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# Mapping Movement on the Move: Dance Touring and Digital Methods

Harmony Bench and Kate Elswit

In a scrapbook of images compiled by musical conductor Alexander Smallens, who traveled with Anna Pavlova on her company's tours to Central and South America and the Caribbean, there are two photographs of dancers giving themselves a ballet *barre* on what Smallens indicates is the French liner *Antilles* taking the company from Trinidad to Martinique (fig. 1). These images offer a behind-the-scenes glimpse of how the dancers spent their time between performance engagements; in so doing they highlight the complexity of touring as an object of study. A broad account of how, why, and by what means dances travel requires that scholars attend to the lived, day-to-day experiences of multiple bodies, together with the financial, technical, and political infrastructures that support such movement moving. In this essay we propose that a better understanding of the transnational networks of dance touring is critical to placing dance within larger theatrical and cultural systems. Digital research methods can work in tandem with more traditional scholarly ones to manage the scale of data truly necessary to model traveling dance in terms of what we call "dynamic spatial histories of movement."

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Figure 1. Dancers in Anna Pavlova's company practice at a makeshift barre onboard a ship. (Source: Image courtesy of the Jerome Robbins Dance Division of the New York Public Library for the Performing Arts, New York City, reprinted with permission.)

Despite the existence of many projects of archival digitization and online presentation in the field of dance,<sup>1</sup> we are not aware of any projects involving historical cultural analytics and inquiry-driven visualization of historical data in dance studies besides our own. We thus build on the foundations of our ongoing projects while drawing into conversation the ways in which digital methods can facilitate large-scale comparative analyses of the mobilities evidenced in the phenomenon of dance touring.

This essay triangulates its discussion of digital humanities and theatre studies with dance. Although we focus here on disciplinary overlaps and the cross-pollination of digital research methods, we believe that such methods can facilitate future cross-genre studies of the performing arts as a whole. In the process, we engage with scholarship on literature, geography, and particularly theatre, which shares many concerns regarding performance as live event and its re-presentation over time in different places and forms. There is huge potential for analyses of touring to help us understand larger ecosystems of performance, past and present. For example, most theatres and agents present multiple genres of performance, and many artists themselves cross between dance and theatre, as well as between elite and popular stages. At the same time, dance-based perspectives, including dance ethnography, can extend theatrical discussions of travel of, and even as, embodied practice. Whereas ethnographic approaches have primarily been the domain of performance studies rather than theatre studies, the prevalence of anthropology as one of the foundational pillars of the field of dance studies means that such methods are more intertwined with how dance scholars conceive of dance practices, whether onstage or off. Together, the fields of theatre and dance can not only draw from the digital humanities, but also propose new means to consider embodied experience in terms of dynamic spatial histories of movement. Such approaches can facilitate dance research, among other things by enabling discovery and display at a scale not available in analog media.

<sup>1</sup> For example, Eiko and Takashi Koma Otake, *Eiko & Koma* (2016), available at <http://eikoandkoma.org/home>; Siobhan Davies, Sarah Whatley, et al., *Siobhan Davies Replay: The Archive of Siobhan Davies Dance* (2009), available at <http://www.siobhandaviesreplay.com/>; William Forsythe, Maria Palazzi, Norah Zuniga Shaw, et al., *Synchronous Objects for One Flat Thing*, reproduced by William Forsythe (2009), available at <http://synchronousobjects.osu.edu/>.

A few years ago we discovered that we were embarking on similar projects of using digital tools to engage with dance history—specifically, histories that involve what we now call “movement on the move.” We came to our projects from different backgrounds. Kate was looking to digital methods as a way to tackle the particular historical problem of tracing dance’s complex global networks and infrastructures, and experimenting with various visualizations that would enable her to better understand and account for the onstage and offstage operations of dance’s transnational circulation. Harmony had come to touring as a way to historicize dance’s screen-based transmission, and to leverage digital humanities research for dance studies, building a series of datasets to track staged repertory on tour. Both of us are, however, interested in the circulation of dance, and specifically how digital tools can elucidate the ways in which touring has functioned in dance’s transnational history. There is something telling in the fact that our two unique, dance-based cultural analytics projects happened to converge on the same nexus of ideas. As we elaborate, the problems of infrastructural networks and dance’s transmissions preceded the choice of digital methods, which enable us to develop new and complementary lenses from which to attend to critical scholarly horizons. We argue that a better understanding of touring is necessary to account for dance’s global nature, and that the scale and distribution demanded of this research require dynamic spatial histories of movement supported by digital methods.

Given the scarcity of scholarly projects combining dance history with digital research, we began to collaborate in order to both consolidate our limited resources and expand our scope of intellectual inquiry in an uncharted field of research. For a first phase of research, we brought our respective projects into alignment. We designed a comparative structure in which each of us worked independently on one of two wartime tours in South America: Pavlova’s company tour during World War I, and the American Ballet Caravan tour during World War II.<sup>2</sup> In so doing we wished to clarify our individual projects’ aims and also to test their limits and expansiveness together in relation to broader scholarly initiatives. What follows is the first print output of this collaborative work<sup>3</sup> in which we explore how digital modes of analysis can expand understandings of dance’s transnational circulation, while we begin to articulate rigorous practices by which to do so. Throughout this essay we use these early explorations to argue for the urgency of tracing such dynamic spatial histories of movement on the move. The next section expands on the methodological underpinnings of this work. From there, we turn to two key tools—the database and then the map—which we consider to be vital to furthering our understanding of dance touring.

One of the advantages of working together in a peer-review collaboration has been to help demystify the celebratory attitude that sometimes accompanies digital making. It is relatively easy to use freely available online software to build a visual

<sup>2</sup>For the purposes of this essay, except where indicated, we are working with unpublished manuscript materials that have been collected for our respective projects from the archives at the Jerome Robbins Dance Division at the New York Public Library; the Jerome Lawrence and Robert E. Lee Theatre Research Institute at The Ohio State University; the New York City Ballet Archives; and the Rockefeller Archive Center. Further details, maps, and datasets on American Ballet Caravan can be found in Kate Elswit, *Moving Bodies, Moving Culture*, available at <https://movingbodiesmovingculture.wordpress.com>; details, maps, and datasets on Anna Pavlova can be found in Harmony Bench, *Mapping Touring: Dance History on the Move*, available at <https://harmonybench.wordpress.com>.

<sup>3</sup>We are also in the early stages of a new, jointly initiated project titled “Dance in Transit,” funded by a Battelle Engineering, Technology, and Human Affairs grant from The Ohio State University.

essay or multimedia narrative, such as an aesthetically pleasing historical map<sup>4</sup> with some annotations along the lines of “this happened,” or “here is a picture connected to this location,” or even “this was supposed to happen but didn’t,” and then stop. Instead, we need to ask whether and how digital tools can be leveraged to support scholarly interpretation and analysis by revealing things we do not already think we know. Our conversations have stressed the importance of not becoming enamored of digital research methods for their own sake, even as digital approaches to scholarship are changing the forms that humanistic inquiry can take. As Barbara Herrnstein Smith puts it, “[n]ew methods enable new questions to be posed and old answers to be sharpened or corrected. But in any field of knowledge production, *significant* questions come out of ongoing interests and problems, not usually just methods as such.”<sup>5</sup> Although we may envisage different scholarly outputs for our individual projects, we share a core interest in the potential for such digital research methods to bring together and examine multiple complex datasets related to dance touring. This vastly expands scholarly understandings of dance’s mobility, for example, by destabilizing accounts of transnational contact that privilege certain large metropolitan areas. At the same time it also enables the discovery of new historical interconnections and patterns that can, for example, supplement and contextualize reviews and other firsthand accounts among audience members. It can point to convergences in patterns of travel, shedding light on transportation networks and infrastructures. And it can motivate new dimensions of audience analysis through the lens of company repertory. In this way we can extend our capacity to place individual performances and audiences within larger performance ecosystems and global networks of touring.

### Toward Dynamic Spatial Histories of Movement

In her overview of dance studies Janet O’Shea contends four intellectual arenas laid the foundation for the discipline that emerged as a field from their points of overlap: namely, anthropology, dance criticism and analysis, philosophy, and history. Of these, ethnographic and historiographic tendencies have been the most prominent in what O’Shea calls “new dance studies,” marked by the simultaneous pursuit of choreographic and cultural analysis, which she aligns with the dance scholarship of the late 1990s.<sup>6</sup> As dance scholarship has continued to focus on the cultural politics of dance, and in particular the politics of representation, questions regarding how dance practices travel have emerged. Priya Srinivasan notes in her analysis of the transnational circulation of the labor of classical Indian dance that “[d]ance is embodied and passes from body to body, whether we like it or not.”<sup>7</sup> The concern over how dance travels, “from body to body, whether we like it or not,” has been generative for the field. The focus of much

<sup>4</sup> On aesthetic considerations within data visualization and information design, see Orit Halpern, *Beautiful Data: A History of Vision and Reason since 1945* (Durham, NC: Duke University Press, 2014).

<sup>5</sup> Barbara Herrnstein Smith, “What Was ‘Close Reading’? A Century of Method in Literary Studies,” *Minnesota Review* 87, no. 1 (2016): 57–75, quote on 67 (original emphasis).

<sup>6</sup> Janet O’Shea, “Roots/Routes of Dance Studies,” in *Routledge Reader in Dance Studies*, ed. Alexandra Carter and Janet O’Shea, 2nd ed. (New York: Routledge, 2010), 1–15, quote on 1.

