based session, the Medieval Medical School activity asks us to read closely, question bias and presentism, and engage thoughtfully with historical sources.

Using visual supports adapted from primary sources, we designed the activity to introduce learners to the system of Western medieval medicine based on the four humours. We adopted a case study approach to active learning;[1] once students are versed in the basics of medieval medical thought and understand how to use the supports to guide their analysis, they are given fictional patient histories. They must closely read and analyze these texts within the framework of the four humours to diagnose and devise treatment plans for their patients. Is Bonnefoy L'Anglois suffering from a surfeit of phlegm? Balance out his humours with exercise and hot, dry foods! The activity can teach critical skills to students of all ages by asking increasingly difficult questions and going deeper into

the interpretation of the intellectual and visual content; for this reason, our design has drawn ideas from resources created for teachers at all levels of education. Rather than being a show-and-tell or "treasure tour," the Medieval Medical School learning exercise provides hands-on experience in an interpretative activity and falls firmly in the category of "inquiry-based learning"[2] that increases student awareness of the reading process.[3] In this chapter, we detail our experiences delivering the activity and discuss the themes undergirding it. We suggest ways in which the Medieval Medical School activity can be adapted for different ages and levels. We also link to our activity outline as well as handouts, which include explanatory documentation and instructions, patient histories, and images of the Zodiac Man and Urine Wheel, with captions translated from the Latin.[4]

Critical Reading Connection

Over the past two decades, rare books and archival communities have firmly established the key role that special collections professionals play in instruction by demonstrating the learning value of archival and rare resources for diverse levels of students.[5] As innovative teaching philosophies such as active learning and intentional design have gained ground, special collections have been well-poised to offer their version of hands-on immersive learning that provokes critical reflection and questioning.[6] Yakel and Torres were among the first to apply the concept of "literacy" specifically to the analysis of archives and other primary sources[7] and shone a spotlight on scholarship that defined "artifactual literacy" as "the practice of criticism, analysis and pedagogy that reads text as if they were objects and objects as if they were texts."[8] Teaching goals have progressed from basic primary source literacy to higher level lessons that require students to "use [sources] critically by analyzing their biases, gaps, context, and narrative, and to use them ethically."[9] The literature describing lessons that draw undergraduates and younger users into archives and special collections environments has also become increasingly rich.[10] All of these efforts share several components in common with the Medieval Medical School activity, a key one being to encourage students to evaluate and challenge their own assumptions.

Concurrent with the development of critical reading as a supplemental goal of primary source literacy, historical literacy has also become the focus of several articles aimed at classroom teachers and professors.[11] The emphasis of many of these pieces is on teaching students the critical skills they need to read, write, and think like historians, or to "negotiate and create interpretations and understandings of the past."[12] Central to the work of historians is the ability to read critically and assess primary sources. In this context, the critical exercise requires that students learn to identify and evaluate not only biases and assumptions within presented texts but also within themselves.[13] Thus, primary source literacy and critical reading are both fundamental to historical literacy.

The literature at the foundation of the Medieval Medical School activity is not only about teaching students the critical skills they need. Nokes stresses the importance of understanding students' cognitive processes as they move through stages of historical analysis to historical literacy. He also stresses the role of educators in guiding students whose tendency is to misinterpret history due to presentism or the tendency to view past events through the

lens of anachronistic modern-day values, assumptions, and ideas. This tendency, he warns, "interferes with contextualization by causing students to make inappropriate inferences about the motives and actions of individuals who lived in conditions very different from our own."[14] Luckhardt, too, remarks that students "often lack historical empathy for pre-modern peoples, seeing them through the lenses of barbarism or noble savagery,"[15] a point that highlights how important it is to instill in students a sense of historical consciousness.

