CHAPTER 13.

VISUALIZING WRITING DEVELOPMENT: MAPPING WRITERS' CONCEPTIONS OF WRITING THROUGH THE LIFESPAN

Erin Workman
DePaul University

> We all travel through our lives acquiring different experiences, trying new things, and meeting different people, and each of these events in our lives contributes to our personal voice that we then express as words on a paper.
>
> – Hudson, First-Year College Student

> Because different individuals bring such variety to the task of learning to write, they may have very different trajectories of development across their lifespans.
>
> – Bazerman et al., 2018, p. 43

In their recent collection *The Lifespan Development of Writing*, Bazerman et al. (2018) call for a "description of writing development that is realistic and rich," one that "recognize[s] the roles of both early and continuing life experiences and of individual variation" (p. 20). Within the *Lifespan* collection, Berninger et al. (2018) take up writers' individual variation, reporting on two studies that asked early developing writers "to explain what writing is" as a way of "gaining insight into the perspectives that developing writers *themselves* bring to the task of learning to write" (p. 155; emphasis added). Berninger et al. (2018) found that writers' explanations of writing "appeared to reflect a continuum of metacognition," ranging from writers who articulated no definition of writing to those who defined writing according to function to those who described multiple forms of writing (p. 164). Taking a similar approach, I conducted a nine-month study of 18-year-old writers, focusing on whether, how, and why these writers' conceptions of writing changed as they moved "*through* and *across* space-times, modalities, genres, [and] communities" (Smith, this volume) as they completed their

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first year of college. In addition to defining writing, participants in my study mapped their definitions of writing by identifying key concepts and visually depicting connections among them, creating *visual maps* that served as documentation of their definitions at discrete moments in time. In this chapter, I draw from my research to outline *visual mapping*—an adaptation of concept mapping—and to demonstrate its promise as a method for lifespan writing research.

Researching conceptions of writing is methodologically challenging, in part because of the "tacit nature of writing-related knowledge" (Roozen, 2016, p. 152) and in part due to the inaccessibility of cognitive structures (Ifenthaler et al., 2011). While North American writing studies (NAWS) researchers have approached the first challenge using stimulated recall techniques to prompt a writer's articulation of tacit knowledge—including retrospective accounts (e.g., Greene & Higgins, 1994), document-based interviews, and reflective interviews (Roozen, 2016)—researchers in education and educational psychology have responded to the second challenge using concept mapping to elicit a learner's conceptual knowledge within a particular domain (e.g., Kinchin, 2014; Novak, 2010; Schroeder et al., 2018). Although education researchers have used concept mapping since the early 1970s (Novak, 2010), NAWS researchers are only beginning to take up this method. Wette (2017), for example, uses mind mapping[1] to study graduate student writers' "conceptual knowledge development in a genre-based ESP writing course" (p. 59), and similarly, Rounsaville (2017) uses concept mapping to study writers' "genre repertoires from below" (p. 319). Like Wette, I use visual maps to study writers' conceptual knowledge over time, and like Rounsaville (2018) and Berninger et al. (2018), I use visual maps to study writers' perspectives on their conceptual writing knowledge and their perceptions of whether, how, and why that knowledge changes along lifelong and life-wide dimensions.

This chapter outlines the utility of visual mapping for lifespan writing research. First, I review concept mapping research to demonstrate its efficacy for studying changes in learners' conceptual knowledge. Second, I distinguish visual mapping from concept mapping by identifying key differences between the methods and describing the procedures for using visual mapping as a research method. Third, with these definitions established, I provide a brief case study of one writer to illustrate how this method works and what it can contribute to our understanding of individual writers' conceptions of writing through the lifespan. In concluding the chapter, I address the limitations of my study and propose promising directions for using visual mapping in future lifespan writing research.

1 Although some researchers use the terms "mind maps" and "concept maps" interchangeably, those working in the Novakian tradition (e.g., Hay & Kinchin 2006; Novak, 2010) distinguish concept maps from mind maps by emphasizing the importance of linking words between concepts that can be read as propositional phrases.