<sup>7</sup> Priya Srinivasan, *Sweating Saris: Indian Dance as Transnational Labor* (Philadelphia: Temple University Press, 2012), 167. Work such as ours owes a debt to Deirdre Sklar’s 1991 observation that “[o]ne has to look beyond movement to get at its meaning,” which inaugurated a turn to offstage analyses in dance studies, beginning with ethnographic accounts. See Sklar, “Five Premises for a Culturally Sensitive Approach to Dance,” in *Moving History/Dancing Cultures: A Dance History Reader*, ed. Ann Dils and Ann Cooper Albright (Middletown, CT: Wesleyan University Press, 2001), 30–32, quote on 31.

of this scholarship, however, has addressed the social responsibility of such travel, and in particular the colonial, neocolonial, and neoliberal politics that situate the circulation of dance within a framework of cultural appropriation.<sup>8</sup>

Whether focused on the contemporary moment or on the recent or distant past, such research is taking shape against a background in which digital and social media are profoundly restructuring how and where dance circulates, and how quickly movement practices spread.<sup>9</sup> Popular media screenscapes have reoriented the circulation of dance, shifting its presumed locus from the concert stage or dance club to computer and television screens, through which videos are shared widely and rapidly. The dramatic nature of this shift invites scholars to examine previous modes of dance's dissemination, and dance touring is an obvious place to begin.

Sociologist John Urry points out that the movement of bodies is not necessarily faster than other global processes, given such border mechanisms as passports and visas, but that the interactions of subjects tend to be privileged by scholars while the infrastructures that enable such forms of exchange are overlooked.<sup>10</sup> Today, a telecommunications network provides the infrastructure for bringing dance to casual and "serious" viewers alike, from YouTube and Vimeo to live broadcasts of performances in high-art venues. Postal and telegraphy services previously facilitated such virtual communication, supporting what Bruno Latour has called "long distance networks."<sup>11</sup> But for dance it was more specifically the development of transportation technologies that connected cities and theatres through which performers could circulate. Although this transportation network operated at slower speeds and moved people rather than data, it also disseminated the works and practices of cultural producers, thereby creating new geographies of knowledge and practice. The phenomenon of dance touring thus asks us to consider the role of such infrastructural factors as transportation in disseminating movement practices by enabling bodies to circulate as mobile contact zones consuming, absorbing, and spreading aesthetic and cultural practices.

Steven Harris offers a schema for understanding how bodily practices travel when he breaks down the geography of knowledge into three analytic approaches, which he explores in relation to Jesuit missionaries and the advancement of Western science. The first he describes as a "static geography of place" that attends to the development

<sup>8</sup> See Brenda Dixon Gottschild, *Digging the Africanist Presence in American Performance: Dance and Other Contexts* (Westport, CT: Greenwood Press, 1996); Anthea Kraut, *Choreographing Copyright: Race, Gender, and Intellectual Property Rights in American Dance* (New York: Oxford University Press, 2016); and Jacqueline Shea Murphy, *The People Have Never Stopped Dancing: Native American Modern Dance Histories* (Minneapolis: University of Minnesota Press, 2007).

<sup>9</sup> See, for example, Harmony Bench, "'Single Ladies' Is Gay: Queer Performances and Mediated Masculinities on YouTube," in *Dance on Its Own Terms: Histories and Methodologies*, ed. Melanie Bales and Karen Eliot (New York: Oxford University Press, 2013), 127-51, and "Monstrous Belonging: Performing 'Thriller' after 9/11," in *The Oxford Handbook of Dance and the Popular Screen*, ed. Melissa Blanco Borelli (Oxford: Oxford University Press, 2014), 393-411.

<sup>10</sup> John Urry, *Mobilities* (Cambridge, UK: Polity Press, 2007), 12.

<sup>11</sup> Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, MA: Harvard University Press, 1987), 264. On the importance of telegraphy for theatre scholarship, see Marlis Schweitzer, *Transatlantic Broadway: The Infrastructural Politics of Global Performance* (New York: Palgrave Macmillan, 2015), 69-102. Earlier postal networks have also provided the basis for digital scholarship, including Paula Findlen, Dan Edelstein, Nicole Coleman, et al., *Mapping the Republic of Letters* project, Stanford University (2013), available at <http://republicofletters.stanford.edu/>.

of knowledge in situ.<sup>12</sup> Where were key figures when they engaged in the discovery/production of knowledge? The second Harris describes as a “kinematic geography of movement” that considers where practices and approaches came from and how knowledge is disseminated.<sup>13</sup> His third approach to analyzing the geography of knowledge encompasses “the dynamics of travel: why and by what means did all these movements take place? what was the *anima motrix* responsible for the multiple peregrinations of the elements of knowledge?”<sup>14</sup> In this final sense, Harris suggests, a scholarly account must bring historiography to bear on “these geographies of place, movement, and social organization.”<sup>15</sup> As Stephen Greenblatt points out, scholars must take such mobility in a highly literal sense, including physical and institutional barriers to and conditions of movement: “[o]nly when conditions directly related to literal movement are firmly grasped will it be possible fully to understand the metaphorical movements”—for example, between center and periphery.<sup>16</sup>

Dance historians and dance ethnographers have emphasized, in their own ways, the static and kinematic dimensions of a geography of knowledge, analyzing dance practices and dance works at the site of their origination or occurrence, and thinking through questions of cultural diaspora, human migration, and political exile through dance movement. Such studies of dance’s circulation have often emphasized the ways in which dance moves through times, more than how it crosses space, with documentation and the body as archive serving as prominent frameworks for pursuing dance histories.<sup>17</sup> The spatial turn in the humanities withdrew choreography from dance as its exclusive medium of manifestation, and enabled choreography as a concept to operate within a larger conversation regarding movement, mobility, travel, and displacement. But with few exceptions, dance scholars have left travel itself virtually untouched.<sup>18</sup> At a moment when key concepts associated with dance, such as *mobility*, are increasingly used to articulate the flows of contemporary labor and migration, deeper understandings of dance’s own mobility position dance studies to engage with and further develop interdisciplinary scholarly conversations of “kinopolitics.”<sup>19</sup>

<sup>12</sup> Steven J. Harris, “Long-Distance Corporations, Big Sciences, and the Geography of Knowledge,” in *Postcolonial Science and Technology Studies Reader*, ed. Sandra Harding (Durham, NC: Duke University Press, 2011), 61–83, quote on 62.

<sup>13</sup> *Ibid.*

<sup>14</sup> *Ibid.*

<sup>15</sup> *Ibid.*

<sup>16</sup> Stephen Greenblatt, “A Mobility Studies Manifesto,” in *Cultural Mobility: A Manifesto* (Cambridge: Cambridge University Press, 2009), 250–53, quote on 250.

<sup>17</sup> On the relationship between cross-cultural journeys and fantasies of time travel, see Michelle Clayton, “Touring History: Tórtola Valencia between Europe and the Americas,” *Dance Research Journal* 44, no. 1 (2012): 28–49. A sample of the extensive writing on danced reengagements with archives appears in Mark Franko, ed., *The Oxford Handbook of Danced Reenactment* (Oxford: Oxford University Press, forthcoming).

<sup>18</sup> Notable exceptions include analyses of seventeenth- and eighteenth-century choreography and cartography, such as Susan Leigh Foster, *Choreographing Empathy: Kinesthesia in Performance* (Abingdon, UK: Routledge, 2011); dance’s relationship to twentieth-century tourism, such as Jane Desmond, *Bodies on Display from Waikiki to Sea World* (Chicago: University of Chicago Press, 1999); and the twentieth- and twenty-first-century use of dance in American cultural diplomacy, such as Naima Prevots, *Dance for Export: Cultural Diplomacy and the Cold War* (Middletown, CT: Wesleyan University Press, 1998), and Clare Croft, *Dancers as Diplomats: American Choreography in Cultural Exchange* (New York: Oxford University Press, 2015).

<sup>19</sup> Thomas Nail, *The Figure of the Migrant* (Stanford, CA: Stanford University Press, 2015), 24. See also Tim Cresswell, *On the Move: Mobility in the Modern Western World* (New York: Routledge, 2006).

The question of travel, and further of infrastructures facilitating such travel, is more comprehensively addressed in theatre and performance studies. For example, in *Transatlantic Broadway* Marlis Schweitzer attends to the nonhuman entities, including technological advances in transatlantic travel, which expanded theatre networks prior to World War I.<sup>20</sup> Her project is among a growing number in theatre and performance studies to draw on network analysis in order to situate historical and contemporary performance events and their global circulation within larger economic and cultural systems.<sup>21</sup> Such infrastructures of travel are particularly important to dance, which is even less likely to rely upon a text that can circulate independently of live performers.<sup>22</sup> At the same time, as Christopher Balme points out, even theatrical touring remains the most under-researched manifestation of modern transnational, or even global, theatre practices.<sup>23</sup>

As these scholars demonstrate, performing artists covered transnational ground via the complex relational structures of networked systems. Urry calls for a study of “network capital” in order to point to “the real and potential social relations that mobilities afford.”<sup>24</sup> Underlying mobilities in themselves, he argues, do nothing; it is necessary to account for the social consequences of such mobilities.<sup>25</sup> To think about touring in this way is not only to tell the story of a star performer and her most famous audience members, but to consider the ripple effects and residual affects of many travelers’ arrivals, departures, stays, and returns. Such a distributed world is suggested by Clare Croft’s *Dancers as Diplomats*, which incorporates an ethnographic approach to the day-to-day life of dancers on tour, using the experiences of multiple dancers as a means to counter top-down narratives of cultural diplomacy in which national ideologies tend to overdetermine interpretation.<sup>26</sup> Further dimensions of touring’s network capital include the many travelers’ prior tours, since company membership changes over time, and the relationship between one company and those that preceded or followed its performance engagements in the same cities or even theatres. For example, in terms of American Ballet Caravan’s 1941 South American tour, the wardrobe mistress, a Russian émigré to the United States, had also been with George Balanchine on a previous South American tour, which visited many of the same cities. Likewise, when Pavlova’s company toured South America simultaneously with the Ballets Russes during 1917, the two companies sometimes competed for venues, as lamented by a dancer of Pavlova’s who noted that they had to open in Buenos Aires at the Teatro Coliseo, which she described as the second-best theatre in the city, because Sergei Diaghilev had already booked the nicer Teatro Colón.<sup>27</sup> Here, the tools of digital cartography can

<sup>20</sup> Schweitzer, *Transatlantic Broadway*.