The Medieval Medical School activity guides students to think like medieval doctors via exercises that bring together lessons from critical reading and primary source literacy initiatives while building historical literacy and historical empathy. From the six standards of information literacy that Carini adapted for teaching with archives, we explicitly integrated training on (2), "interpret," and casually impart an understanding of (6), "follow ethical principles."[16] Critical reading skills are one specific part of that broader effort. Rather than being a classroom experience where students are told what to think, the Medieval Medical School activity follows Carini's advice by providing participants a space in which to improve their own interpretation of sources by creating their own narrative.[17] As part of this process, we guide students to interrogate all sources by learning to identify and judge (purported) authority by immersing themselves in an historical mindset. We designed the exercise with confidence—backed up by research—that school students of all levels can learn to think critically, like historians, given proper guidance.[18] We should further note that critical reading in this case is not only about reading text but also about reading images. We challenge participants to engage with a long tradition of manuscript drawings and woodcut illustrations, to assess their purpose and utility, and to read them in concert with written texts to illuminate and unlock meaning.

Teaching Strategies

Practical Examples: Activity Description

We first developed the Medieval Medical School activity to carry out with a group of approximately one dozen visitors to the Osler Library, aged around eight to twelve years old; subsequently, we refined it for use with middle-school classes. We open the activity by providing background information to equip the students with the interpretive clues required to approach the texts (both written and visual) that we ask them to read and analyse. The lesson's background discussion provides a brief, general introduction to medieval society, drawing out both similarities and differences to our own. Medieval people, they learn from the activity's explanatory introduction, believed the following:

> In the body… four qualities [hot, cold, wet, dry]… combined to make four "humours": liquids that… the body contained. "Phlegm" they thought was wet and cold and watery; "blood" was hot and wet; "yellow bile" was hot and dry and fiery; and "black bile" was cold and dry. So not only was the human body made of these substances, but these were the things that either made you sick or kept you healthy. Doctors believed that when you had too much of one humour or not enough of a humour that was how you got sick.[19]

From the beginning, the explanatory material asks students to reflect critically on their own knowledge: What do we know about the way the world works today and how do we know it? Modern people know about germs (even if we've never seen one personally) because we have a technology that allows one to see them and generations of experts have confirmed their existence. Similarly, the introductory presentation asks, "What did premodern people 'know' about the way the world works and how did they know it?" They "knew" that the natural world was composed of the building blocks of four elements and four humours. They "knew" this because of observations of nature around them and an accumulation of generations of expertise confirming this worldview. We introduce students to the idea of historical empathy and encourage them to recognize that even though today we understand the foundational assumptions of Western traditional medicine to be faulty, it was nonetheless a rational system of study and practice based on observations of the world and rigorously elaborated by physician-scholars over several centuries.

The introduction goes on to explore the connection between the four humours, the Zodiac, and what medieval people believed about an individual's personality and constitution. Two larger visual supports are introduced at this point, designed from late medieval primary sources, and one smaller handout complements these. The visual supports provide differentiated instruction while reinforcing that medical students from centuries ago benefitted from the visual representation of these complex medical concepts, as similar diagrams were very popular in the Middle Ages.

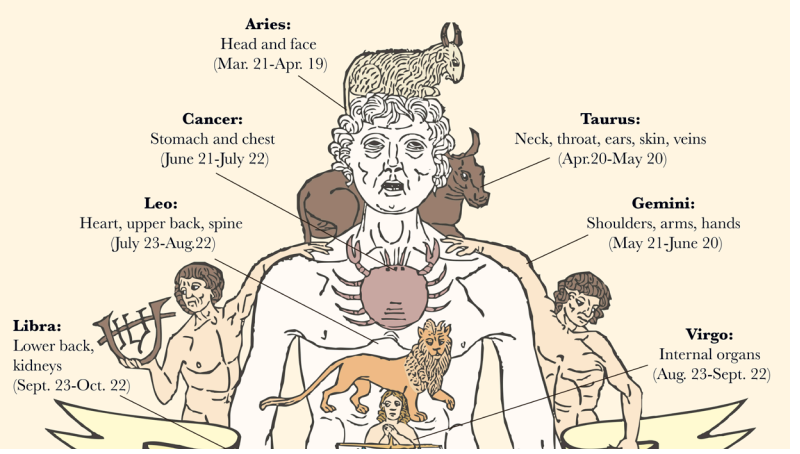

Figure 4.1

Detail from "Zodiac Man" poster (Medieval Medical School Activity Packet, p. 11), adapted from a woodcut found in Johannes de Ketham, *Fasciculus Medicinae* (Impressum Venetijs: Per Joannem & Gregoriũ de Gregorijs fratres, M.ccccc die xxvliij Martij [28 March 1500]).[20] Graphic design by Greg Houston, McGill University

"Zodiac Man" visually demonstrates the link between different signs of the zodiac, their corresponding times of year, and the parts of the body they were believed to govern. (See figure 4.1.)