CONCEPT MAPPING: A METHOD FOR ELICITING A LEARNER'S CONCEPTUAL KNOWLEDGE

Used in many disciplinary and professional domains for both pedagogic and research purposes, concept maps are "graphical tools for organizing and representing knowledge" that "include concepts, usually enclosed in circles or boxes of some type, and relationships between concepts indicated by a connecting line linking two concepts" (Novak & Cañas, 2006). A typical concept map uses lines and short phrases to connect concepts into a proposition, or "meaningful statement" (Novak & Cañas, 2006). Often organized hierarchically, concept maps represent a response to a "focus question." Figure 13.1 shows an example concept map. In response to the focus question, "What is a concept map," the concept map indicates several interconnected propositions, including: "concept maps represent organized knowledge useful for effective learning/teaching," "concept maps include propositions, concepts, and linking words," "propositions are units of meaning," etc.

Though most often associated with the classroom, concept mapping was first developed as a research method. Many researchers (e.g., Hay & Kinchin, 2006; Kandiko et al., 2012; Kinchin et al., 2000; McNeil, 2015; Miller et al., 2009) attribute the development of this method to Joseph Novak, a botanist and education researcher who, in 1972, began a twelve-year longitudinal study on elementary science students' emerging knowledge (Novak, 2010). Through the course of the project, Novak's research team recognized the need for a tool that would facilitate easier identification of patterns in the lengthy and complex transcriptions of interviews with students; thus, concept mapping was developed as an effective means for seeing these patterns and tracing changes in subjects' propositional knowledge of science (Novak, 2010; Vanhear & Reid, 2014).

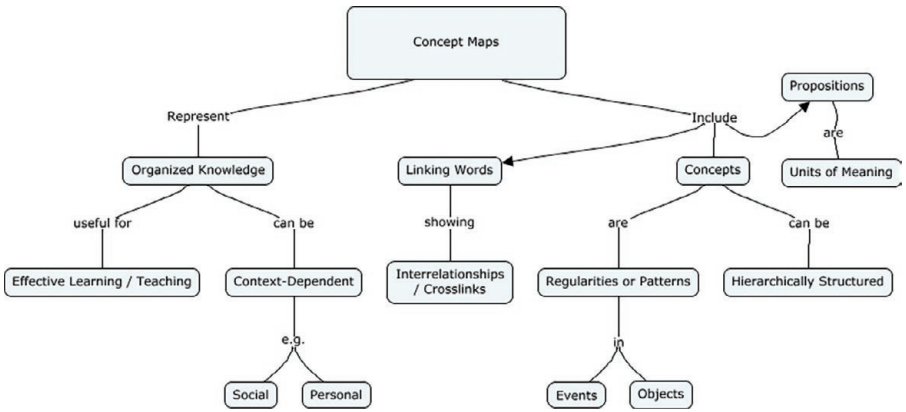

Figure 13.1. Example of a concept map. This figure illustrates how concepts are linked via propositional phrases into a knowledge structure.

Concept mapping offers learners a means to "express [their] mental models" (McNeil, 2015, p. 77) making it a valuable tool for researchers interested in learning because, as Ifenthaler and colleagues (2011) point out, "it is not possible to measure cognitive structures directly [so] individuals have to elicit or externalize them before researchers can analyze and interpret them" (p. 44). Education researchers have documented the utility of this method for "capturing changes in students' conceptions over time" (Ritchhart et al., 2009, p. 5) and "facilitat[ing] the empirical measurement of learning" (Kinchin, 2014, p. 235). Ritchhart et al. (2009) elucidate the process, explaining, "[w]hen a student maps the same topic in the course of their study, then a comparison of two or more such 'snapshots' enables measurement of learning quality" (p. 5). Wette's (2017) research on second-language writers' developing genre knowledge used concept mapping to this end, demonstrating its efficacy for studying writers' changing conceptual knowledge as evidenced through multiple maps in as little as two weeks. That Wette identified changes in writers' maps within such a short time period is encouraging for researchers interested in observing changes that might occur over a much more extended time period, such as the nine-month span of my study or the complete span of a writer's life.

