This is a pre-print version of the Ron Balthazor and Elizabeth Davis' webtext "Infrastructure and Pedagogy: An Ecological Portfolio" published in *Kairos: Rhetoric, Technology, Pedagogy*, 20(1), available at http://kairos.technorhetoric.net/20.1/coverweb/balthazor-davis.

Surveying the Landscape: Text of Drafts

Ron's Draft 1:

<emma> is a web-based writing environment developed at the University of Georgia and used program wide in UGA's First-Year Composition Program and in a variety of other courses on campus. For the purposes of this paper, it is our writing infrastructure per se.

Architectures

We all assume the internet as the backbone of communication and user-generated content as a significant part of information ecology. When we began thinking about an electronic writing environment for students over ten years ago, the word processor was the center of writing and "learning management systems" were mostly for delivering information to students. Since those early days, the evolution of technology has been swift, as has the evolution of our writing environment, <emma>. The back-end architecture of <emma> consists of a database (Postgresql), a file repository, and a web application framework (Apache Cocoon running on Tomcat). Such is the nature of much of what we know on the internet. The pedagogical imperative with which we began, however, shaped the schema for the database and the web-front user-interface in very particular ways. The real core of the <emma> writing environment, long before "Web 2.0" was common parlance, has always been student writing. The architecture needed to facilitate process writing and peer review as well as support careful investigation of writing by students and instructors as part of the process. The architecture also needed to support the creation electronic portfolios and instructors' review of them. We may have only intuited then but are keening aware now that we needed an architecture that could evolve quickly and scale. Thus from the very start, the infrastructural components of the writing environment were keenly bound to pedagogy.

Several particular architectural decisions were made at the beginning that were pedagogically important. We wanted process writing at the core, so <emma> is designed to keep all the stages of student writing. Documents are never overwritten (though we do allow students to delete) and are filed with process designations: i.e., each document will be listed as part of a particular project at a particular stage (e.g., Paper 2, Draft 2). We wanted to encourage the community of writing, so students can make each stage available to his or her peers. We wanted to facilitate peer review, so peers can easily find and review the work of their classmates. We wanted to create a common vocabulary for writing instruction so we worked toward defined "tagging" schemes that could be used by students and instructors. We wanted to extend the writing process through final evaluation, so our database needed portfolio collection and assessment tables.

Interfaces

The core of the user's experience with <emma>, both instructors and students, is the web application. The web interface that <emma> wears, though always designed with students in

mind, has evolved rapidly as we learned more about web design and its relation to pedagogy. From the beginning, we have chosen open-source projects to underpin our architecture and our interface, partly because we believe in the benefits of community development and partly because we needed to stand on the shoulders of giants to get where we wanted to go. At this point, working within community standards and with the best of open sources libraries, we are able to able to adapt quickly to the evolving needs of the writing classroom and our web-savvy users. To say the least, the interface has evolved as the standards and web technologies have evolved. From the modest use of graphics and the careful development of style sheets to improved and simplified navigation and the efficient use of AJAX, we like to think that <emma> continually improves. As we begin the migration to a smarter web- application framework, more sophisticated AJAX libraries, HTML5, and CSS3, we are constantly questioning the intersection of infrastructure and pedagogy. For example, the careful integration of AJAX has allowed each student document to become a kind of hub of class responses somewhere between a response to a blog post and a chat. Also essential in the development of the interface is the constant feedback of instructors, at least in part because each of the developers is also an instructor.

More than simply creating intuitive navigation and attractive design, we are looking for the ways in which the interface itself encourages writing improvement. Much of instruction relies on what might be called presence. The intersection of the infrastructure and pedagogy in this regard is the immediacy of collected and shared materials. For example, we know our program has seen an increase in multi-stage writing projects for, on the one hand, the infrastructure offers a very simple was to organize and review multi-stage writing. Instructors assign more staged writing, and students can see in retrospect how much process work they have completed. Without access to the drafts, student don't recognize how their writing has developed. Similarly, having easy access to peers' work and a simple way to offer review outside of class, students can do much more peer review. The quality of peer review certainly increases with careful guidance but most importantly with more practice. Asynchronous peer review was the first great change in my pedagogical practice facilitated by technology. The persistent storage of peer review creates an ongoing conversation about the text and allows for the possibility of instructor review and intervention. <emma> layers on top of the ability to respond to peers tools for that response, namely tags that offer a common vocabulary for the review. <emma>'s tag sets include a variety of emphasis from sentence level tags for parts of speech to investigation of argument and the incorporation of research. We have also had the great good fortune to have worked with Bedford St. Martin's and have a rich tag set of items from their handbook that allows immediate access to handbook support for the grammatical or rhetorical items marked in the student text. The immediacy of access and the permanence of the repository help fashion the community of writers and a greater depth of reflection on what the students are learning in the classroom. The collision of immediacy and permanence shines through in the creation of the portfolio. With complete access to the work of the term and a very simple interface for building the portfolio, student can focus on their writing and their learning about writing per se, rather than on the mechanics of creating a portfolio.