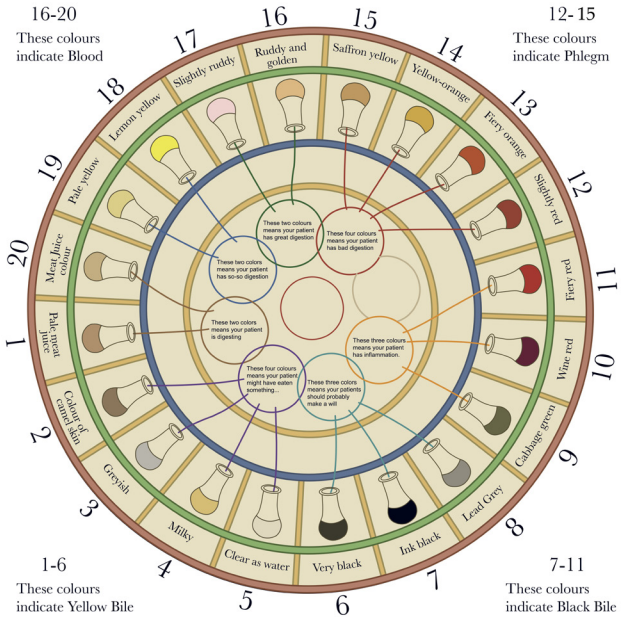

Figure 4.2

Urine wheel (Medieval Medical School Activity Packet, p. 12) also adapted from woodcut found in Johannes de Ketham, *Fasciculus Medicinae*, 1500. Graphic design by Greg Houston, McGill University

The urine wheel links different colours of urine (medieval doctors were avid uroscopists) to the predominance of one humour, as well as providing diagnoses and, in some cases, prognoses. (See figure 4.2.) For example, a patient with fiery orange urine has a surfeit of phlegm and is suffering from poor digestion, while a patient with lead grey urine cannot expect to live very long.

The four humours and their qualities:

Blood Qualities: Hot and wet Associated element: Air Kids have more of this humour. Traits: Friendly, likes to have fun, talkative, boisterous.	**Black bile** Qualities: Cold and dry Associated element: Earth Old people have more of this humour. Traits: Introverted, sensitive, thoughtful, creative
Phlegm Qualities: Cold and wet Associated element: Water Adults have more! Traits: Relaxed, quiet, accepting, sometimes lazy	**Yellow bile** Qualities: Hot and dry Associated element: Fire Teenagers have more! Traits: Passionate, energetic, prone to anger

Figure 4.3

Visualisation of the four humours and their correlated qualities included on the handout for students (Medieval Medical School Activity Packet, p. 5)

Lastly, the interpretive key handout guides students as they unlock meaning from the texts presented to them. It links the four qualities and elements to personality characteristics. (See figure 4.3.) At this point, we divide the students into small groups, go over the step-by-step instructions found in the activity packet, and introduce them to their medieval patients. We assign each group a fictional patient with a case history to read. Next, we give each group a flask of coloured "urine" to analyse, which is a fun (and slightly disgusting) prop to help the students get into character; invariably, someone asks us if the urine is real and some students open the flask to have a sniff.

Within the case histories are embedded clues to help students diagnose their patients by using what they have learned of medieval medicine and by referring to the interpretive supports provided to them. To encourage close reading, the activity asks: Which bits of information offer helpful clues to a medieval physician? Is there information that would be relevant today but has no bearing on the mindset of a medieval physician? How does the information we discern relate to the framework of medieval medical thought? How can we apply these new ideas in creative ways to cure our medieval patients? By introducing an unfamiliar interpretive framework of thought and analysis, we push students to build critical skills, to "create their own narratives and, in doing so, to better understand the interpretive process."[21]

Once the groups have applied close reading techniques to their texts and have had an opportunity to compare the clues found within the Zodiac Man, urine wheel, and interpretive key, the students debrief together with the instructor to put forth their various diagnoses. The students may note, for example, that because the Baron Leofrick von Turpentyn was born on the 19th of May and thus is a Taurus, he may be more prone to ailments of the throat and ears. He also appears to be suffering from a bout of melancholy (crying, disinterest in his usual activities). That may mean he has too much black bile in his system. The students could attribute this to the cold, noting that it is currently December, but they might also attribute this to his age (older people are governed by black bile).