VISUAL MAPPING: A METHOD FOR STUDYING A WRITER'S CONCEPTION(S) OF WRITING

Given the efficacy of concept mapping for studying learners' conceptual knowledge at discrete moments in time, I adapted concept mapping for use in researching writers' *conceptions of writing*, calling it visual mapping for two reasons: (1) to distinguish it from other common forms of mapping (e.g., mind mapping, concept mapping, topic mapping), and (2) to foreground its use for *seeing* a writer's conception of writing, a property allowing for quick identification of change from one map to the next. Because concept mapping was developed as a research and pedagogical tool for investigating and facilitating learning in K–12 contexts, education researchers have argued that this method must be revised for use in post-secondary contexts: "For the purpose of using concept mapping at the university level, what is important is being able to include [a] *wider range of representational forms*, not just because this allows more to be said, but also because, otherwise, concept-mapping cannot be a means of learning from the whole of narrative" (Kandiko & Hay, 2010, p. 250; emphasis added). McNeil (2015), a teacher-scholar of a multimedia design and development course, echoes this concern, suggesting that "expressing mental models through a *drawing process* rather than a preset format [like concept mapping] may provide individuals with a higher degree of freedom to express concepts in ways that

they may have otherwise been unable to do" (p. 77; emphasis added).[2] Likewise, Miller et al. (2009) advocate for a more open-ended approach to concept mapping that "does not provide restrictions on how the map may be drawn" because "[t]his enables creators to construct the concept map in accordance with their personal semantic understanding of knowledge of a concept" (p. 366).

It is just this kind of open-ended approach to knowledge representation that visual mapping was designed to facilitate. While both methods ask participants to identify concepts crucial for understanding a particular domain and to represent connections that link those concepts into a knowledge structure, visual mapping offers participants a wider range of semiotic resources—including word, image, color, layout, proximity, and symbols—for depicting and connecting concepts in personally meaningful ways. This open-ended approach also makes visual mapping a more fitting tool for qualitative research, as Wheeldon and Faubert (2009) explain: "A broader definition of maps, allowing for data collection based on a participant's generated visual expression of meaning, is more in line with the theoretical starting place generally associated with qualitative research" (pp. 71-72). In keeping with Wheeldon and Faubert's argument, visual maps function as a "participant-centric means to ground theory within data" (2009, p. 68) because, "[i]nstead of looking to the researcher to search for codes, concepts, and categories within the data, maps allow for the identification of concepts and connections based on how the participant frames their experience" (pp. 72-73). Oriented to an individual's perspective, visual mapping grants the researcher an emic view of a writer's conception of writing, making it well-suited to the study of writing in the lifespan.

To illustrate the affordances of visual mapping for lifespan writing research, I offer an example of one writer drawn from a nine-month study that used visual mapping to document and trace changes in writers' conceptions of writing during their first year as college students at a large research university in the southeast. Participants were recruited from a 2000-level transfer-focused writing course that engaged students in developing theories of writing informed by rhetorical concepts (e.g., rhetorical situation, genre, audience) and composed iteratively through sustained reflective activities.[3] During the first week of the course, participants were asked to create their first visual map by completing a sequence of tasks: first, to define writing; second, to identify five to eight key

2 Although McNeil expresses a similar concern about the representational affordances and constraints of the traditional concept mapping approach, she does not engage the considerable body of research on university-level concept mapping by Ian M. Kinchin, David Hay, Camille Kandiko, and various colleagues.

3 This writing course design was adapted from the Teaching for Transfer model outlined by Yancey et al. (2014).

terms important for defining writing; and third, to map the definition by depicting connections among the key terms. Participants created four additional maps throughout the study: two while they were still enrolled in the course, and two the following semester—in January and April—as part of document-based interviews. Participants also completed two surveys, one after the writing course ended, and another midway through the following semester. Thus, my data set for each participant included: (1) five visual maps with accompanying written descriptions for the first three, (2) three document-based interviews, (3) two surveys, and (4) participant-selected samples of writing.

Initially, my analysis focused exclusively on the key terms that participants retained, added, and deleted to their visual maps over the study. This approach enabled easy identification of the concepts that endured for participants over time as well as those added during the course of the study. However, this exclusive attention to key terms provided a partial view of participants' writing development. Tracking changes in key terms yielded limited insight into why participants had chosen these terms, what these terms meant to participants, and how terms came to hold these meanings. Returning to the data sets, I noticed and began to identify texts that participants described writing, people that participants connected to those texts, locations in which participants produced texts, and key concepts that participants associated with those texts. Tracing these networks of texts, people, locations, and concepts became challenging, so, like Novak's research team, I began mapping each mention of these as a way of visualizing connections among them. After several iterations of this process, I developed a lifespan map (see Figure 13.5), charting lifelong development along the y-axis and life-wide development along the x-axis. As I illustrate in the next section, these lifespan maps offer insight into a writer's development as they move through lifeworlds.

