

## Clio's (mis)adventures with Hermes, Hestia, and Hephaestus

### Las aventuras y desventuras de Clío entre Hermes, Hestia y Hefesto

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#### Abstract

This article shall reflect on how emerging technologies and the so-called “spatial turn” impact the historian’s craft. Looking at the past, the authors identify historical antecedents of both tendencies in the second generation of the *Annales School*. Eyeing the present and the future, the authors advance the concept of “border space” as an analytical tool to

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illuminate characteristics and trends in the digitized production of knowledge about the past. The article argues that some of the key values that characterize this border space – open-source scholarship, horizontal collaboration, and the free circulation of knowledge – can stimulate more democratic methods of producing historical scholarship.

### **Keywords**

Digital humanities, digital history, Annales School, historiographical culture

### **Resumen**

El artículo presenta una reflexión sobre el impacto de las nuevas tecnologías y el llamado “giro espacial” en el oficio del historiador. Con un enfoque en el pasado, el artículo busca en la segunda generación de la *Escuela de Annales* los antecedentes históricos de estas tendencias. Con un foco en el presente y el futuro, y tratando de realizar algunos ejercicios de diagnóstico y pronóstico, los autores proponen el concepto de “lugar de frontera” como un marco analítico capaz de iluminar algunas de las características y quizás algunas de las tendencias en la producción de conocimiento sobre el pasado. El artículo sostiene que algunos de los valores clave que caracterizan este espacio fronterizo, como la investigación de código abierto, la colaboración horizontal y la libre circulación del conocimiento, pueden estimular métodos más democráticos para la producción de investigaciones históricas.

### **Palabras clave**

Humanidades digitales, historia digital, Escuela de Annales, cultura historiográfica

### **“Can You Hear Me?”**

The screen froze. The internet went out. It’s back! I can’t enter the room. You just cut out. Try leaving and coming back in again. Are you there? Caaaannnnn yyyyoouuuuuuu hhhhheeeeeeaaarrrrr mmmmmeeeeee? (An archetypal history professor in some corner of South America at some point during the winter of 2020).

In 2020, the shift from 3D to 2D represented an enormous loss. Suddenly, much of our professional and personal lives lost dimension. Corporeal humanity vanished from daily relationships. Soccer matches with empty stands but with sound systems blaring the home team’s songs seemed to symbolize the phantasmagoria of the current pandemic times.

While sports fields at least retained their physical locations as the setting for the action, classrooms did not. They remain empty, and with reoccupation uncertain. Classes take place remotely and digitally as part of a ruthless adaptation from 3D to 2D. By its very nature, the change does not respect unequal access to the cybersphere, at both ends of the teacher-student relationship. While the pandemic did not cause these disparities, it amplified them dramatically. Large corporations have, amid these changes, further encroached into the education marketplace, eager to capitalize on the crisis and

consolidate highly profitable and often predatory distance learning models. Public policies to regulate this intrusion and/or promote more equitable access remain wanting.

Historians occupy an ambiguous position in this fast-changing landscape of digitized teaching, learning, and research. The archetypal historian does not like technology. As a high school student, she identified with the humanists, who preferred literature and philosophy to chemistry and mathematics, letters over numbers. In college, her environment seemed safe from the advance of equations, graphs, and quantifications, with the rare exceptions of economic history or the history of science. Suspicious of computing in the work and home environments, her computer often amounted to little more than a souped-up typewriter. While she welcomed online access to historical documents, the return of quantifying and objectivist discourses that has accompanied the digitization of the humanities generated concern<sup>25</sup>.

This archetypal historian had often produced results admired by her peers without the intensive use of digital technologies. This independence, however, became a vulnerability as the pandemic created new professional demands. Navigating powerfully disruptive digital platforms and videoconferences became essential, bringing the strained relationship between historians and emerging technologies into full relief. Looking for historical contexts within which to situate this longstanding uneasiness, we see two predominant trends: technologists “repudiation of history, and historians” as a denial of technology.

### **Technology as a repudiation of history**

It is not hard to find those who argue for the irrelevance of history, proposing that the speed and extent of technological revolutions since the last decades of the twentieth century have transformed the world. These repudiators tend to be wholly absorbed by the present, a perspective that reveals the creative destruction and power of capitalist modernity to such an extent that the qualifying prefix “post” has become the norm (post-modernity, post-capitalist, post-industrial, post-human, and most recently, post-pandemic).

For repudiators, intellectual reflection and criticism should no longer analyze the past as an object, even in the context of present contradictions. Instead, reflection and criticism become modes of coping with present perplexities, helping us recognize that immediacy is not limited to the world of consumption and “self-care”. Marshall Berman reflects on this denial of history in his work *All That Is Solid Melts Into Air*.<sup>26</sup> Berman states that the various epitaphs of modernity proliferate and gain popularity due to the lack of a historical sensibility about the presence of the past in the present. This myopia leads to an old and well-known conviction: the emptying out of history as a discipline produces the idea of lived experience devoid of history; not the other way around.

If we return to the perplexities of the present, it is easy to restore the historicity of several technological phenomena shaping the contemporary moment. Berman proposes a diagnosis for the confusion, noting “we find ourselves today in the midst of a modern age

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<sup>26</sup> Marshall Berman, *Tudo que é sólido desmancha no ar: a aventura da modernidade* (São Paulo: Cia das Letras, 1986).

that has lost touch with the roots of its own modernity”.<sup>27</sup> While this loss of contact allows the idea of history’s irrelevance to circulate, we propose that technology is always historically situated. The vectors that guide technology’s development are rooted in society and must be considered objects of historical inquiry.