After the diagnostic debrief, students are encouraged to devise a multitude of creative treatments, such as heating up the Baron through spicy foods or physical activity. During the session, we regularly emphasize to students that there are no right or wrong responses; there are only conclusions that are better supported by the evidence and well or less well explained by the doctor. Students are also invited to think about what, concretely, they are providing to their patients. The expertise of the medieval physician was, in the end, an ability to read and interpret the signs of illness and apply "scientific" principles of treatment to reassure their patient with a good story. By framing the activity this way, we provide fruit for thought on the concept and role of "authority" and encourage a wide field for the student's creativity to unfurl as they invent and assert their own acquired authority when prescribing their proposed treatments.

We have layered the activity to accommodate students who have very little prior understanding of either the subject matter or the time period. By introducing the material in small doses, students can assimilate concepts that can be difficult for the modern mind to digest. For those more advanced students who have learned about basic concepts of medieval medicine, we are able to add layers of complexity into the equation by exploring in

greater depth and breadth the medieval system of correlations and contrasts that described the precise relationship between the human body and the world around it.

Assessment

Borrowing from the advice of Bahde and Smedberg, we perform assessments at every stage of the session.[22] The assessments are generally formative: e.g., informal and impromptu interviews. Casually listening to deliberations among individual groups provides the instructors with moments that indicate whether they should assist by asking the students leading questions or if they need to jump in with just enough additional knowledge to help a group reach the next step. Circulating around the room gives students a low-pressure opportunity to ask questions and share preliminary thoughts. Meanwhile, bringing together the entire class and asking each group to share their diagnoses and their treatment regimens allows for additional brainstorming and sharing of clues that students might have overlooked in their initial analysis. Significantly, it allows the instructor to assess comprehension as an informal benchmarking exercise and to provide additional clarification as necessary.

By listening and engaging during the group discussions and then throughout the class presentations and feedback, library instructors can feel confident that students have sufficiently absorbed the background information and become capable of applying the interpretive framework and tools to their reading of the prompt provided. We achieved this in part by constructing the exercise using ideas from backward design;[23] our own informal assessments provided way markers to confirm that participants were going to achieve the critical reading aims of the Medieval Medical School activity. That is to say, participants were all able to collaborate in producing well-supported, text-based diagnoses and devising creative and relevant treatments.

Discussion: Close Reading, (Un)Learning Bias, and Dissecting "Authority"

One of the greatest challenges of teaching critical reading with respect to medieval medicine is the learning curve that students need to tackle before reading can begin. The words might be familiar, but critical reading demands recognition that their meanings in a medieval context might be very different. When the student first sees the Zodiac Man representing what they know as astrological signs, their modern impressions can divert them from the meaning of the diagram in a medieval context. The challenge is not simply to teach critical reading but also to introduce students to an entirely new way of thinking: there are linguistic issues, cultural issues, and the need to set aside what we know about medicine and our bodies in order to free students to think like someone who possesses an entirely different knowledge set.

Reflecting on how we produce successful graduates of Medieval Medical School, it is important to acknowledge that even within a tight lesson period (we advise allocating ninety minutes), we follow several steps. The results include enhanced critical reading

skills, but the students' initial pass at the text involves guided close reading.[24] Before they can truly interrogate the text, guided close reading allows us to introduce the background assumptions that operate within it. Armed with this crucial information, students begin to practice the critical reading skills of textual analysis and interpretation. Afterwards, they must locate the specific textual clues that illustrate these background assumptions, an action that both highlights how cultural and intellectual assumptions operate and demands that students apply critical analysis to reflect on what is relevant in the text and what is accessory.