AN ILLUSTRATION OF VISUAL MAPPING IN ACTION: HUDSON'S WRITING DEVELOPMENT

To illustrate the affordances of visual mapping, I offer a brief case study of one writer, focusing first on the writer's visual maps and then on my lifespan map of this writer. At the beginning of the study, Hudson self-identified as an 18-year-old white man and "a first-generation college student" from a working-class family. He began his undergraduate career majoring in music composition with the goal of "one day becoming a successful composer." Looking to Hudson's visual maps, his identification as a musician did not appear to influence his conception of writing, though the lifespan map of Hudson's writing development uncovered the deep connections Hudson made between writing and composing. For in-

stance, when Hudson created his first visual map (see Figure 13.2), he identified four key concepts linked via 1:1 connections in a linear sequence, as indicated by the three large arrows connecting *write* to *express*, *express* to *experience*, and *experience* to *interaction*. Hudson further explained these terms with "sub-bubbles" that included five additional key terms—*personal*, *ethos*, *questions*, *perspective*, and *application*. Read together, these nine concepts depict writing as a process with three stages: a writer's expression of content, a writer's projection of the reader's experience of text, and a reader's interaction with the text. Hudson described his map by explaining, "writing should include an interaction of ethos, emotions, feeling, and should provide more questions than answers. I believe that is the only way writing can assist us into the future of fresh ideas and revolution."

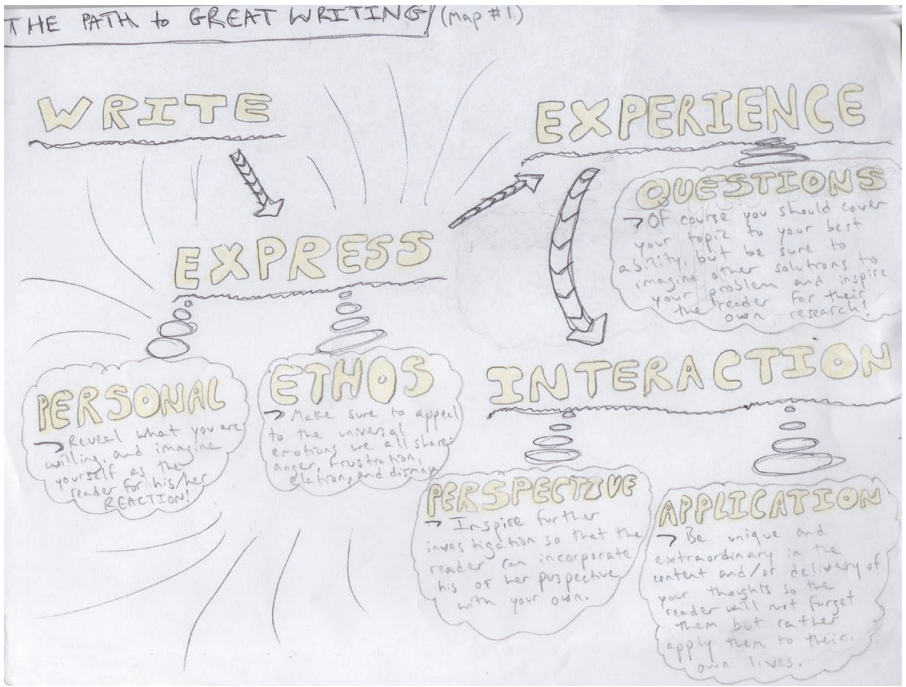

Figure 13.2. Hudson's first visual map created 8/2015.

Four months later, Hudson created a third visual map (Figure 13.3), which he described as "simpler" than his previous maps because it "generalizes all of the key terms [for defining writing] that were mentioned in the previous maps into five terms: *purpose*, *express*, *audience*, *context*, and *genre*." Unlike map one, these key terms are multiply connected with double-headed arrows, indicating a shift away from a linear, process-based understanding of writing toward a more dynamic rhetorical conception of writing. Hudson attributed this changed

conception to the content of the transfer-focused writing course, explaining, "Whenever I am writing, I remember to consciously remind myself of what my *purpose*, *audience*, and *genre* is so that I can create the most effective piece of writing possible. This is something that was not as present in my initial [visual map] and has therefore been significantly developed over this course." Reading map three alongside map one, then, indicates a changed conception of writing, but these maps alone do not provide insight into why Hudson's conception of writing changed and whether that change extended beyond the writing class.