<sup>21</sup> For example, Jen Harvie, *Fair Play: Art, Performance and Neoliberalism* (Basingstoke, UK: Palgrave Macmillan, 2013); Leo Cabranes-Grant, “From Scenarios to Networks: Performing the Intercultural in Colonial Mexico,” *Theatre Journal* 63, no. 4 (2011): 499–520; Elizabeth Maddock Dillon, *New World Drama: The Performative Commons in the Atlantic World, 1649–1849* (Durham, NC: Duke University Press, 2014).

<sup>22</sup> As compared to, for example, the international expansion of British theatre markets during the late Victorian and Edwardian periods through new distribution mechanisms that were free of the constraints of human travel. See Tracy C. Davis, *The Economics of the British Stage, 1800–1914* (Cambridge: Cambridge University Press, 2000), 360.

<sup>23</sup> Christopher Balme, “The Bandmann Circuit: Theatrical Networks in the First Age of Globalization 1,” *Theatre Research International* 40, no. 1 (2015): 19–36, quote on 19.

<sup>24</sup> Urry, *Mobilities*, 196.

<sup>25</sup> *Ibid.*

<sup>26</sup> Croft, *Dancers as Diplomats*.

<sup>27</sup> Letter from Mascot Moskovina to Billie Morton dated August 14, 1917, *Mascot Moskovina*, available at <http://scalar.usc.edu/works/mascot-moskovina/letter-aug-14-1917-page-1>.

help to elaborate print arguments in visual form; for example, that concert dance has participated in a complex and entangled history of global circulation for a long time. Digital scholarship thus contributes to the reorganization of dance history beyond the nation by making visible distributed “micropolitics of exchange.”<sup>28</sup>

At the same time that digital tools can reinforce and elaborate other scholarly work, they also provide new methods for analysis. Visualizing spatial history, as Richard White has argued, is productive not primarily as a vehicle “to communicate things that you have discovered via other means”; rather “[i]t is a means of doing research; it generates questions that might otherwise go unasked, it reveals historical relations that might otherwise go unnoticed, and it undermines, or substantiates, stories upon which we build our own versions of the past.”<sup>29</sup> In the case of dance touring, the scale of digital analysis, particularly organized as a database and represented as a map, expands our capacity to trace real and potential networks of relation. Whether deployed as a means of exposition or exploration, such mapping can thus “show alignments, reveal patterns and display affinities”<sup>30</sup> by managing large amounts of data in a manner not easily achieved via other means.

To take one dataset as a sample, each time American Ballet Caravan crossed national and even municipal boundaries, the company presented officials with substantial documentation of travelers’ identities. From this paperwork we can collate a table of personal information regarding the tour’s travelers who were born in thirty-six cities in eight countries, although these anchor statistics cannot, of course, present the full story of the company’s workers and their backgrounds. A dancer born in London was domiciled in Montreal, worked in the United States under a quota visa, but traveled under a valid Canadian passport. Two dancers born in different cities in Germany required extensive documentation, since they were officially listed as “stateless.” By the time of the 1941 tour American Ballet Caravan’s travelers held citizenship in four countries, plus the stateless Germans, whose passports had been invalidated.<sup>31</sup> To trace a map of the world that is capable of representing the places of birth, citizenship, and previous journeys of all travelers is not just a demographic project; instead, it visualizes touring as a distributed transnational network of individual agents rather than a single clump shuttled around in a loop in service of a company.<sup>32</sup> Dance or dancers as circulating entities could thus be explored similar to export commodities, through critical visualizations that represent how presenters, company managers, and dancers maneuver in a complex, global dance market.<sup>33</sup>

<sup>28</sup> See, for example, Kate Elswit, “The Micropolitics of Exchange: Exile and Otherness after the Nation,” in *The Oxford Handbook of Dance and Politics*, ed. Randy Martin, Gerald Siegmund, and Rebekah Kowal (Oxford: Oxford University Press, forthcoming, 2017). On touring, see also Elswit, *Watching Weimar Dance* (New York: Oxford University Press, 2014), 95–127.

<sup>29</sup> Richard White, “What Is Spatial History?,” para. 36. The Spatial History Project, Stanford University (2010), available at <https://web.stanford.edu/group/spatialhistory/cgi-bin/site/pub.php?id=29> (emphasis in original).

<sup>30</sup> Richard Rogers, Natalia Sánchez-Querubín, and Aleksandra Kil, *Issue Mapping for an Ageing Europe* (Amsterdam: Amsterdam University Press, 2015), 9.

<sup>31</sup> See New York City Ballet Archives, box RG6-1, folder 3112.

<sup>32</sup> Assigning individual performers and others Virtual International Authority File (VIAF) numbers could facilitate the tracking of well-known persons across the many companies with which they worked.

<sup>33</sup> The Harvard University Center for Economic Development’s Globe of Economic Complexity offers one example of visualizing global exports. Notably, it includes no arts or heritage objects. See Owen Corneil and Romain Vuillemot, “Globe of Economic Complexity” (2015), available at <http://globe.cid.harvard.edu/>.

Spatial history addresses, in part, how particular sites change over time, emphasizing, for example, how changes in the landscape or architecture or in population density and demographics are registered in a given place. Building on this basic premise, dynamic spatial histories add the dimension of movement, emphasizing such patterns as migration, trade and travel routes, war, or even the spread of disease, in particular by utilizing digital visualizations, animations, or interactive elements. In advocating for dynamic spatial histories of movement, we are interested in putting these same resources to work—database and map alongside narrative interpretation—in order to think not only about how people and objects travel from point to point, but also about their embodied ways of moving, both in place and in transit.

The following two sections elaborate first the building of databases as engines capable of managing such large scales of movement, and then their exploratory visualization in the form of maps that enable access to different experiences of space. These tools allow us to construct narratives that emphasize movement in circulation, not just isolated in moments of contact or encounter, but rather as part of larger dynamic systems in which individuals function as vectors of movement. Dance studies is particularly well-suited for such work because the field is accustomed to the contradiction of bodies as agents of movement (colonizers, proselytizers, negotiators, protesters) that are nevertheless subject to social, political, and aesthetic choreographies. Movement moves across and through; dance repertoires move through dancing bodies as performers learn new dances, just as the dancers themselves move through various cultural landscapes, leaving gestures, steps, and choreographies in their wake. And all these are embedded within infrastructures of mobility, from transportation and communication to impresarios and presenting networks. By bringing together the powerful combination of database and map, together with narrative contextualization and interpretation, we propose that dynamic spatial histories of movement can address static, kinematic, and dynamic geographies of knowledge as they pertain to bodies in motion. Further, analyzing movement in historical and cross-cultural contexts challenges digital humanities to grapple with the phenomenon of live bodies, which are not fixed in print or image, but carry, borrow, and share techniques, styles, theories of corporeality and composition, gestures, and ways of being as they travel.

### Dance's Datasets

Every historian has the experience of sitting in an archive and scribbling lists in order to sort through detailed information, creating idiosyncratic databases that almost no one else can use. The power of the digital database lies in the standardization of data, which facilitates access and usability, and its ability to manage datasets of whatever size. Supported by databases at both fine-grained and sweeping scales, digital scholarship can then bring unexpected details to the foreground. For example, in cataloging the repertory performed on Pavlova's South American tour show by show, her signature piece, "The Dying Swan," emerges as the most frequently performed. While this is unsurprising, what is in fact more interesting is that "Gavotte Pavlova," "Holland Dance," and "Pizzicato" were danced almost as often (fig. 2). How then does "The Dying Swan" emerge as the most influential and memorable of Pavlova's repertory if, at least within the context of her South American appearances, the frequency of its performance is not substantially greater than other items in her repertory? Certainly, Pavlova's promotional materials capitalized on and solidified the connection, but in