### **History as a negation of technology**

The presence of technology and the use of digital archives in the historian’s craft has advanced in step with technical-scientific revolutions. Clio, the Greek muse of History, could not resist the appeal of Hephaestus, the Greek God of artisans, blacksmiths, and tools. Given the traction and public attention technology has acquired in the cybernetic times and spaces of the 21st century, why shouldn’t humanities generally, and historians specifically, follow Clio’s lead and accept the radical disruption and transformation? Scholarly production has left behind the authoritarian fixity of the pen and the paper and accommodated itself to the slight disengagement and frantic flexibility of the keyboard actions delete, copy, and paste.<sup>28</sup> Moreover, the digitization of historical documentation and the availability of entire collections on the World Wide Web irreversibly democratized the possibilities for research. Digital tools have been appropriated creatively by historians, as demonstrated by the ingenious resource “The Programming Historian”.<sup>29</sup>

Even so, mistrust exists in the face of the speed and intensity of innovations and transformations. Current convergences cannot resolve old and persistent tensions. We must recognize that history and technology have never really gotten along. Technology is precise, univocal, categorical, uncompromising, and assertive. History is elusive, suggestive, indicative, nuanced, and inconclusive.<sup>30</sup> Technology’s opposition to human sensibilities has now transposed to the problem of conducting historical analyses with the help of machines and programs.

Historians’ skeptical attitude towards emerging technologies has several important precedents in the discipline. Traditionally, the use of technologies in studies of the past has been and is associated with a resilient historiographic positivism.<sup>31</sup> The golden eras of quantitative and social history of the 1960s and 70s were made possible by the arrival of computers with greater processing capacity in the most well-resourced universities of the Global North. Anti-objectivist critics responded by protectively championing

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<sup>27</sup> *Ibid.*, 16-17.

<sup>28</sup> For a sensitive analysis of changes in writing and reading, from analog to digital, with a focus on how the humanities have addressed this topic, see Maria Clara Sousa, “Ler a prosa do mundo hoje”, *Digital Humanities Quarterly*, [vol.]14, 2, (2020), <http://www.digitalhumanities.org/dhq/vol/14/2/000457/000457.html> [accessed on August 28, 2022].

<sup>29</sup> See <https://programminghistorian.org> [accessed on August 23, 2022].

<sup>30</sup> David Bodenhamer, “History and GIS: implications for the discipline”, in *Placing History: How Maps, Spatial Data, and GIS Are Changing Historical Scholarship*, ed. Anne Knowles (Redlands: Esri Press, 2008), 222.

<sup>31</sup> Ian Gregory and Paul Ell, *Historical GIS: Technologies, Methodologies and Scholarship* (Cambridge: Cambridge University Press, 2007), 13-14. Richard White, “Foreword”, in *Placing History: How Maps, Spatial Data, and GIS Are Changing Historical Scholarship*, 9; and Robert Churchill and Amy Hillier, “Teaching with GIS”, in *Placing History*, 62.

narrative over quantification in reflections on the past. This sentiment continues today, functioning at times as a healthy reaction to the inflation of the worth of quantitative methods and emerging technological tools in the production of research conclusions. At other times, however, this posture is a stubborn denial of the inevitable technological changes shaping the historian's work, thus hindering both adaptive and reactive strategies they might adopt.

### **Where is history going?**

While opposing and, on their surface, irreconcilable forces exert pressure on the discipline of history, historians might also find possibilities in the irreversible advance of digital technologies in the production and circulation of scholarly work about the past. Indeed, this advance makes the need for historically informed debate and reflection more urgent. In other words, neither the denial of technology nor its uncritical, wholesale adoption should prevail. But such a statement is more programmatic than diagnostic. What actually happens on the "factory floor"? What trends have been shown to be most consistent? Denial of technology, its uncritical incorporation, or something in between?

It is difficult to answer these questions. Perhaps no one is qualified to do so, and, ironically, answering them would be difficult without the intensive use of digital technology. Yet we might consider observing systematically the dynamics of historical projects that engage technology, while refusing to consider them paradigmatic for the community of historians or as methodological or epistemological beacons. Besides the not-so-subtle arrogance of this perspective, it would be inescapably tautological to assess technological trends among historians by studying those that use technology intensively.

We see historians that seek out creative technologies or uses thereof as occupying "border spaces" that often illuminate the mismatch between what these historians do and the design of their institutions. Border spaces are not vanguard places, but only one of many possible positions in which the work of history can and does take place. As there is no guarantee that the community will migrate, we propose border spaces as a locus where issues taken up by the wider historical community are intensified and radicalized as an element of work within that community. Studying the work of those who occupy these border spaces can help us to anticipate and predict possible, if not probable, trends.

We do not contend that border spaces are a field, area, or sub-discipline of history. A similar protracted discussion on the place of the digital humanities already exists. Some affirm digital humanities as a specific field of the humanities, while others attribute only a methodological dimension to them, limiting their profile to a community of practices. We locate ourselves this latter group, acknowledging that the humanities will soon all be digital. In this respect, what is true for humankind is true for the discipline of history.

Now that we have established our theoretical and methodological premises, we proceed to explore border spaces through one project that sits at the both very old and very new liminal ground between history and technology.