Created approximately four months after his third map (Figure 13.3), Hudson's final visual map (see Figure 13.4) retains four key terms—*audience, purpose, genre,* and *personal expression*—and adds two new terms—*delivery* and *material*. In his verbal remarks about the map, Hudson explained that the double line between audience and purpose symbolizes the importance of that connection, while the dotted lines between *delivery, material,* and *personal expression* indicate variations in a writer's agency in choosing the material of their text, the audience for whom they write, and the method(s) through which they deliver this text, such as in school settings where these choices are often constrained by an assignment. As with previous maps, map five reveals changes to Hudson's conception of writing, but the map provides no indication as to Hudson's choice to add *delivery* and *material* to his writing definition.

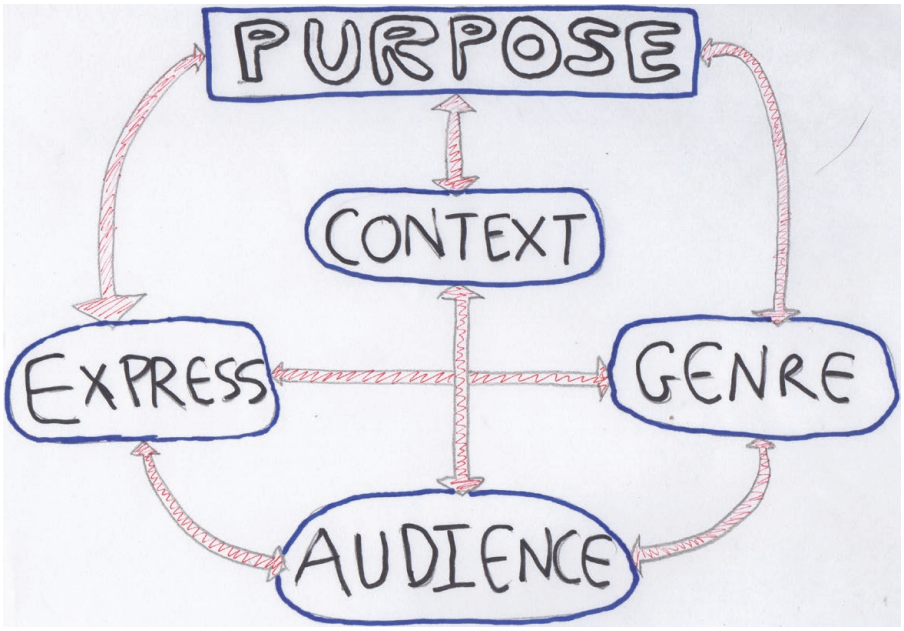

Figure 13.3. Hudson's third visual map created 12/2015.

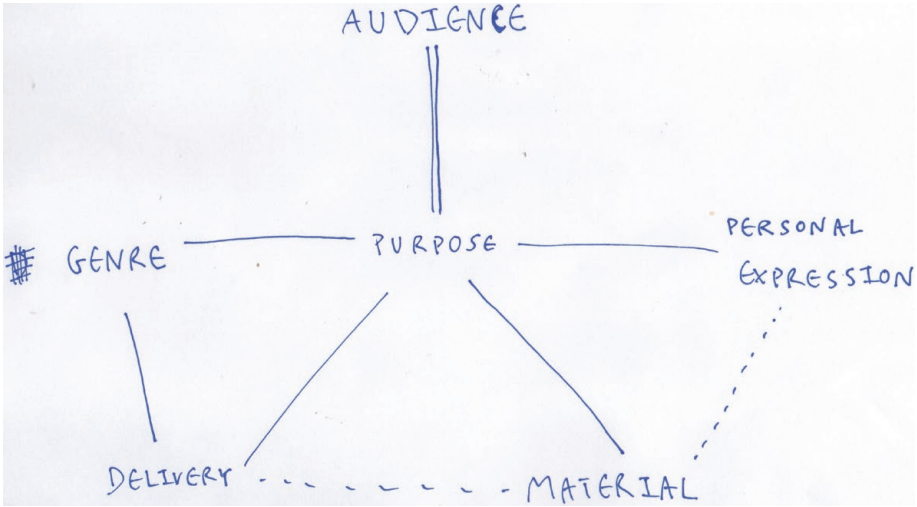

Figure 13.4. Hudson's fifth visual map created 4/2016.