During their analysis, students become aware of the importance of understanding historical and cultural contexts when parsing texts. Free of context, the case histories themselves hold very little meaning for a modern student. Their fullness becomes apparent when paired with the historical context that subtly scaffolds them. Students gain an awareness that allows them to consciously put aside their twenty-first-century perspectives and consistently ask themselves: What belongs to the medieval era? What am I projecting from my perspective of modern science and medicine?[25] In other words, the journey requires that medieval medical trainees confront bias and presentism by demanding a non-judgmental approach to the past. Our medieval medical school graduates learn that, far from being based in ignorance and superstition, the medieval medical system was grounded in internal logic and intellectual rigour. The exercise emphasises the extent to which both doctor and patient interacted with a system of knowledge wherein each participant was expected to understand the intricacies of that system. That a patient had to be educated is itself a useful reference point for students trying to move beyond their modern interpretation of how medicine works.

With students who have a greater understanding of medieval history, and specifically of medieval medicine, we are able to tease out the immense complexities of what was a highly rational system. They experience critical reading as "a tool for challenging the system"[26] because the Medieval Medical School activity illustrates that intellectual frameworks that may seem incomprehensible are, in fact, as normal to their adherents as our own thought systems are to us. By demonstrating such a distinct system of thought and asking students to work as participants within that system, the Medieval Medical School activity enables students to recognize where systems operate within their own worlds and ways of thinking. The activity, within the hands of a librarian or educator who is familiar with other healthcare cultures and modalities, can also draw the students' attention to the ways in which Western traditional medicine shares similarities with other traditional systems of medicine, such as Chinese traditional medicine, which are based similarly in a whole-body perspective on health.[27]

Conclusion

The Medieval Medical School activity is exciting and challenging, and not only for the students. Although the co-authors have a background in medieval medical history, we come to the exercise with an appreciation for how difficult it can be for librarians to impart the subject knowledge required to make critical reading effective; we join our

library colleagues in relying on faculty partners to complement our work by providing subject-specific background information. We offer Medieval Medical School as a stand-alone exercise that can be tailored to meet the education needs of students at different levels; with the expectation that others may find ways to adapt the Medieval Medical School activity within their own institutional contexts, we have produced documentation that we hope provides enough information to support those incorporating the exercise into classes that explore pre-modern (European) medicine.

The Medieval Medical School activity presumes that those entering have a similar level of *unfamiliarity* with the material at hand. This can be a benefit: an exercise such as this one anticipates less privilege based on experience and knowledge, since we presume that we have to provide a basic understanding of the concepts of medieval medicine to all students before moving ahead. In most cases, the students begin on an even plane.

Our experience with this exercise leads us to believe that it is particularly valuable in how it knits together multiple realms of literacy. The Medieval Medical School activity serves as an introduction to primary sources and their understanding, yet also provides deep training in the fundamental analytical and interpretive skills involved in critical reading, such as the ability to identify assumptions, tease out relevant textual clues, assess texts from the standpoint of a theoretical or disciplinary framework, and examine reader bias. All these competencies feed directly into the skills necessary to develop historical literacy and historical empathy.

Notes

1. Elizabeth F. Barkley, K. Patricia Cross, and Claire Howell Major, *Collaborative Learning Techniques: A Handbook for College Faculty* (San Francisco, CA: Jossey-Bass, 2005).
2. Barbara Rockenbach, "Archives, Undergraduates and Inquiry-Based Learning: Case Studies from Yale University Library," *American Archivist* 74, 1 (Spring–Summer 2011): 298, https://www.jstor.org/stable/23079010.
3. Karen Manarin et al., *Critical Reading in Higher Education: Academic Goals and Social Engagement* (Indianapolis: Indiana University Press, 2015), 48.
4. The activity packet is available for download: Anna Dysert, "Medieval Medical School" (2013, revised 2021), https://www.mcgill.ca/library/files/library/medmedschool-activity-final_eng_rev2021_1.pdf.
5. Note, for instance, the adoption of a set of guidelines for primary source literacy by the Society of American Archivists and the Association of College and Research Libraries in 2018: ACRL RBMS-SAA Joint Task Force on the Development of Guidelines for Primary Source Literacy, "Guidelines for Primary Source Literacy," accessed 7 February 2021, https://www2.archivists.org/sites/all/files/GuidelinesForPrimarySourceLiteracy-June2018.pdf.
6. See, for example, the precise description of a primary source engagement exercise developed by colleagues at McGill University: Sandy Hervieux, "Telling a Compelling Story: Using the Guidelines for Primary Source Literacy to Teach Students How to Critically Use Original Library Documents," in *Approaches to Liaison Librarianship: Innovations in Organization and Engagement*, ed. Robin Canuel and Chad Crichton (Chicago: Association of College & Research Libraries, 2021), 159–74.
7. Elizabeth Yakel and Deborah A. Torres, "AI: Archival Intelligence and User Expertise," *The American Archivist* 66, no. 1 (2003): 51–78, http://www.jstor.org/stable/40294217.
8. Randy Bass, "The Garden in the Machine: The Impact of American Studies on New Technologies," Georgetown University, accessed 5 February 2021, https://faculty.georgetown.edu/bassr/garden.html.
9. Hervieux, "Telling a Compelling Story," 160.