Elizabeth's Draft 1:

Interface

While the FYC program was achieving success and recognition in its revision-based approach to writing instruction and assessment supported by the homegrown <emma> CMS, as evidenced in the 2005 NSSE in which nearly 75 percent of first-year students reported writing multiple drafts of papers (in all likelihood a correlation with those students' enrollment in the FYC), the 2007 Task Force's report noticed in the results of that 2005 study that, still, only a minority of seniors reported regularly preparing revisions of writing assignments for their courses (Comparing 4). An even smaller percentage said they had frquently written papers that required using multiple sources of information and ideas, something that a majority of upper-division faculty felt was important in the corresponding Faculty Survey of Student Engagement (Comparing 4). It seemed clear that revision and, perhaps, even writing more generally, dropped off as a practice as students moved into upper-level courses in which there was less support and coordination – less infrastructure – for faculty efforts to include writing in their courses. In a large public university, such factors as class size and the pressure to conduct research can deter even those faculty most committed to teaching in a writing-intensive way. Add to that the administrative problems of defining and identifying wriitng-intensive courses across such a widespread curriculum and the challenges of encouraging students to select courses with significant writing requirements, and it is clear why, without a coordinated effort, writing remains unsupported (yet, ironically, idealized) in the culture of the university.

In its call for a coordinated writing initiative, the UGA task force could have asked for a top-down administrative mandate requiring students and faculty to meet institutionally defined criteria for writing. Instead, they chose an approach more in keeping with scholarship that has emerged from decades of research on writing across the currciulum programs: building from what already exists within a given institutional culture and infrastructure in order to create a more organic (and, therefore, more likely to succeed) program (see McLeod, Sandler, Farris and Smith, Soven). As McLeod has noted about WAC programs, support from upper administration is critical, but they must be "bottom-up phenomen[a]" that emerge from faculty committed to writing and grow naturally as successes build and become visible to others (McLeod 6). And the importance of the campus environment and culture cannot be underestimated; infrastructural elements that are unique to an institution cannot simply be replicated because they are, in fact, naturally emergent from a particular discourse community and, thus, are not easily taken out of context.

Just as native ecosystems can be disrupted and destroyed by invasive foreign species, importing a program that has been successful at another university can result in the destruction of the emergent and blossoming elements already in existence at a school. Soven has pointed out that an awareness of "the substructures in place" at a given institution can prevent the failure that results from trying to simply transplant native practices to an entirely new environment with very different conditions and structural foundations (195). Though their analysis of infrastructure focuses on the kinds of support necessary for teaching new media writing, DeVoss, Cushman and Grabill's insistence on attending to the "matrix of local and more global policies, standards, and practices" that surround and sustain any program is relevant to the project of setting up a new writing program because the underlying infrastructures "often emerge as visible and at times invisible statements about what types of work are possible and valuable (encoded, often in curricula, assessment guidelines, standards, and policies)" (DeVoss, Cushman, and Grabill 16). Infrastructural elements are not necessarily physical, but include

policies and unstated assumptions embedded within the curriculum, administrative practices, and even the attitudes and assumptions of faculty and students.

The writing task force at UGA decided to take an approach to building a writing iniative that considered the local practices and structures already existent: "We have strengths at this university that other public research universities lack, so it makes sense ot develop an initiative resting on those strengths" ("Task Force" 7). In doing so, the task force endeavored to recognize the discursive conventions and structural support already at work constructing the institutional culture. Building on several local strengths, notably the FYC program, the Franklin College of Arts and Sciences Writing Intensive Program (WIP), and the Center for Undergraudate Research Opportunities (CURO), the task force presented a set of recommendations that would create more writing resources and support services that allow for flexibility and adapation in a diverse curriculum, while spreading a pedagogy fostered in FYC and WIP – a pedagogy of process, revision, and understanding disciplinary conventions.

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