### **History, maps, and computers**

When we focus on border spaces of the community of historians who work with digital technology in a more routinized, intensive, and systematic way, we find that most activities and inquiries involve geotechnologies, with a predilection for Geographic Information Systems (GIS) offers a useful definition of GIS as “a spatial database concerned with structuring, integrating, visualizing, and analyzing spatially referenced data”.<sup>32</sup>

When using GIS, historians incorporate a temporal dimension, in what has come to be known as Historical GIS<sup>33</sup> (more general applications that take time into account are called Temporal GIS). Historical GIS has advanced over the past two decades and the “Historical GIS Clearinghouse and Forum” project provides a reference point for researchers looking to access or inventory.<sup>34</sup> The Stanford University Spatial History Laboratory has also launched a diverse set of historical GIS projects, with innovative visual and textual work that holds space and time in the same frame of analysis.<sup>35</sup>

Among the many digital technologies available to humanists, why the predilection for GIS? The history of history can help answer that question. Differentiating itself from the field of philosophy,<sup>36</sup> the emergence of the *Annales School* marked the denial of an eminently traditional and “event-based” political history.<sup>37</sup> The so-called second generation of the *Annales*, in turn, affirmed the primacy of quantification and demographic and economic models, permitting a more generative relationship between history and computing.<sup>38</sup> That relationship produced compelling results through work such as Ernest Labrousse’s quantitative serial history and price and wage studies.

The second generation of the *Annales* did not just inaugurate quantification, but also introduced Fernand Braudel’s geohistory, defined as:

the study of a double connection: from nature to man and from man to nature, the study of an action and a reaction, mixed, confused, restarted without end in the reality of each day. It is really the quality, the power of this effort that forces us to reverse the geographer’s usual “approach”. [...] The life of a society depends on physical and biological factors; it is in contact, in symbiosis with them. Such factors shape society by helping or disrupting lives and, therefore, history [...]. Not the whole story, but a part – this part which we propose to call “geohistory”.<sup>39</sup>

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<sup>32</sup> See Ian Gregory and Paul Ell, *Historical GIS*, 89; David Bodenhamer, John Corrigan, and Trevor Harris (eds.), *The Spatial Humanities: GIS and the Future of Humanities Scholarship* (Bloomington: Indiana University Press, 2010). Anne Knowles (ed.), *Placing history: How Maps, Spatial Data, and GIS Are Changing Historical Scholarship* (Redlands: Esri Press, 2008).

<sup>33</sup> Or GIS with an H, in the happy phrasing of Carlos Valencia.

<sup>34</sup> Available at:

[http://www.aag.org/cs/projects\\_and\\_programs/historical\\_gis\\_clearinghouse/hgis\\_projects\\_programs](http://www.aag.org/cs/projects_and_programs/historical_gis_clearinghouse/hgis_projects_programs) [Accessed on August 15, 2022].

<sup>35</sup> Available at: <https://web.stanford.edu/group/spatialhistory/cgi-bin/site/projects.php> [Accessed on August 15, 2022].

<sup>36</sup> José Carlos Reis, *A História Entre a Filosofia e a Ciência* (São Paulo: Ática, 1999).

<sup>37</sup> For more information about the Annales School, see Peter Burke, *A Revolução Francesa da historiografia: a Escola dos Annales 1929-1989* (São Paulo: Editora Universidade Estadual Paulista, 1991).

<sup>38</sup> Luciano Figueiredo, “História e Informática: O Uso do computador”, in *Domínios da história: ensaios de teoria e metodologia*, ed. Ciro Cardoso and Ronaldo Vainfas (Rio de Janeiro: Campus, 1997), 419.

<sup>39</sup> Fernand Braudel, *O Mediterrâneo e o Mundo Mediterrâneo na Época de Felipe II* (Lisboa: Martens Fontes, 1984); Guilherme Ribeiro, *Espaço, tempo e epistemologia no século XX: a geografia na obra de Fernand Braudel* (Tese de Doutorado, Universidade Federal Fluminense, 2008), 181.

In the first part of his classic *The Mediterranean*, Braudel makes clear his focus on *mapping history* and reconceptualizing the notion of space: “Spatializing history means that geographical space is no longer simply a frame of reference, a static background (...)”.<sup>40</sup> Thus the *Annales* scholars’ thinking was linked to two Greek myths: Hermes, representative of movement, and Hestia, representative of the stable space of the home.<sup>41</sup> The spread of geotechnologies among historians is thus a legacy of the second generation of the *Annales* and Historical GIS a kind of late synthesis of the computational and spatial strands of the *Annales School*. Would the technological maturation of the tools involved in the spatial treatment of the past bring historians of the 21st century closer to Braudel and his contemporaries? Has Hephaestus in fact joined Hermes and Hestia, in the end?

A post-Braudel development helped prepare the ground for Historical GIS: the so-called spatial turn<sup>42</sup> and the multifarious digital revolution, from the dissemination of the personal computer at the end of the 1970s to the production of Web 2.0 at the beginning of the 21st century. The popularization of GIS technology in general, and Historical GIS in particular, is a by-product of this combination. The dramatic cost reduction in digital infrastructure and the distribution of free software alternatives helped spur this favorable technological scenario.<sup>43</sup>

Cultural and technological trends have also affected conditions for the production of knowledge far beyond the community of historians. In a sense, these trends have acted as exogenous forces, working from the outside. We hypothesize that these broader forces have interacted with particular historiographic legacies to facilitate changes in the historian’s work. In short, the second generation of the *Annales* fertilized the ground for a greater acceptance of geotechnologies among historians, as José Carlos Reis notes:

although there has been substantial change, we must also admit that there was not total discontinuity, as the new perspective, while changing, included the previous perspective.<sup>44</sup>

The use of geotechnologies since the *Annales School* produced three developments that would have seemed inconceivable to its practitioners in the 1960s: the exponential growth in the capacity for data storage and manipulation; the multiple possibilities for connecting different scales of analysis; and the ability to produce so-called meta sources.

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<sup>40</sup> *Ibid.*, 183.