**Anna Pavlova's Ballet Russe in South America (1917-1918)**

Day of Date	Country	City	Time	Venue	Program
1917, April, 12	Null	Null	eve	Teatro Nacional	Coppelia: El Estudio Mecanico de Coppellius (Delibes); Divertissements (unspecified)
1917, April, 20	Panama	Panama City	eve	National Theatre	The Magic Flute (Drigo); Divertissements (unspecified)
1917, May, 2	Ecuador	Quayaguil	eve	Teatro Olmedo	Puppen-Fee (Bayer); Walpurga Night (Gounod); Rhapsodie Hongroise (Liszt); Pierrot (Dvořák); The Swan (Saint-Saëns); Holland Dance (Grieg); Vals de Primavera (Mey
1917, May, 12	Ecuador	Quayaguil	eve	Teatro Olmedo	Puppen-Fee (Bayer); Walpurga Night (Gounod); Rhapsodie Hongroise (Liszt); Pierrot (Dvořák); The Swan (Saint-Saëns); Holland Dance (Grieg); Vals de Primavera (Mey
1917, June, 1	Peru	Lima	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, June, 2	Peru	Lima	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, June, 12	Peru	Lima	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, July, 5	Chile	Valpo	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, July, 6	Chile	Valpo	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, July, 7	Chile	Valpo	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, July, 8	Chile	Valpo	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, July, 10	Chile	Valpo	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, July, 11	Chile	Valpo	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, July, 12	Chile	Valpo	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, July, 13	Chile	Valpo	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, July, 14	Chile	Valpo	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, July, 15	Chile	Valpo	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, July, 22	Chile	Santi	mat	Teatro Municipal	The Swan (Saint-Saëns); Moment Musicale (Schubert); Valse Sentimental (Strauss II); Pizzicato (Drigo); Rhapsodie Hongroise (Liszt); Mazourka (Glinka); Danse Grecque (Brahms); P
1917, July, 24	Chile	Santiago	eve	Teatro Municipal	Flora's Awakening; Invitation to the Dance; Mazourka (Glinka); The Butterfly (Drigo); Czardas (Grossman); Danza Japonesa (Sullivan); Pizzicato (Drigo); Pas de Trois (Go
1917, July, 25	Chile	Santiago	mat	Teatro Municipal	Amarilla; Chopiniana (Chopin); Gopak (Tchaikovsky); Noche Buena (Tchaikovsky); Anitra's Dance (Grieg); Mazurka (Wieniawski); Danse Grecque (Brahms); Valse Caprice
1917, July, 26	Chile	Santiago	mat	Teatro Municipal	Puppen-Fee (Bayer); Invitation to the Dance; Mazourka (Glinka); The Butterfly (Drigo); Czardas (Grossman); Danza Japonesa (Sullivan); Pizzicato (Drigo); Pas de Trois (Go
1917, July, 28	Chile	Santiago	eve	Teatro Municipal	Coppelia: El Estudio Mecanico de Coppellius (Delibes); Danse Grecque (Brahms); Rosa Morante (Grieg); Pierrot (Dvořák); Pastorale (Strauss II); Valse Sentimental (Schub
1917, July, 29	Chile	Santiago	mat	Teatro Municipal	Coppelia: El Estudio Mecanico de Coppellius (Delibes); Danse Grecque (Brahms); Rosa Morante (Grieg); Pierrot (Dvořák); Pastorale (Strauss II); Valse Sentimental (Schub
1917, July, 29	Chile	Santiago	mat	Teatro Municipal	Coppelia: El Estudio Mecanico de Coppellius (Delibes); Danse Grecque (Brahms); Rosa Morante (Grieg); Pierrot (Dvořák); Pastorale (Strauss II); Valse Sentimental (Schub
1917, August, 2	Chile	Santiago	mat	Teatro Municipal	The Magic Flute (Drigo); Invitation to the Dance; Vals de Rosas (Delibes); The Swan (Saint-Saëns); Tarantella (Drigo); Moment Musicale (Schubert); Valse des Visions (Be
1917, August, 3	Chile	Santiago	mat	Teatro Municipal	Raymonda: El Sueño de Raymonda; Noche Buena (Tchaikovsky); Oberetas (Polish Dance); Pizzicato (Drigo); El Sueño (Sra. Fernandez original music); Pierrot (Dvořák); Val
1917, August, 3	Chile	Santiago	mat	Teatro Municipal	Snowflakes (Tchaikovsky); Danzas Egipcias; Vals de Rosas (Delibes); The Swan (Saint-Saëns); Danza Bohemia (Saint-Saëns); The Swan (Saint-Saëns); Valse (Chopin); Minuet (Paderewski); Val
1917, August, 4	Chile	Santiago	mat	Teatro Municipal	Oriental; Orfeo; Rhapsodie Hongroise (Liszt); Pizzicato (Drigo); Holland Dance (Grieg); Minuet (Gardes); Pastorale (Strauss II); Ballets Espagnols (Bizet)
1917, August, 5	Chile	Santiago	mat	Teatro Municipal	The Magic Flute (Drigo); Orfeo; Pizzicato (Drigo); Minuet (Paderewski); La Nutt (Rubinstein); Holland Dance (Grieg); Indo-Chinese Dance (Kreisler)
1917, August, 5	Chile	Santiago	mat	Teatro Municipal	Snowflakes (Tchaikovsky); Danzas Egipcias; Vals de Rosas (Delibes); The Swan (Saint-Saëns); Danza Bohemia (Saint-Saëns); El Sueño (Sra. Fernandez original music);
1917, August, 15	Argentina	Buenos Aires	mat	Teatro Coliseo	Puppen-Fee (Bayer); Walpurga Night (Gounod); Vals de Primavera (Meyer-Helmund); The Swan (Saint-Saëns); Danza Bohemia (Saint-Saëns); El Sueño (Sra. Fernandez original music);
1917, August, 19	Argentina	Buenos Aires	mat	Teatro Coliseo	Coppelia: El Estudio Mecanico de Coppellius (Delibes); Danse Grecque (Brahms); Gavotte Pavlova (Lincke); Pastorale (Strauss II); Pas de Trois (Strauss II); Valse Sentim
1917, September, 5	Argentina	Buenos Aires	eve	Teatro Coliseo	Puppen-Fee (Bayer); Walpurga Night (Gounod); Mazourka (Glinka); Pas de Trois (Strauss II); The Swan (Saint-Saëns); El Guerrero (Ligutti); Minuet (Paderewski); Danse
1917, September, 23	Argentina	Rosario	mat	Teatro Colon	Puppen-Fee (Bayer); Danzas Egipcias; Oberetas (Polish Dance); Pierrot (Dvořák); Holland Dance (Grieg); Danza Japonesa (Sullivan); Danse Grecque (Brahms); Pas de T

Figure 2. This table, generated in Tableau Public, and superimposed query from Palladio are based on a dataset in progress. They show the pieces in Pavlova’s repertory that were most frequently performed while her company was in South America during 1917–18.  
 See <https://public.tableau.com/profile/hb2157#!/vizhome/shared/S75WFST8J>  
 (Source: Image and dataset by Harmony Bench.)

order for dance scholars to see past a marketing strategy they need ways to attend to non-canonical aspects of Pavlova’s repertory that were equally important to shaping and reinforcing global modernism, although they passed by unnoticed.

A database extends beyond the scope of an individual artist to organize and manage data that represent larger systems and networks of performance. By focusing, for example, on the intertwined relationship between repertory and touring, data analysis can also support claims of dance’s importance to (and not only its implication in) the complex exchange of embodied cultural practices. Pavlova was not simply an ambassador of ballet, narrowly construed; throughout her career she staged a great variety of folk dances and orientalist numbers in addition to Romantic and classical ballets, with a repertory of as many as forty full-length ballets and 300 divertissements from various genres, performed to classical music as well as popular tunes. While on tour Pavlova and her dancers both gathered and disseminated movement. Like many dancers, she also commissioned music and created new pieces as she toured. For example, in 1917 in Santiago, Chile, Pavlova premiered a piece called “El Sueño” to music by a Señora Fernandez from Valparaiso, where her company had been a few weeks prior. Additionally, after her 1919 stay in Mexico, she added a suite of Mexican folk dances, including “El Jarabe Tapatío” (Mexican hat dance), to her repertory.<sup>34</sup> Because Pavlova presented a range of material and dance styles (filtered through the movement vocabulary of ballet), her audiences were witness to and participants in a global circulation

<sup>34</sup> For an analysis of how Pavlova functioned within a narrative of modernization among the elite classes of Mexico City, see Jose L. Reynoso, “Choreographing Modern Mexico: Pavlova in Mexico City (1919),” *Modernist Cultures* 9, no. 1 (2014): 80–98.

of music and dance. A historical narrative that emphasizes choreographers and their works independent of place, or which highlights only metropolises, fails to account for the impact of travel, audiences, and local arts communities on the development of repertory in touring companies.

As the example of Pavlova makes visible, touring as a phenomenon both takes advantage of transnational networks and furthers the economic and cultural project of globalization. Yet, the global scale of dance's circulation through these networks far exceeds any single artist's participation. The ability of databases to store and organize many complex pieces of information greatly enhances our capacity to track the touring and performance engagements of numerous artists over time, to trace shifts in repertory and company membership, and to note the proximity of multiple cultural agents in time and space. Furthermore, databases can support analyses of local audiences and what they might have seen in the past, and enable comparisons among cities and venues in terms of repertory selected for presentation.<sup>35</sup> Working at a large scale, across many artists and many decades of touring, one can more fully grasp the impact of dance on the global arts landscape, and the centrality of global connectedness to the development and transmission of dance practices in modern history.