10. See for example, Eleanor Mitchell, Peggy Seiden, and Suzy Taraba, *Past or Portal?: Enhancing Undergraduate Learning through Special Collections and Archives* (Chicago: Association of College & Research Libraries, 2012); Lori Lynn Dekydtspotter and Cherry Dunham Williams, "Alchemy and Innovation: Cultivating an Appreciation for Primary Sources in Younger Students," *RBM: A Journal of Rare Books, Manuscripts, and Cultural Heritage* 14, no. 2 (2013): 67–81, https://doi.org/10.5860/rbm.14.2.402.
11. Courtney Luckhardt, "Teaching Historical Literacy and Making World History Relevant in the Online Discussion Board," *History Teacher* 47, no. 2 (2014): 187–96; Jeffery D. Nokes, "Recognizing and Addressing the Barriers to Adolescents' 'Reading Like Historians'," *History Teacher* 44, no. 3 (2011): 379–404.
12. Jeffery D. Nokes, "(Re)imagining Literacies for History Classrooms," in *(Re)Imagining Content-Area Literacy Instruction*, ed. Roni Jo Draper, Gordon Paul Broomhead, and Tom Bean (New York: Teachers College Press, 2010), 66.
13. Manarin et al., *Critical Reading in Higher Education*, 6.
14. Nokes, "Recognizing and Addressing the Barriers," 383–84, 388.
15. Luckhardt, "Teaching Historical Literacy," 188.
16. Peter Carini, "Information Literacy for Archives and Special Collections: Defining Outcomes," *portal: Libraries and the Academy* 16, no. 1 (2016): 198–200, https://doi.org/10.1353/pla.2016.0006.
17. Carini, "Information Literacy," 194.
18. Nokes, "Recognizing and Addressing the Barriers," 381.
19. See activity packet, page 3.
20. Johannes de Ketham, *Fasciculus Medicinae* (Impressum Venetijs: Per Joannem & Gregoriũ de Gregorijs fratres, M.ccccc die xxvliij Martij [28 March 1500]), Osler Library of the History of Medicine, McGill University, folio WZ 230 K43f 1500, available digitally at http://public-content.library.mcgill.ca/digitization/osl_fasciculus-medicinae_WZ230K43f1500.pdf.
21. Carini, "Information Literacy," 194.
22. Anne Bahde and Heather Smedberg, "Measuring the Magic: Assessment in the Special Collections and Archives Classroom," *RBM: A Journal of Rare Books, Manuscripts, and Cultural Heritage* 13, no. 2 (2012): 152–74, https://doi.org/10.5860/rbm.13.2.380.
23. Grant Wiggins and Jay McTighe, *Understanding by Design Guide to Advanced Concepts in Creating and Reviewing Units*, Association for Supervision & Curriculum Development, *ProQuest Ebook Central*, 2012.
24. On the importance of close reading to the development of critical reading skills at different educational levels, see Zhihui Fang, "Teaching Close Reading with Complex Texts across Content Area," *Research in the Teaching of English* 51, no. 1 (August 2016): 106–15, https://www.jstor.org/stable/24889936.
25. This ties back to the central theme of evaluating and challenging assumptions. Manarin et al., *Critical Reading in Higher Education*, 47.
26. Ibid., 9.
27. Don Bates, "Scholarly Ways of Knowing: An Introduction," in *Knowledge and the Scholarly Medical Traditions*, ed. Don Bates. (Cambridge: Cambridge University Press, 1995).

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