<sup>41</sup> Traian Stoianovitch, *The French Historical Method: The Annales Paradigm* (London: Cornell University Press, 1976), 9-18.

<sup>42</sup> For an analysis of the spatial turn in the context of the tensions between modernity and postmodernity, see Manoel Fernandes Sousa, “Os ventos do norte não movem moinhos”, *Boletim Goiano de Geografia*, [vol.] 28 (2008): 15-31.

<sup>43</sup> For a history of free software, see Maria Carlotto and Pablo Ortellado, “Activist-driven innovation: uma história interpretativa do software livre”, *Revista Brasileira de Ciências Sociais*, [vol.] 26 (2011): 77-221. And Aracele Torres, *A tecnoutopia do software livre: uma história do projeto técnico e político do GNU* (São Paulo: Alameda, 2018).

<sup>44</sup> José Carlos Reis, *A História Entre a Filosofia e a Ciência* (São Paulo: Ática, 1999), 61.

Based on the work of Jean-Philippe Genet,<sup>45</sup> Carrara et al.<sup>46</sup> proposed a definition of the concept of meta sources:

On the one hand, for the reader familiar with geography, the map as a point of arrival may not add much. The map as a starting point, on the other hand, allows the research to proceed with new questions arising from the spatialization of data. Thus, it allows the exploration of new issues that were previously invisible, or prevented from being seen, in traditional sources. This map as a starting point corresponds to a *metaphors*, in the sense originally proposed by Jean-Philippe Genet: in simple terms, it means “a collection of scientifically constructed data”.<sup>47</sup>

Geoff Cunfer’s study of the Dust Bowl in agricultural regions in the United States during the 1930s is an example of an insightful reframing of classic historiographical questions through the use of Historical GIS technology. His research expands analytical scales in both time and space and proposes that the Dust Bowl stemmed more from periods of drought than intensive land use, as the historiographical literature had suggested. His conclusions would not be possible without the use of GIS to systematize, spatialize, and disseminate the data as a meta source.<sup>48</sup>

### Neither Prometheus nor Faust

Cunfer’s success in using HGIS to upend a classic historiographical thesis suggested, to some, the revolutionary potential of technology in the humanities. When he published his research in 2008, the use of GIS among historians was still nascent, yet it elicited optimistic and enthusiastic proclamations for its potential. Ian Gregory and Paul Ell, in their seminal work on Historical GIS, had no doubts about the imminent use of the tool by historians: “We believe that if the opportunities currently on offer are taken, then GIS will become an essential part of historical research in the future”.<sup>49</sup> Anne Kelly Knowles, Amy Hillier, and Roberta Balstad go further, endorsing its role in upending orthodoxies among historians. When asked what Historical GIS would look like in five or ten years, they answered that:

There is no question that GIS-based historical scholarship will yield new discoveries. Whole chapters of history will need to be rewritten or revised. Historical scholarship will gain insight and context from more explicitly identifying where and how geography shaped events. We have more nuanced stories and more confidence in our interpretations.<sup>50</sup>

In spite of an undeniable growth in the use of GIS by historians, the epistemological optimism that envisioned tectonic shifts in the production of historical knowledge has faded. Cunfer’s inventive, generative approach remains an exceptional case rather than a common and widespread set of practices. Nonetheless, changes are evident as historians

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<sup>45</sup> Jean-Philippe Genet, “Histoire, Informatique, Mesure”, *Histoire & Mesure*, [vol.]1 (1986): 7-18.

<sup>46</sup> Angelo Carrara, Carlos Valencia, y Massimiliano Grava, “Metafuente y el uso de los sistemas de información geográfica en historia económica”, in *América Latina en la Historia Económica*, (2018), 40-70. 10.18232/alhe.906.

<sup>47</sup> *Ibid.*, 6.

<sup>48</sup> Geoff Cunfer, “Scaling the Dust Bowl”, in *Placing History: How Maps, Spatial Data, and GIS Are Changing Historical Scholarship*, ed. Anne Knowles (Redlands: Esri Press, 2008).

<sup>49</sup> Ian Gregory and Paul Ell, *Historical GIS*, 204.

<sup>50</sup> Anne Knowles, Amy Hillier and Roberta Balstad, “Conclusion: An Agenda for Historical GIS”, in *Placing History*, 272.



have gradually if sometimes begrudgingly accepted GIS as a useful tool that can advance earlier work. In this respect, history intersects once again with the broader discussion of the digital humanities. Within this broader scope, scholars recognize a certain failure of the revolutionary promises in earlier reflections on the between technology and the humanities. For example, in a reference collection, William Thomas III offers this nuanced assessment:

paradoxically, the 20-year surge in the digital humanities – from 1993 to 2013 – has produced relatively little interpretive or argumentative scholarship. In this first phase of the digital humanities, scholars produced innovative and sophisticated hybrid works of scholarship, blending archives, tools, commentaries, data collections, and visualizations. For the most part in the disciplines, however, few of these works have been reviewed or critiqued. Because the disciplines expect interpretation, argument, and criticism, it could be argued that digital humanists have not produced enough digital interpretive scholarship, and what we have produced has not been absorbed into the scholarly disciplines.<sup>51</sup>

Why have expectations been so lowered? The literature offers a persuasive explanation: digital humanities projects tend to demand inordinate scholarly time and energy. Building cyber infrastructures, such as platforms, portals, and interactive databases requires multidisciplinary teams with an array of commitment from and coordination among its members. These demands lead to imbalance between building digital infrastructure and historical interpretation, where the investment of resources in constructing the “what” leaves relatively little time to ask interesting “whys”. Indeed, teams who often build a digital tool to enhance the study of their particular historiographical area, end up with little time to actually use that tool for their own reflections and analyses.<sup>52</sup> While full of generative possibilities, the border space between technology and history is also rife with limitations.