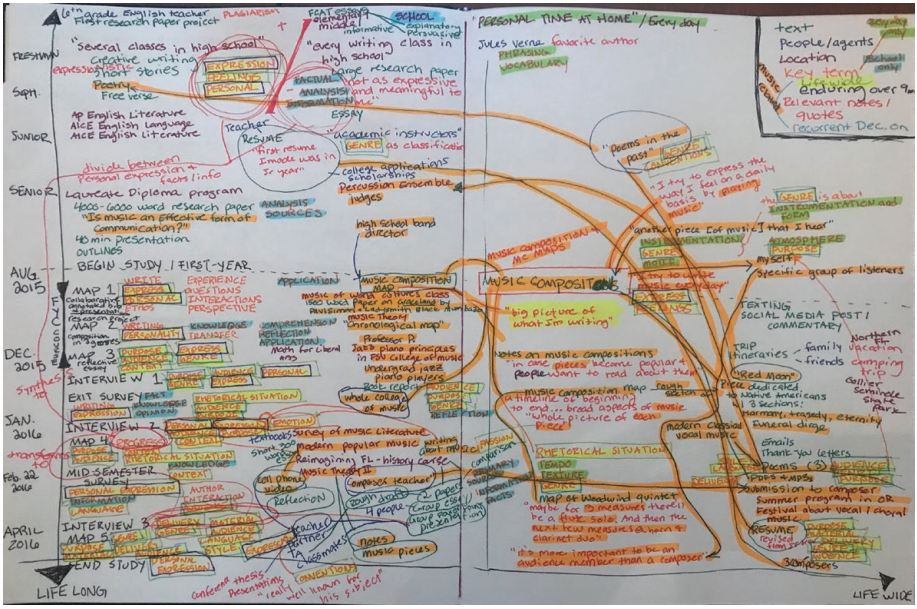

Figure 13.5. Lifespan map of Hudson's writing development.

The lifespan map of Hudson's writing—developed by tracing Hudson's references to texts he had written, and the people, locations, and concepts connected to those texts—provided a fuller, if still incomplete, portrait of his writing development. And, because Hudson described some of his writing experiences in middle

and high school, I was able to plot those on the lifespan map (see Figure 13.5), using the y-axis to indicate lifelong writing and the x-axis to chart life-wide writing. The lifespan map covers the time period beginning with the earliest writing experience Hudson described—his "first research paper project" assigned by a sixth grade English teacher—and ending with the study's conclusion. The black dotted line along the middle indicates the beginning of the study, which coincides with Hudson's first year in college. The division between school writing on the left-hand side of the page and everyday writing on the right reflects Hudson's distinction between these lifeworlds in his first definition of writing. The key in the top right corner indicates color coding for text, people, location, and key terms, which are further coded by (1) endurance over nine months, (2) recurrence after the writing course, and (3) presence across lifeworlds. Highlighting references to everyday, school, life-wide, and music-related writing revealed interesting patterns in Hudson's writing development that were not visible in analysis of Hudson's visual maps.

Hudson's identification as musician and composer does not seem to influence the definition of writing depicted in his visual maps. As indicated by the location and prevalence of orange highlighting in the lifespan map, however, "music compositions" and "music composition maps" are texts that Hudson reported composing frequently both in school and during his "personal time at home." For instance, as a high school student, Hudson completed a research project on music as an effective form of communication and composed a piece entitled "Red Moon" for his percussion ensemble to perform for an "adjudication." After starting college, Hudson began creating "music composition maps," a method for composing music that Hudson attributed to his high school band director. Although Hudson learned about music maps in high school, it was not until he began creating visual maps in his writing class that he started composing music maps in his personal time. When he made the connection between visual maps of writing and music maps, that connection was transformative for both his writing and composing development. As Hudson explained in his final interview:

> Sometimes when I compose—this was a problem I was running into—I would sit down at the piano and start improvising on ideas and I would be like "oh that was cool" and I would write it down, but I was never thinking about the whole thing. So what the [music] map helped me to do was *think about the entire picture of the piece*. And it helped me to like make *a solid unit of a musical piece* versus just like a lot of ideas strewn together. (emphasis added)

Likewise, Hudson described thinking of "the big picture of writing," that is, the "overall picture of what you're trying to do versus just like specifically trying

to do a piece of writing just to accomplish whatever you're required to do [in a writing assignment]." Hudson's development as a writer (re)shaped and was (re)shaped by his development as a composer, both driven by his discovery of a "big picture" approach to writing and composing.