There is enormous potential in what has been called "distant" analysis to sift through large quantities of cultural data to observe the patterns that emerge.<sup>36</sup> Yet, such work requires that there be large quantities of fairly "clean"—that is, relatively uniform and hopefully accurate—data through which to sift. Many cultural analytics projects thus focus on the analysis of born-digital or previously digitized datasets, both past and present, whether textual or image-based. By contrast, especially given the limited amount of digitized artifacts or pre-collated data regarding dance, it is important that we do not limit our scholarly scope by letting the data lead, whether by exclusively relying upon the content of archives privileged enough to have been digitized or using only available motion capture and video recordings that fix single iterations of a dance into an extreme historical present. Instead, we begin by collecting our data through traditional archival research with the intent of eventually making the datasets themselves available to other researchers. The resulting datasets may be quite small initially, given the labor intensiveness of collection, but they reflect an investment in the future of a field where historical datasets are scarce.

Both of our work with dance touring has involved manually collating datasets in archives and special collections, culling from different sources that can support analyses of onstage and offstage elements related to performance. For example, performance programs provide extensive information about what appears onstage, from dancers and their roles in repertory performed, to choreographers and designers, to location information, such as the towns and theatres in which performances were given.

<sup>35</sup> IbsenStage and Linked Jazz are two projects in theatre and music, respectively, that capture the potency of data-driven projects for the performing arts. The University of Oslo's IbsenStage exhaustively documents the countries and theatres in which the playwright's works have appeared, the dates of performances, and those who have contributed to staging the work over time (<https://ibsenstage.hf.uio.no/>). Linked Jazz: Revealing the Relationships of the Jazz Community works laterally, building and visualizing relationships among jazz musicians as a social network, which is both supplemented and driven forward by a combination of open data and transcribed oral histories (<https://linkedjazz.org/>).

<sup>36</sup> See Franco Moretti, *Distant Reading* (London: Verso, 2013). On "distant reading" and its provocations and complications with respect to "close reading," see Herrnstein Smith, "What Was 'Close Reading'?"

Performance programs have the benefit of being highly structured and presenting information in a predictable, even formulaic manner. Data from such programs can be supplemented with announcements for upcoming shows, as well as newspaper advertisements, previews, reviews, tour itineraries, season subscription mailers, and performers' diaries and scrapbooks. The archives that lend themselves to analyses of offstage activity are often much less standardized, although the data themselves can be likewise broken down into quantitative structures. Financial documents can provide profit-and-loss statements on a night-by-night or city-by-city basis, which include the dates, times, and types of performances (matinee or evening, subscription or benefit), as well as the costs and types of transportation (taxi, bus, train, plane, and boat fares, connection by connection). There may be further supporting lists, such as the personal information collected on company members for group visas, the bonds paid to cross certain international borders, or the vaccinations needed prior to departure. Material histories are evidenced by props and costume items—for example, the amount of makeup, shoes, or sunscreen anticipated for a single trip.

These archival onstage and offstage datasets on dance touring can also be combined with datasets that have been collected for other purposes. Clearly, even establishing geo-location data for a town or specific venue requires cross-referencing with existing datasets. Then there are further datasets that can not only support, but also enhance the understanding of touring data, such as a city's demographic information, active transportation routes, and migration patterns. For example, analyzing the ratio of performances given to the populations of towns on a tour reveals a number of cities where events per capita deviate from the mean; this can suggest the need for further attention to the political, cultural, or artistic value of those sites in particular. More importantly, setting dance-touring pathways alongside well-known burlesque wheels and vaudeville circuits, not to mention touring theatre productions, can paint a more thorough portrait of the performing arts ecosystem as a whole, as well as illuminate specific interconnections. Who performed in the same cities and theatres not only within, but across forms? Which routes were the most common? Who performed different dances to the same music or the same dances to different music? And what are the implications for disciplinary and interdisciplinary performing arts research?

Whatever the source, creating new datasets from archival materials rather than "scraping" already digitized information reminds us, as Lev Manovich cautions, that "data does not just exist—it has to be generated. Data creators have to collect data and organize it, or create it from scratch."<sup>37</sup> Similarly, Lisa Gitelman and others have argued that data is never "raw"; regardless of warnings that datasets are presented "as is," with inconsistencies, inaccuracies, and biases, the larger the dataset, the more raw (neutral, unbiased, or objective) it appears. Gitelman and Virginia Jackson argue that scholars must therefore account for not only how disciplines "have imagined their objects and how different datasets harbor the interpretive structures of their own imagining," but also, playing on Claude Lévi-Strauss's distinction between the "raw" and the "cooked," how data are "variously 'cooked' within the varied circumstances of their collection, storage, and transmission."<sup>38</sup> Although they have the aura of neu-

<sup>37</sup> Lev Manovich, *The Language of New Media* (Cambridge, MA: MIT Press, 2001), 224.

<sup>38</sup> Lisa Gitelman and Virginia Jackson, "Introduction," in *Raw Data" Is an Oxymoron*, ed. Lisa Gitelman (Cambridge, MA: MIT Press, 2013), 1–14, quote on 3.

trality, data are already interpretations, and they carry with them cultural values and assumptions that guide identification and assembly within scholarly research; as interpretations, data reflect the biases of institutions and researchers. The “cleaner” and bigger a dataset is, the more likely it is to favor practices and people that are already well-represented in archives. One of the dangers is thus that data-driven methods will reinforce existing structures of power and aesthetico-political hierarchies. It is no coincidence, for example, that ballet was a common denominator chosen for our own collaboration; we knew that cultural institutions would have substantial collections of artifacts relevant to its history.

Accounting for and counteracting biases built into archives remains a significant challenge for digital researchers, and yet it is also possible that the critical interrogation of quantified historical information will enable holes in the archival record to emerge bigger and brighter. Bringing cultural criticism to bear on data analysis, critical data studies insists on the nonneutrality of data. Such a framework acknowledges that data collection is already an act of interpretation, and similarly acknowledges the limits of data analysis when not accompanied by subject-matter expertise. As critical data studies advocate Rob Kitchin remarks: “[i]t is one thing to identify patterns; it is another to explain them.”<sup>39</sup> For example, Lincoln Kirstein, the director of American Ballet Caravan, noted at various times that one of the goals of its six-month tour of South America was to showcase a kind of American art, but having to do it where the frame of reference for ballet was primarily Russian. In one report he suggests that for audiences in Buenos Aires, “[f]ew believed beforehand there *was* an American Ballet equal to Russian Ballet,” while in another he offers a caveat for the some of the controversies that the tour had faced more generally in South America: “[t]he more conservative [audiences], used to the classic dance of the Russian ballet type, neither understood nor approved the modern approach of such ‘typically American’ ballets as *Billy the Kid*.”<sup>40</sup>

Pavlova’s earlier tours make an appearance as one such Russian form in a letter that Kirstein wrote to Nelson Rockefeller regarding Rio de Janeiro: “I knew that our purely American Ballets are not liked by the rich conservative public whose idea of dancing is Pavlova.”<sup>41</sup> As Kirstein’s own comparison suggests, to frame his comments rather than take them at face value requires contextualizing this tour not only in terms of the company’s own touring or repertory, but also the prior tours and repertory of Euro-American artists like Anna Pavlova, as well as Isadora Duncan, Tórtola Valencia, Maud Allan, and the Ballets Russes, among others. Without examining the repertory and routes of these artists and companies, it is difficult to say if Kirstein’s comment reflects identifiable aesthetic differences between Russian and American modernisms, represents a conflict between classicism (perceived as Russian) and modernism (perceived as American), or results from the tour’s status as a prelude to cold war cultural diplomacy. In addition, we need to assess what Kirstein knew or did not know about local dance by tracing the ways that Central and South American dancers were them-

<sup>39</sup> Rob Kitchin, “Big Data, New Epistemologies and Paradigm Shifts,” *Big Data & Society* 1, no. 1 (2014): 1–12, quote on 8.

<sup>40</sup> Lincoln Kirstein, “Draft of a Preliminary Report Concerning the Tour of the American Ballet in South America, June–September 1941” (emphasis in original) and “Report on The American Ballet Caravan covering June–September 1941,” box 101, series L (FA348), folder 966, in Nelson A. Rockefeller Papers, Projects, Rockefeller Archive Center.

<sup>41</sup> Lincoln Kirstein, letter to Nelson Rockefeller, July 2, 1941, box 101, series L (FA348), folder 966, in Nelson A. Rockefeller Papers.

selves circulating in the early and mid-twentieth century. Building this larger dataset requires time, travel funding, and language competency. Clearly, this is a lot of work, but we believe it can extend our scholarly frame of view.

The relationship between the construction of datasets and what is more readily understood as a conventional gathering of historical evidence can be thought of in terms of what Sarah Bay-Cheng describes as seeing “the composite image within the pixelated fragments,”<sup>42</sup> or what Martin Mueller calls “scalable reading.”<sup>43</sup> Advocating for “digitally assisted” analyses of early modern texts, Mueller notes that “[d]igital tools and methods certainly let you zoom out, but they also let you zoom in, and their most distinctive power resides precisely in the ease with which you can change your perspective from a bird’s-eye view to close-up analysis. Often it is a detail seen from afar that motivates a closer look.”<sup>44</sup> Rather than maintain a binary distinction between distant and close reading practices, the paradigm of scalability recognizes both the need and ability to approach a research area at multiple distances, not just close up and far away. Further, Bay-Cheng’s description of a composite emerging from fragments reminds us that we are rarely working with material that neatly conforms to the same scale nor is a complete picture likely to result from our efforts. When working with data, this means building nested relationships, such that, for example, a performance venue is located in a city, a state, and a country, and perhaps at a finer scale, at a street address or latitude/longitude coordinate, or at a grander scale, on a continent; but it is also located within a diary, a letter, a series of interactions among travelers, and the like. Scalability recognizes that not all temporal and geographic scopes are useful or meaningful for inquiry, and that overlaps and discontinuities are to be expected in composites, as are absences. Tethering such a hermeneutics of suspicion to data-driven inquiry is thus critical to employing digital research methods in a humanistic context.