To visit what we called border spaces in the production of historical knowledge and to seek in them lessons about potential trends, we present the case of Hímaco (History, Maps, Computers), the research group to which the authors belong. From 2011 to 2015, we developed a flood mapping project focused on the city of São Paulo during its industrial urban modernization (1870-1949). The flood of 1929 has particular historical significance because it was caused by the Anglo-Canadian company Light & Power to protect land it owned in the floodplains of the Pinheiros River. Despite this historical knowledge, no visualization of the flood had been produced until the Hímaco team presented its results. Our argument was not revisionist, rather we suggested that the consensus conclusions are more easily demonstrated using historical GIS. The promise of technology was reinforced, and the visualization led the mainstream media to use the Hímaco map and produce comparisons to Sao Paulo’s 2020 flood, concluding that “São Paulo has been experiencing the same floods for 91 years”.<sup>53</sup> We invested primarily in

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<sup>51</sup> William Thomas III, “The Promise of the Digital Humanities and the Contested Nature of Digital Scholarship”, in *A New Companion to Digital Humanities*, ed. Susan Schreibman, Ray Siemens, and John Unsworth (Malden/Oxford: Wiley Blackwell, 2016), 525.

<sup>52</sup> For a pertinent analysis of this phenomenon, focusing specifically on the discipline of history in the context of the digital humanities, see Cameron Blevins, “Digital History’s Perpetual Future Tense”, in *Debates in the Digital Humanities*, ed. Matthew Gold and Lauren Klein (Minneapolis: University of Minnesota Press, 2016), 308-324.

<sup>53</sup> Fábio Santos et al., “A enchente de 1929 na cidade de São Paulo: memória, história e novas abordagens de pesquisa”, *Revista do Arquivo Geral da Cidade do Rio de Janeiro*, [vol.] 8 (2014): 149-166,

building infrastructure and organizing data rather than asking questions that directly disrupted the historiography. But our platform invited new, unanticipated collaborators to pursue their own interpretations and they demonstrated a nearly century-long pattern of continuity. This, in turn, creates the possibility of more analysis using the platform.

This lack of new interpretations of the past suggests that another way to conceptualize the misadventures of Hephaestus among historians emerges from thermodynamics: the law of conservation of matter and energy. The integration of machines into the researcher's workflow does not produce "new material". Rather, it reorganizes the data being fed into the system. In other words, the historian gathers the historical documentation of her research and can submit it to varying levels of computational manipulation, thus producing cumulative graphs, statistical analyses, vector visualizations, relational databases, or any other form of data reorganization. If it is true that these processes can bring new insights and interpretative shifts, our experience suggests that they are rarely revolutionary. At best, and borrowing that ubiquitous moniker levied against the technologists, they are disruptive. To a certain degree, the researchers of the border space know this and thus are not surprised by the "new" permutations produced by the machine.

Should we lower our expectations and assume that new technologies will render slight improvements in our methods rather than epistemological revolutions? Perhaps not yet. Recent technological developments offer interesting surprises for the production of knowledge, especially via collaboration and open science. Thus, we hypothesize that such trends favor the emergence of innovation and redefinitions.

### **The loss of control: sharing, collaboration, and open science**

One area that unites the trends noted above is some loss of control by individuals over the fate of their work. Yet it is precisely this loss of control that provokes surprise and innovation. Take, for example, the greater collectivization of research. Technology facilitates and often demands networks, an approach that can simultaneously grow interdisciplinarity. The classic figure of the isolated thinker, distantly observing and analyzing the cultural landscape from above, has given way to a more collective and horizontal articulation of knowledge, linked to expectations and availability. In addition to digital humanities, the increase in collaboration spans many disciplines. The paradigm that values the internationalization of research, or the increase in the average number of authors on a single piece, is indicative of this collectivization of scholarly work. In this regard the humanities have followed the natural sciences.

Loss of control happens as academic processes move away from the individual and towards dependence on groups and connections between groups working in border spaces. Interdisciplinarity becomes inherent to the process and the paradigms and protocols of knowledge areas is destabilized. As a result, translators and researchers who work in these border areas between disciplines, and thus facilitate collaboration between them, become more important.<sup>54</sup>

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[http://wpro.rio.rj.gov.br/revistaagcrj/wp-content/uploads/2016/11/e08\\_a8.pdf](http://wpro.rio.rj.gov.br/revistaagcrj/wp-content/uploads/2016/11/e08_a8.pdf) [accessed on August 27, 2022].

<sup>54</sup> Jennifer Edmond, "Collaboration and Infrastructure", in *A New Companion to Digital Humanities*, 57.

A second trend related to opening up research and the loss of control is the questioning of the traditional separation between producer and consumer of knowledge. Wikipedia is perhaps the clearest and most well-known example of this phenomenon. The emergence of the “Web 2.0” facilitated the multi-directional flow of information on the Internet. This new environment has destabilized the academy’s traditional monopoly on the production of knowledge. One of the most interesting and healthy alternatives to obsolescence is for university and research centers to embrace the open science and citizen science movements. Far from denying the place of traditional science, open science aims to connect the academy with other sites of knowledge production that are less institutionalized and relationships with knowledge producers that are more horizontal.