The lifespan map also provides insight into the endurance of specific concepts, including variations of *personal expression* stemming from Hudson's experiences with creative writing in high school, as well as *genre, purpose, audience*, and *rhetorical situation/context* (synonymous terms for Hudson), terms Hudson began including on his visual maps at the conclusion of the writing class. Hudson consistently uses these concepts to describe both school and everyday writing, suggesting that they endure because of their relevance for Hudson's life-wide writing. His addition of *delivery* and *material* to the final visual map provides further evidence for the connection between enduring concepts and life-wide writing. Hudson attributed his use of these concepts to a group presentation in a history course:

> What we were required to do was bring a lot of new *material* to our *audience*, and even our teacher—he doesn't know everything about everything. . . . so I knew some things he would know, but I also wanted to bring some new *material* to what he saw in our presentation. So I thought of *delivery* because I think it kind of entails the *genre* [of the scholarly presentation] and also I've noticed like even in scholastic research papers it's not always—the language and the style are not always the same. Like it can be very professional and very formal, but it also can be kind of casual. But it depends on *how you're delivering the material*—or *the material that you are delivering*. That's a lot of the time what people care about. (emphasis added)

Just as Hudson discussed *delivery* and *material* in relation to the *genre* of his history class presentation, he used these three terms to describe texts composed for everyday life: an application to a summer program on vocal music written for a committee of three professional composers; poems modeled on published poetry that could serve as text for vocal music compositions; and music composition maps that "help [him] think about the entire picture of the piece." As Hudson talked through his visual maps, explaining each key term and articulating his rationale for choosing it, he revealed traces of a chronology of writing development unfolding through a network of artifacts, people, practices, and concepts. These traces can be marked and tracked on a lifespan map (see Figure 13.5), affording the researcher a way of "look[ing] forward, backward, and across in time . . . to understand the causes, triggers, and impacts on writing development in an individual's life" (Dippre & Phillips, this volume).

A WAY FORWARD: MAPPING LIFESPAN WRITING DEVELOPMENT

While this study was limited by a nine-month time span, it reveals the potential of visual mapping as a method for studying writing in the lifespan. As Hudson's case study illustrates, a visual map captures a writer's conception of writing at one moment in time, and when used as a repeated measure, a visual map *shows* change—or stability—in a writer's conception of writing as they move through and across lifeworlds. As documents, visual maps focus a writer's attention on their conceptual knowledge and, when used in document-based interviews, can help to reveal traces of a complex network of texts, people, locations, and concepts spanning time and space. When plotted on a lifespan map, this network provides a "perspective on [an individual writer's] learning pathways that no other individual has" (Smith, this volume). Read alongside each other, Hudson's visual maps show *that* his conception of writing has changed and *how* it has changed as he retains concepts like *personal expression*, adds concepts like *genre* and *delivery*, and deletes concepts like *application*. Used for document-based interviews, Hudson's visual maps serve as touchstones for elaborating his conception of writing, with each concept indexing a hidden network of texts, people, and locations. In other words, Hudson's talk about his visual maps begins to reveal *why* his conception of writing changed, and when plotted on a lifespan map, changes to this conception can be understood in relation to Hudson's "becom[ing] across contexts" (Smith, this volume).

Given the promise of visual mapping for studying developing writers' conceptions of writing, lifespan writing researchers can take up this method to further refine our understanding of individual trajectories of writing development. Though this study was limited to a nine-month timespan, it still uncovered changes in writers' conceptions of writing; what might we learn by extending the timespan to nine years? To nine decades? What further insights might be gained by sharing a researcher's lifespan map with the writer? By asking a writer to compose their own lifespan map? And what might a collection and comparison of individual writers' lifespan maps reveal about patterns in writers' developmental trajectories? There's much more to explore, and I invite you to join me in mapping writing through the lifespan.

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