### Mapping Narratives of Touring

There is a long history of leveraging analog visual media to help render abstract information like datasets intelligible. Media archaeologists and historians of science have extensively documented the roots of contemporary digital visualization tools in prior technologies of representation.<sup>45</sup> But digital visualizations make user interaction and manipulation more explicit and more available than their analog counterparts. In 1993, for example, prior to the broad availability of digital visualization tools, Mark Monmonier proposed the use of print images in “complementary pairs or triads” in order to enable side-by-side analysis that made information clearer to the reader.<sup>46</sup> Digital tools now enable the layering of multiple datasets, bypassing the need for side-by-side comparisons in favor of superimposed images, graphs, and other visual representations of data. For example, figure 3 overlays our respective datasets on the

<sup>42</sup> Sarah Bay-Cheng, “Pixelated Memories: Theatre History and Digital Historiography” (plenary presentation, ASTR conference, Nashville, November 1–4, 2012), quote on 11, *Academia.edu*, available at [https://www.academia.edu/2131876/Pixelated\\_Memories\\_Theatre\\_History\\_and\\_Digital\\_Historiography](https://www.academia.edu/2131876/Pixelated_Memories_Theatre_History_and_Digital_Historiography).

<sup>43</sup> Martin Mueller, “Shakespeare His Contemporaries: Collaborative Curation and Exploration of Early Modern Drama in a Digital Environment,” *Digital Humanities Quarterly* 8, no. 3 (2014), available at <http://www.digitalhumanities.org/dhq/vol/8/3/000183/000183.html>.

<sup>44</sup> *Ibid.*, para. 31.

<sup>45</sup> For example, Edward R. Tufte places the origin of the “data map” in the seventeenth-century combination of cartographic and statistical skills. See his *The Visual Display of Quantitative Information*, 2nd ed. (Cheshire, CT: Graphics Press, 2001), 20.

<sup>46</sup> Mark Monmonier, *Mapping It Out: Expository Cartography for the Humanities and Social Sciences* (Chicago: University of Chicago Press, 1993), 189.

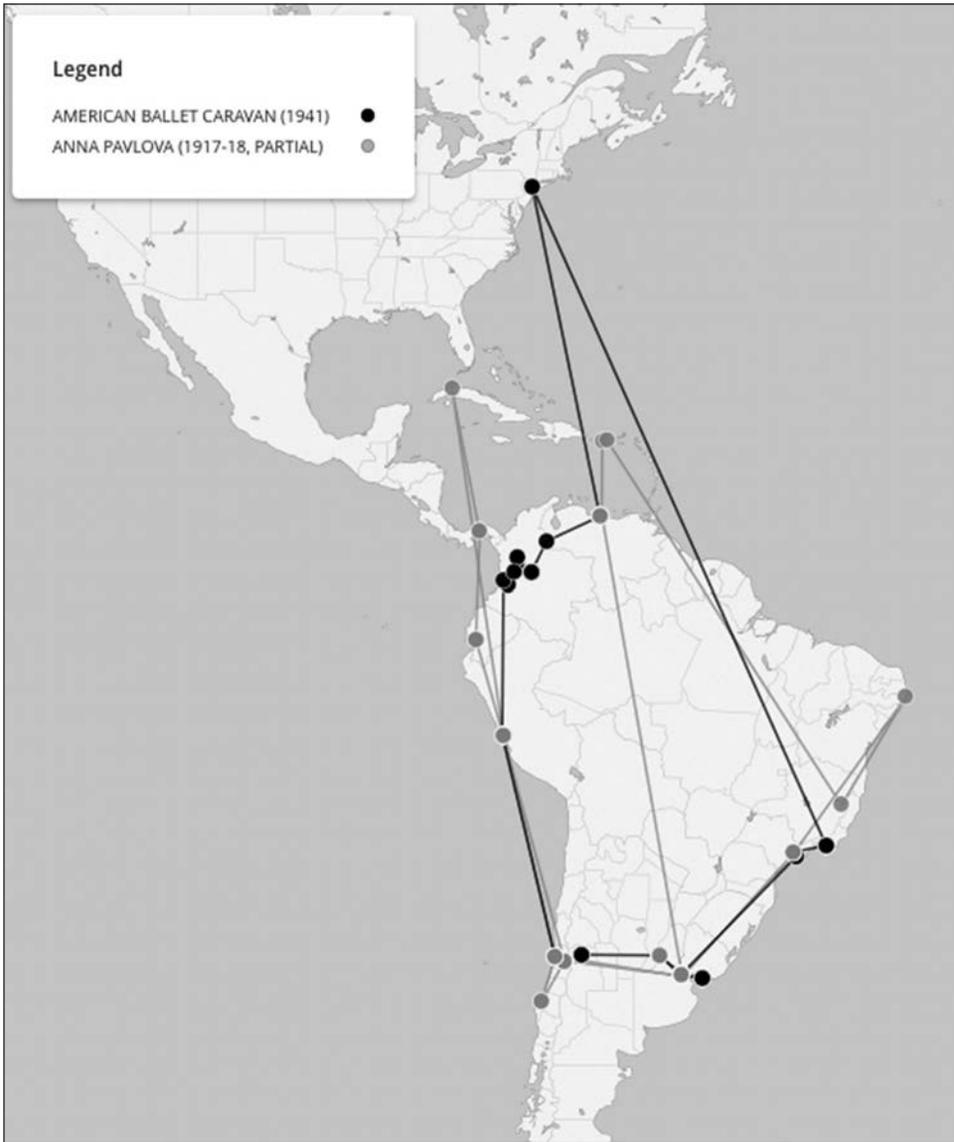


Figure 3. Using the open-access mapping platform Carto, we have plotted key locations of the two tours underlying this essay: the performances given in South America by Anna Pavlova's company during World War I and by American Ballet Caravan during World War II. A good deal of overlap between the two tours is visible, particularly in coastal cities like Lima, Buenos Aires, and São Paulo. See [https://kelswit.carto.com/viz/556cc6c8-81d6-11e6-a243-0e8c56e2ffdb/public\\_map](https://kelswit.carto.com/viz/556cc6c8-81d6-11e6-a243-0e8c56e2ffdb/public_map) (Source: Map and datasets by Kate Elswit and Harmony Bench.)

performance locations and trajectories of Pavlova's and American Ballet Caravan's tours from 1917–18 and 1941, respectively. Digital visualization further allows for the higher density of information associated with the database to remain available to the eye, at different levels of specificity.

Recalling Greenblatt's assertion that it is necessary to understand literal movement in order to understand metaphorical movement, digital visualizations like mapping

offer new means to extend that literal understanding of how movement moves by reorganizing our representations of global space.<sup>47</sup> Spatial historians have underscored the potential of tools like GIS for discovering the correlations and connections “among events in space and time for narrative generation,”<sup>48</sup> which also facilitate the generation of dynamic spatial histories of movement. It is important to remember that such events are not static; map-based visualizations are capable of drawing attention to the spatial distribution or concentration of more and less mundane systems and events over time, each of which are themselves in motion.

The need for such a flexible tool is apparent in exploring the relationships of the Pavlova and the American Ballet Caravan tours to both world wars, respectively. On the one hand, there is clear evidence for the ways in which the distant wars enabled and constrained travel through their impact on global transportation networks. This includes the very choice of South American routes because of the inaccessibility or inadvisability of transatlantic crossings and the personal circumstances of family members, such as dancer Ruth Page, who was able to join the Pavlova company in Puerto Rico in 1918 because, as her mother writes, “they were perfectly free to go ([their] men folk being in France).”<sup>49</sup> But it also appeared later into the tours, as when American Ballet Caravan could not take its originally planned boat between Santos and Buenos Aires because Atlantic shipping schedules had been thrown off, and so it ended up on a Spanish refugee ship originally from Bilbao. On the other hand, the faraway wars were clearly not the only factor impacting such travels. In fact, for American Ballet Caravan in 1941, it was the brief Ecuadorian–Peruvian war that lasted less than a month, but rerouted the tour already underway. In each of these instances a map alone might mean very little, but the combination of map and narrative explanation together enables a different scope of consideration, one capable of accounting for the constant evolution of interactions between local and global.

The multiple framings of global space that these war stories reference can be provisionally organized in terms of what cultural geographer David Harvey began to theorize in the 1970s as the overlapping frameworks of absolute, relative, and relational space in order to support his work on space and social justice. In terms of dance touring, *absolute space* would be the fixed location, such as the private property of the theatre or hotel that is located by a series of bounded territorial designations: on a particular street, in a particular city, and so on. If standard units of measure represent distances between locations in absolute space, by contrast, distance in *relative space* is measured in terms of time and effort. In Harvey’s words, “[t]he movement of people, goods, services, and information takes place in a relative space because it takes money, time, energy, and the like to overcome the friction of distance.”<sup>50</sup> Mapping relative space for

<sup>47</sup> This supports the turn from the discrete interactions of national practices to the distributed language of “interweaving” or “entanglement” that exceeds any single participating culture. See, for example, Erika Fischer-Lichte, “Interweaving Cultures in Performance: Different States of Being In-Between,” *New Theatre Quarterly* 25, no. 4 (2009): 391–401.