We can now return to the ethics of sharing and the free circulation of knowledge which intersect with the trends mentioned above. Within the digital humanities environment, these ethics create a porous border space for scholarly identity.<sup>55</sup> Working in networks comprised of various disciplines and traditions, full of fraught and sometimes fruitful interaction with non-academic communities, spurred on by a commitment to knowledge-sharing and open science, researchers often find their certainties upended. In the Hímaco collective, we are committed to the opening up of scholarship via “Pauliceia 2.0: collaborative mapping of the history of São Paulo”,<sup>56</sup> a joint initiative of the Federal University of São Paulo (with campuses in Guarulhos and São José dos Campos), INPE (National Institute for Space Research), the Public Archive of the State of São Paulo, and Emory University in Atlanta.

Our objective is to facilitate sharing spatial research data on São Paulo’s history through an online platform and forum. In addition to the dissemination of results and production of spatial visualizations, we invite others to bring their perspectives to the same computational environment, or platform. Our approach is an example of the loss of control over research as the information produced on our platform becomes appropriated, mobilized, and reframed by other actors out of our orbit. This process lays the groundwork for the emergence of new analyses as yet unimagined and allows a division of labor between the developers of cyber infrastructures and the interpreters and analysts of the content. This division of labor reduces the potential for overwork and the diversion of energy that weakens or redirects practitioners from the interpretive work integral to the second half of the disciplinary label “digital humanities”.

Currently, the Pauliceia 2.0 platform is available in its beta version and is in the testing phase. While promising, we cannot yet be certain of our premises, since historiographical success is dependent on technological success, which is also as yet not

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<sup>55</sup> Lisa Spiro, “This Is Why We Fight: Defining the Values of the Digital Humanities,” in *Debates in the Digital Humanities*, 16-35. <http://dhdebates.gc.cuny.edu/debates/text/13>, [accessed on August 20, 2022]. Tom Scheinfeldt, “Why Digital Humanities Is ‘Nice’”, *Ibid.*, 59-60, <https://dhdebates.gc.cuny.edu/read/untitled-88c11800-9446-469b-a3be-3fdb36bfd1e/section/ffbe0616-a8d6-44ac-8f8e-1e4d4359d4f8#p1b3> [accessed on August 29, 2022].

<sup>56</sup> See [www.pauliceia.unifesp.br](http://www.pauliceia.unifesp.br) (accessed November 27, 2023). To learn more about the computational elements of the project, see Ferreira et al., “A Platform for Collaborative Historical Research Based on Volunteered Geographical Information”, *Journal of Information and Data Management*, [vol.] 9, 3 (2018): 291–304.

guaranteed. The process of building this platform is an experiment that the authors want to offer as a contribution to the debate on the role of technology in historical research.

## Conclusion

Will humanities scholars continue to produce conventional scholarship only to deposit it online? Or will we fulfil the promise of the digital humanities and take advantage of the networks, spaces, and audiences online to create and refine new forms of our scholarship?<sup>57</sup>

There is no doubt about the centrality of technology, including disruptive emerging technologies, in the historian's professional life. Technology can be the historian's object of study, a tool to improve scholarship, a teaching enhancement, and a force that upsets our professional routines in deep irreversible ways. On the one hand, the speed of current technological transformations radically reshapes traditional worldviews. Before predicting the inability of historical analysis to attend to these complexities, we must acknowledge the undeniable significance of this change itself. Through historical analysis, we argue that contemporary phenomena are rooted firmly in the past. On the other hand, the historian's craft does not remain immune from the transformations that come with technology, both exciting and threatening. By better understanding the impact of technology on the field of history, we can ask if narrative will be increasingly collective and collaborative, with all the advantages that may result from a more democratic process of producing and circulating knowledge.

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<sup>57</sup> William Thomas III, "The Promise of the Digital Humanities and the Contested Nature of Digital Scholarship", in *A New Companion to Digital Humanities*, 534.

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## **Academic profiles**

### **Luis Ferla**

Graduate at História from Universidade de São Paulo (1998), graduate at Engenharia Química from Universidade Federal do Paraná (1986) and PhD at History from Universidade de São Paulo (2005). He has experience in History, focusing on Modern History and Contemporary, acting on the following subjects: history of science, history of medicine, history of the body, “era vargas” and antropologia criminal.

### **Rafael Laguardia**

Degree in History from the Federal University of Juiz de Fora (2008), a Master’s in History from the Federal University of Juiz de Fora (2011), and a PhD in History from the Federal University of Juiz de Fora (2015). In 2013, he completed a doctoral internship at Stanford University (USA). He was a professor at the Department of History at the State University of Minas Gerais (2017-2018). He concluded, in 2021, a Post-doctorate with a FAPESP scholarship (Process: 19/19112-0) at the Federal University of São Paulo. He is currently a professor at the Graduate Program in History at the Salgado de Oliveira University – Niterói/RJ (<https://ppghistoria.universo.edu.br/>). He has experience in the field of History, with an emphasis on Contemporary History, working mainly on the following topics: economy, roads and borders, rural modules and urban areas. In his research, he makes methodological use of georeferencing information from historical sources, spatial history, historical GIS and regional history.

### **Jeffrey Lesser**

I am the Samuel Candler Dobbs Professor of Brazilian Studies and a History Department faculty member at Emory University in Atlanta (USA). I was named the first full-time faculty director of the Halle Institute for Global Research in 2017. I have been a visiting professor at the University of São Paulo’s Institute for Advanced Studies since 2015. In

my current research on health, immigration, and the built environment I engage with researchers, health professionals, and patients. For the last four years I have been conducting archival research and observing Dr. Fernando Cosentino's medical team at the Bom Retiro Basic Health Clinic in São Paulo, Brazil. This clinic is part of the Brazilian National Health Service, known as SUS.

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### **Andrew G. Britt**

I am a historian of contemporary Latin America and a digital scholarship developer with a national focus on Brazil. I work as an Assistant Professor in the Division of Liberal Arts at the University of North Carolina School of the Arts (USA). My research is based in the city of São Paulo, Brazil – a frenetic, magnetic metropolis of more than 20 million. I completed my PhD at Emory University in 2018, which was awarded honorable mention for Best Dissertation in the Humanities (Antonio Candido Prize) by the Latin American Studies Association Brazil Section. I am currently revising the thesis into a book, titled *The Paradoxes of Ethnoracial Space in São Paulo, 1930s-1980s*. In my digital humanities work I am interested in the intersection of spatial computing and history, especially augmented reality and collaborative mapping projects that advance racial equity throughout the Americas. In 2022, I was awarded a Project Development Grant from the American Council of Learned Societies. In the same year I served as a dramaturg for Marina Zurita's production *Mother Tongue*, which chronicled the lives of waste pickers in São Paulo.

### **Thomas D. Rogers**

Associate Professor (B.A., Williams College; Ph.D., Duke University). Modern Latin American history, especially Brazil; labor and environmental history; Afro-Latin American history. I am interested in the patterns of mutual dependency and influence that develop between societies and their environments. My current book project, *Agriculture's Energy: Development and Hunger During Brazil's Ethanol Boom*, examines 20th century agricultural modernization. I use a singular Brazilian initiative from 1975 – the National Alcohol Program – as a vehicle to explore the mechanics of development and the role of agriculture in the military dictatorship's planning. Taking this angle, I revisit persistent questions in recent Brazilian history: How and where did “modernization” take place? How did agricultural change contribute to broad patterns of regional differentiation? How can we understand the bureaucratic and environmental consequences of a major agricultural program being simultaneously a major energy program? How does this experience affect the standard narrative of the Green Revolution? In addition to its political, bureaucratic, and environmental impacts, the ethanol boom reshaped patterns of agricultural labor.

### **Fernado Atique**



Associate Professor III, at the History Department at Federal University of São Paulo (UNIFESP), where he teaches undergraduate and graduate courses in the area of History, Space and Built Heritage. He is an architect and urban planner (1999), with a master (2002) and a doctor degree (2007) from the University of São Paulo (USP). He was a researcher (Visiting Scholar), with a CAPES scholarship, at the University of Pennsylvania-Penn (USA, 2006). He was a postdoctoral fellow in History, with a FAPESP grant, by the History Department of New York University-NYU (USA, 2016). He is a founding member of the Ibero-American Association of Urban History-AIHU. He is also a member of ICOMOS-Brasil. He coordinates the CAPPH-City, Architecture and Preservation in Historical Perspective Research Group. <http://capph.sites.unifesp.br/>. He was one of the editors of *Thésis*, a magazine of ANPARQ-National Association of Graduate Studies and Research in Architecture and Urbanism (in 2020 and 2021). He is currently Adjunct Dean of Graduate Studies and Research at UNIFESP. He was also a member of CONDEPHAAT, as a representative of the IAB-SP (2021-2022). He was collaborator of the Executive Secretary of the DOCOMOMO São Paulo Nucleus. He is, also granted as Fellow (level 2) of the Brazilian National Council for Scientific and Technological Development (CNPq), since 2018.

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Bachelor's degree in Computer Science from the Federal University of Maranhão (1995), Master's degree in Electrical Engineering from the Federal University of Maranhão (2001) and Ph.D. in Applied Computing from the National Institute for Space Research (2009). She is currently an associate professor at the Technological Institute of Aeronautics. He has experience in the area of Computer Science, working mainly in GeoInformation and Software Engineering.

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Bachelor's degree in Computing Technology from Instituto Tecnológico de Aeronáutica (1978), Master's Degree in Applied Computing from Instituto Nacional de Pesquisas Espaciais (1984) and Ph.D. Participated in the Postdoctoral program at University College Cork (UCC) at the Coastal and Marine Research Center (CMRC), University College Cork (UCC), Cork, Ireland in the area of Computational Modeling of the Coastal Environment. The Post-Doc program was funded by the European Union. He retired in May 2017, fearing that the Social Security Reform would jeopardize the benefits acquired. He maintains a bond as a Volunteer Research Collaborator at the Associated Laboratory of Computing and Applied Mathematics (LAC) of the National Institute for Space Research (INPE). He has experience in the area of Computer Science, with emphasis on Performance Evaluation, Software Testing with Formal Specification, Time Series Analysis and Computational Modeling of the Coastal Environment. From July 2019 to June 2021, he served as Visiting Associate Professor at UNIFESP (Federal University of São Paulo) in São José dos Campos at the Institute of Science and Technology. He is a Permanent Lecturer in the Graduate Programs in Applied Computing (CAP) at INPE and Computer Science at Unifesp.

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### **Luciana Brasil Rebelo dos Santos**

PhD in Applied Computing from INPE - National Institute for Space Research (2015), Master in Electronic Engineering and Computing from ITA - Technological Institute of Aeronautics (2009), and Bachelor of Information Systems from UNESP - Universidade Estadual Paulista Júlio de Mesquita Filho (2001). She is currently a professor at Federal Institute for Education, Science and Technology of São Paulo, Jacareí campus. Her current research involves studying techniques \ methods that maximize finding in software systems defects. She also works with the use of machine learning applied to the interpretation of the Brazilian Signal Language (LIBRAS). In addition, she has investigated techniques that characterize the evolution of patients with spine pain, seeking to find predictors that enable the development of more efficient treatment plans. Her areas of interest include Software Engineering, Software Verification and Validation, Assistive Technology, and Artificial Intelligence.