<sup>48</sup> May Yuan, John McIntosh, and Grant DeLozier, “GIS as a Narrative Generation Platform,” in *Deep Maps and Spatial Narratives*, ed. David J. Bodenhamer, John Corrigan, and Trevor M. Harris (Bloomington: Indiana University Press, 2015), 179–202.

<sup>49</sup> Marian Heinly Page, “A Tour of South America with the Pavlova Company” (1918–19), in Ruth Page Collection, (S) \*MGZMD 16 folder M1, Jerome Robbins Dance Division, New York Public Library.

<sup>50</sup> David Harvey, “Space as a Keyword,” in *David Harvey: A Critical Reader*, ed. Noel Castree and Derek Gregory (Malden, MA: Blackwell Publishing, 2006), 270–93, quote on 275.

dance touring might begin by measuring the proximity of particular cities in terms of the total number of roadways, trains, or other transportation connections, or by the cost of the travel leg that connects them.<sup>51</sup> Finally, *relational space* is created internal to its own processes on the basis of human experiences, such as feeling or memory.<sup>52</sup> Harvey's model is useful for considering the variability of cultural space and thus how visualization tools like mapping can represent multiple geographies of movement on the move.

Before we use these three types of space to demonstrate some of the ways in which digital spatial analyses can develop critical questions within dance scholarship regarding the nature of touring, a note about mapping itself is important. Just as the database is based on curated datasets, the reference map for any such representation of space likewise appears deceptively neutral. Spatial history tends to depend on GIS-based understandings of space as a more absolute, pre-given Cartesian grid, which curtails local specificity and understandings of place. For example, looking through archival materials there is a cultural precision to the granularity of place names like "Harlem" and "Fifth Avenue," but this needs to be negotiated vis-à-vis the opportunity for a larger connection to New York City in general. In addition, there are professional agreements in the geodata community that have identified generic latitude/longitude coordinates for cities. But in the case of New York City, that point itself is fixed at Fifth Avenue. What about that exact location qualifies it to stand in for the whole? Likewise, most base maps can only represent a single period of time at once in terms of national borders, railways, major roads, and so on, and yet the very existence of some routes and not others in a given year will have determined a touring company's pathway.

This kind of fixity stands in opposition to the work of contemporary geographers, among others, who understand space relationally as an emergent property.<sup>53</sup> In our projects of tracing dance in transit, it is this latter, place-based, often relative or relational perspective that foregrounds the flow of local-global relations and thus has the potential to demonstrate how the mobility of dance redraws cultural geographies. In order to bring these two perspectives into alignment we are particularly interested in qualitative GIS work, among other projects, that "share an assumption that while some kinds of fixity are inherent and unavoidable in GIS, there exists a great deal of room for strategic deployments of this fixity, and for iterative adaptations of fixed representations or practices."<sup>54</sup> This active, ongoing negotiation with fixity strikes us as particularly essential to datasets based on lived experience and bodies in motion, both on- and offstage.

<sup>51</sup> See Monmonier, *Mapping It Out*, 198.

<sup>52</sup> Harvey later revisited this to propose a nine-square grid in which absolute, relative, and relational spaces were run up against Henri Lefebvre's experienced, conceptualized, and lived spaces. See Harvey, "Space as a Keyword," 281.

<sup>53</sup> On this contrast, see N. Katherine Hayles, *How We Think: Digital Technology and Contemporary Technogenesis* (Chicago: University of Chicago Press, 2012), 175–98; and David J. Bodenhamer, John Corrigan, and Trevor M. Harris, eds., *Deep Maps and Spatial Narratives* (Bloomington: Indiana University Press, 2015).

<sup>54</sup> Meghan Cope and Sarah Elwood, "Introduction: Qualitative GIS: Forging Mixed Methods through Representations, Analytical Innovations, and Conceptual Engagements," in *Qualitative GIS: A Mixed Methods Approach*, ed. Meghan Cope and Sarah Elwood (London: Sage, 2009), 1–12, quote on 6.

To deal with touring in terms of absolute spaces, such cartographic staples as point-to-point lines can help to draw out narratives of touring as something that occurs not only in theatres, but between them. Although the American Ballet Caravan tour was meant to prototype cultural diplomacy, the stage itself was likely not the primary location where such diplomacy occurred. In almost every city there were political struggles over the high cost of tickets, which directly impacted how few people could actually attend. Kirstein's biographer quotes a letter from late in the tour in which he describes the experience of the shows themselves as "like performing in a half-filled house at 11 o'clock in the morning for a ladies club . . . in Detroit."<sup>55</sup> While American Ballet Caravan's performances happened in sixteen cities over six months, there were up to two weeks of travel between engagements. This means that the travelers actually passed through many towns and cities en route to their sixteen destinations. Overlaying diagrams of multiple companies' tour routes at once identifies the convergences among them, such as frequent stopovers where exchange took place through dancers and other travelers as consumers rather than producers of culture, even if limited in form to food and souvenirs. By looking at the larger patterns of offstage life on tour in this way we can begin to locate what Greenblatt calls "contact zones" for dance-based exchanges of cultural goods<sup>56</sup> and find new ways to attend not just to the travelers, but to what Michelle Clayton borrows from Mary Louise Pratt to call the "travelee" narrative that may offer a counter-narrative to orientalist appropriation and the colonial dispersal of culture.<sup>57</sup>

Dynamic spatial histories of movement need to be studied, like choreography, in terms of time and space simultaneously. Yet, because maps of absolute space privilege the destination and possibly certain intermediary points on the route, they risk losing duration. While some tour itineraries held a punishing pace (often finishing a show in one city on one night, traveling the next day, and appearing onstage in a new city the following evening), others saw travelers spending weeks or even months in a single location before moving on, which produced a different density of engagement. Sometimes travel was delayed for weather or mechanical failure or even the absence of transportation; and sometimes local politics rerouted travel plans. The friction of these different temporalities might be considered in terms of relative space. A choropleth map that is shaded by statistical density might give a researcher a sense of the total number of shows or the duration of a stay, and an animated sequence might even allow that to be experienced in accelerated time.<sup>58</sup> Yet, all of these will remain focused on the shows themselves as discrete events and not the act of travel itself that stretches between them or its effects on dancers' bodies. This issue is compounded by the fact that it is much easier to accumulate static data from archives. For the American Ballet Caravan tour, for example, the company documented the dates and the time of day for each performance and recorded the costs of particular legs of transportation, but information on the actual travel times is much less consistent. Travel is bounded by the shows, yet letters and other accounts indicate that the company did not always arrive even a full day ahead of a performance engagement, given transportation mishaps and customs delays. Visualizing such relative spatial data as duration, using a critical mixed-methods approach that attends to the power structures of what data is

<sup>55</sup> Martin Duberman, *The Worlds of Lincoln Kirstein* (New York: Knopf, 2007), 367.

<sup>56</sup> Greenblatt, "A Mobility Studies Manifesto," 251.

<sup>57</sup> Michelle Clayton, "Modernism's Moving Bodies," *Modernist Cultures* 9, no. 1 (2014): 27–45, quote on 30.

<sup>58</sup> See the samples at Elswit, *Moving Bodies, Moving Culture*.

not available as well as what is, we see that the challenges of visualization can call attention to the ways in which archival materials privilege certain aspects or experiences of travel over others.<sup>59</sup> Yet, this friction has the potential to reveal so much about ways of moving and their impact on cultural movement and movers.

After absolute and relative space, Harvey's final category is relational space, which can be used as a metric of qualitative experience and combined with geospatial technologies in order to understand human experience and social power.<sup>60</sup> One of the exploratory maps that Kate built (figure 4) was meant to capture the particular yet transnational experiences that touring facilitated. The map traced the associations that American Ballet Caravan dancers made between the places in which they were and places elsewhere in the world, whether through memories triggered by a particular scene or through the people they encountered. The dataset for this map was curated from dancer William Dollar's lengthy pseudonymous account of American Ballet Caravan's South American tour, titled "Old Granny Spreads Goodwill." The unpublished manuscript compares the dancers' then current locations with places to which they had previously traveled, such as a location just outside of Cucuta, Colombia, that was connected with the "Badlands of Dakota." Others were likely imagined, such as the comparison between what is called the Guaya River in Ecuador and the Congo River in west and central Africa.<sup>61</sup> When collated into a database and visualized, these point-to-point linestrings draw connections among multiple cities and continents, reframing absolute space in terms of relational geography that demonstrates how dancers folded global space by transposing locations onto one another. More importantly, this analytic representation of experience reveals how their relational geography was dynamic and in fact changed over the course of the six-month tour. Whereas in the earlier part of the tour the majority of the associations were made to locations in the United States and Europe, as the tour continued the map suggests a change in the travelers' own frames of reference, as increasing numbers of connections are drawn back to South American locations that the company had previously visited. The map thus begins to show how the tour imprinted itself in the travelers' imaginations over time.

At the same time, there is so much further such a visualization can go. Imagine a map that not only draws point-to-point lines, as this one does, but connects singular locations to the polygons of countries and continents. More importantly, imagine one that in fact reforms the picture of the world through the dancers' eyes by skewing the base map itself by the size and proximity of various points and shapes. If we combine similar accounts from many tours by twentieth-century North American artists together, what would that particular skewed geography look like? What could it reveal

<sup>59</sup> In prose form it is easy to make room for this uncertainty, and even databases can accommodate date ranges if they have been set up to do so. But when a database powers a map or other visualization, the slipperiness of uncertain data can easily slide into invisibility.