### **Aracele Lima Torres**

PhD in Social History from the University of São Paulo (USP), having developed research on the ideology of the free and open internet and its implications in the debate on internet governance, especially on net neutrality. She was a Fulbright sandwich doctorate fellow during the 2017-2018 period, having developed part of her research at The University of Vermont in the United States. She also holds a Master's degree from the University of São Paulo, and defended her dissertation on the history of the free software movement. She holds a degree in History from the Federal University of Piauí (UFPI). She works in the areas of History of Science and Technology and Digital Humanities and has as main research interests the themes: history of Free Software, internet governance, ideologies and utopias around digital technologies and electronic democracy. She is the author of the book "The technoutopia of free software: A history of the technical and political project of GNU", which tells the story of the free software movement and its adoption as a utopia for some social groups. Currently works as a researcher at lab.hum (Digital Humanities Laboratory) and Hímaco ((History, Maps and Computers) group at the Federal University of São Paulo (Unifesp), Guarulhos Campus.

### **Ana Maria Alves Barbour**

Studying for a doctorate in History and Foundations of Architecture and Urbanism at FAU-USP. She is a Master in History at Unifesp (2018-2021). She graduated in History at the University of São Paulo (2009) and in Social Communication - Journalism at the

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Bachelor's degree in Systems Analysis and Development by FATEC Prof. Jessen Vidal and Master in Applied Computing (CAP) by the National Institute for Space Research (INPE). He currently works at Datainfo, an INPE outsourced company. He is the responsible developer for the new INPE satellite image catalog <http://www2.dgi.inpe.br/catalogo/explore>; and member and responsible developer of the Pauliceia 2.0 project: Collaborative Mapping of the History of São Paulo (1870-1940) <http://www.pauliceia.dpi.inpe.br>. He has experience in the area of software development, especially web systems and geographic data management. Specific knowledge: languages: Python (Flask, Tornado, Dash and Celery); JavaScript (Vue.js and AngularJS) and HTML/CSS; database: PostgreSQL, MySQL and MongoDB; geocomputing: PostGIS, Leaflet, OpenLayers, GeoServer, GeoJSON, STAC (SpatioTemporal Asset Catalog) and VGI (Volunteered Geographic Information); tools: Git, Docker, Nginx and Pyenv.

### **Gabriel Sansigolo**

Technician in Computing with emphasis on Web Design and Technologist in System Analysis and Development with MSc in Applied Computing by the National Institute for Space Research (INPE). Has experience in Computer Science, focusing on Geoinformatics, Front-end and Back-End. Currently is developer on the Brazil Data Cube Project.

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Master in History from the Federal University of São Paulo (UNIFESP), Guarulhos campus, in 2021 with the Dissertation entitled "Anhangabaú off the map: the change in the water supply vector in São Paulo and its impacts on social life in the city (1830-1940)". He also graduated in History (Bachelor and Licentiate. With Emphasis in Heritage Certification) from UNIFESP in 2017. He was a FAPESP TT2 scholarship holder between 2013 and 2015 by the Hímaco Group (History, Maps and Computers) of UNIFESP, of which he is still part of the current project FAPESP: Pauliceia 2.0.

### **Monaliza Caetano dos Santos**

Master's degree in the Graduate Program in History at the Federal University of São Paulo. Develops research entitled "The Russians Are Coming": cinema and censorship in East Germany, financed by the institution FAPESP (Fundação de Amparo à Pesquisa do Estado de São Paulo). The research emphasizes the revolting and cultural movements in the German Democratic Republic in the sixties, with emphasis on censored films and comparative cinema. Graduated in History from the Federal University of São Paulo (UNIFESP) and member of the Hímaco - História, Mapas e Controles group, where she produced Scientific Initiation research, funded by CNPq, regarding the cartographic base used in the project "Paulicéia 2.0: a space platform -temporal for Digital Humanities".

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Historian graduated from FFLCH-USP. Master's student in Social History at UNIFESP. Researcher in the HIMACO group (History, Maps and Computers). Educator in formal and non-formal spaces with experience in History, Contemporary Art, Art Education, Heritage Education and Book Publishing. He has worked in public and private schools, at the São Paulo Art Biennial, SESC, FIESP, Contracurrent Publisher and São Paulo State Symphony Orchestra Foundation. He mediated debates at Itaú Cultural, Oficina de Cultura Oswald Andrade, MASP and other alternative spaces. Author of zine and essays on gender and politics. Technique in the Paths and Memories project. Co-founder of História da Disputa, Disputa da História, a project with an emphasis on Urban History, working mainly on the following themes: memory, History of the Defeated, history of São Paulo, education and autonomy.

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History student at the Federal University of São Paulo where she is a member of HIMACO (History, Maps and Computers) research team.

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Graduated in History from the Federal University of São Paulo (2021). His line of research is the History of the city of São Paulo and the use of geotechnologies in the development of historical investigations. Since 2017 he has been part of the Hímaco Group (Unifesp) - História, Mapas e Controles and since 2019 of the Lesser Research Collective Group (Emory University).

### **Vitoria Martins Fontes da Silva**

I have research experience, with an emphasis on Urban History, Worker History and Digital Humanities. Currently, I work with two delimited research fronts in the city of São Paulo, with different themes and periods: the first, from 1870 to 1940 on its modernization process for the creation, feeding and improvement of the digital platform Pauliceia 2.0: collaborative mapping of the city of São Paulo (1870-1940); and the second, on the trajectory of peripheral workers in the southern part of the city during the 1970s and 1980s, in the midst of the Brazilian civil-military dictatorship.

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Graduation at Segurança da Informação by Universidade Nove de Julho (2019) and graduation at História by Universidade Federal de São Paulo (2019). Has experience in the area of History.

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