<sup>60</sup> On the use of GIS to build relational maps of experience and power, see the examples in Marianna Pavlovskaya, "Non-Quantitative GIS," in *Qualitative GIS*, 13–39; and LaDona Knigge and Meghan Cope, "Grounded Visualization: Integrating the Analysis of Qualitative and Quantitative Data through Grounded Theory and Visualization," *Environment and Planning A* 38, no. 11 (2006): 2021–38.

<sup>61</sup> For more on the curation of this dataset, see Kate Elswit, "Mapping Tours through the Dancers' Eyes" and "Mapping Tours through the Dancers' Eyes, Redux," *Moving Bodies, Moving Culture*, September 19, 2015 and September 26, 2016, available at <https://movingbodiesmovingculture.wordpress.com/2015/09/19/mapping-tours-through-the-dancers-eyes/> and <https://movingbodiesmovingculture.wordpress.com/2016/09/26/mapping-touring-through-the-dancers-eyes-redux/>.

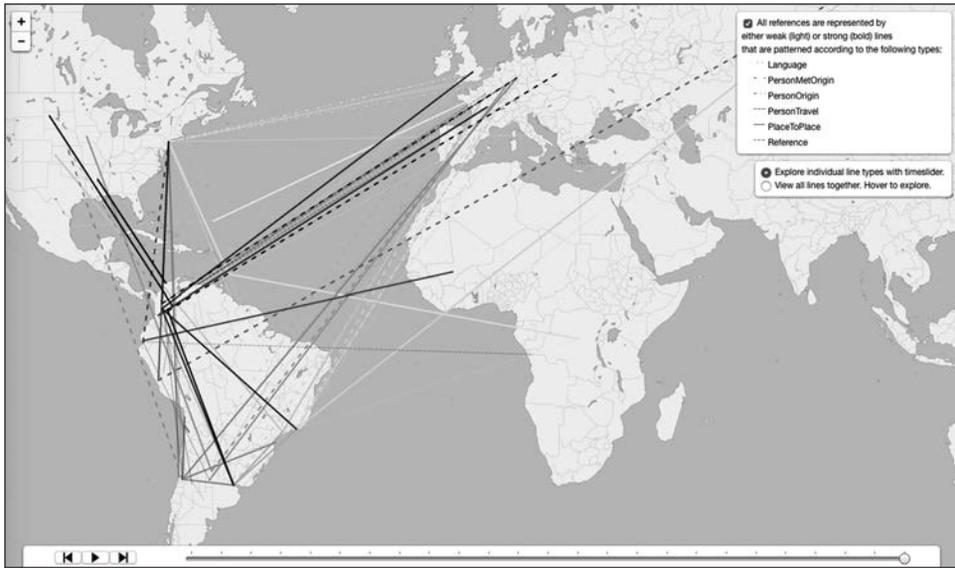


Figure 4. This relational map is based on William Dollar's pseudonymous account of American Ballet Caravan's South American tour, "Old Granny Spreads Goodwill." Here, lines trace the associations that he reported American Ballet Caravan dancers made between the places in which they were and places elsewhere in the world. This map makes visible how previous tour cities become new points of reference.

See <http://www.kateelswit.org/moving-bodies-moving-culture.leafletmap/#2/32.1/-15.5>  
(Source: Dataset by Kate Elswit; map by Kate Elswit and Eric Andrew Sherman.)

about the sites that are dominant versus marginal in these dancers' perspectives on the world? Another way to complicate such relational geography would be to compare the travelers' views, as accounted for by Dollar's manuscript with all of its Yankee privilege, to a travelee perspective that maps, for example, the associations that local audience members themselves made in accounting for the performances or in fact dance more broadly. Exploring such relational spaces supports Clayton's proposal for more attention to traveling cultural practices from a perspective that has "less to do with modernist cosmopolitanism than with comparative particularisms."<sup>62</sup>

### Lingering Thoughts on Digital Methods in Practice, Onstage and Offstage

In this essay we have drawn on the beginnings of our own individual and collaborative work at the intersections of dance touring and digital methods. The type of analytic work that we have been describing brings to the fore the question of how research practices co-articulate with scholarship and process with outcome. In the digital humanities such questions have led to tensions within the field. Some argue that participation in the digital humanities should be contingent on knowing how to code;<sup>63</sup> as Johanna Drucker puts it, "[i]f we are interested in creating in our work with digital technologies the subjective, inflected, and annotated processes central to humanistic inquiry, we must be committed to designing the digital systems and tools for

<sup>62</sup> Clayton, "Modernism's Moving Bodies," 31.

<sup>63</sup> Stephen Ramsay, "Who's In and Who's Out," paper presented at the MLA convention, January 8, 2011, Los Angeles, available at <http://stephenramsay.us/text/2011/01/08/whos-in-and-whos-out/>, and "On Building," January 11, 2011, available at <http://stephenramsay.us/text/2011/01/11/on-building/>.

our future work.”<sup>64</sup> Other humanities scholars decry the “invidious distinction between making things and merely critiquing them [that] has come to be one of the generally accepted differences that marks off DH [digital humanities] from the humanities in general.”<sup>65</sup> This tension between making and critiquing recalls ongoing conversations in theatre, dance, and performance studies. Rationales for comparing digital research and performance reside in the time-based nature of the scholarship, as well as the interest in user experience. While some scholars have suggested that the scholarship produced by new digital methods functions more as performance than publication,<sup>66</sup> and Bay-Cheng, among others, has clearly argued for the parallels between digital and performance scholarship, this body of literature is not generally referenced within the digital humanities community.

Citing expertise in reenactment, presence, documentation, and reception, Bay-Cheng also argues that theatre and performance historiography is uniquely positioned to engage with digital methods. Likewise, performance itself offers also a framework for thinking through and developing evaluative language around digital research. To return to Richard Schechner’s “is performance” / “as performance” distinction,<sup>67</sup> what happens if we not only study the work produced through these digital methods “as” performance, but in fact tap into the robust scholarly language that has been developed in order to articulate the value of practical artistic research as complementary to more conventional scholarly methods?<sup>68</sup> Since the 1990s the basic argument for artistic practice as a mode of inquiry has been grounded in the relationship between research method and scholarly knowing—namely, the understanding that we think differently on our feet and thus may come to different propositions while testing out ideas in the studio than working them out in print form alone. In this way practice-based research cultivates a fluid back-and-forth exchange between embodied knowledges and textual practices, or indeed embodied texts and knowledge practices. Although performing arts researchers often turn to the humanities in order to articulate method, and digital humanists tend not to draw on the scholarly framework of artistic research, it is in fact our own fields of theatre, dance, and performance studies that may provide new language to articulate the many ways in which “digital humanities practice” can be situated in tandem with scholarly inquiry.

Here, we have used our projects to discuss on- and offstage dimensions of touring in terms of data collection, analysis, and visualization. These same distinctions apply to the production of digital scholarship and therefore the terms and language through which this type of work can and should be evaluated. If the backstage labor of performance has recently come to the fore as an important aspect of scholarship on the history of theatrical production, many scholars have yet to grapple with the labor of scholarly production, a situation felt acutely among scholars utilizing digital

<sup>64</sup> Johanna Drucker, “Blind Spots: Humanists Must Plan Their Digital Future,” *Chronicle of Higher Education* 55, no. 3 (2009): B6–B8.

<sup>65</sup> Richard Grusin, “The Dark Side of the Digital Humanities: Dispatches from Two Recent MLA Conventions,” *Differences: A Journal of Feminist Cultural Studies* 25, no. 1 (2014): 79–92, quote on 86.

<sup>66</sup> For example, Scheinfeldt and McPherson, referenced in Bay Cheng, “Pixelated Memories,” and Debra Caplan, “Notes from the Frontier: Digital Scholarship and the Future of Theatre Studies,” *Theatre Journal* 67, no. 2 (2015): 347–59.

<sup>67</sup> Richard Schechner, *Performance Studies: An Introduction* (Abingdon, UK: Routledge, 2002), 30–35.

<sup>68</sup> For an overview, see Robin Nelson, *Practice as Research in the Arts: Principles, Protocols, Pedagogies, Resistances* (Basingstoke, UK: Palgrave Macmillan, 2013).

methods of research. We have felt this even in the process of producing this essay, choosing to focus on the rationale and foundation for the work rather than producing the many visualizations that could have easily constituted a second full-length “visual essay” alongside. Engaging in the practices of which digital scholarship is composed, including manually compiling and cleaning comprehensive datasets and developing software or learning to use existing visualization platforms, adds a dimension of labor to digital research that is generally invisible in the final product. Furthermore, for many scholars the “product” may ultimately materialize as a digital object, such as a database, dataset, or visualization, whether in service of their own research or that of others. How then to apply rigorous standards of evaluation and peer review when, like performance, digital scholarship is reliant upon a tremendous amount of invisible labor and is frequently developed in a prolonged workshop phase with multiple collaborators and technological platforms? When the process of digital scholarship and its iterative manifestations of a research idea may exceed the final product? Or when it results in a digital object that is, at minimum, unstable and even ephemeral, prone to failure and accelerated obsolescence? At the same time that these methods invite us to consider new ways to approach performance research, we believe that our own fields are already equipped with frameworks for producing and evaluating such work, and we are excited about the next steps.