

Determining Value for Digital Humanities Tools: Report on a Survey of Tool Developers

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Abstract

While the purpose and direction of tools and tool development for the Digital Humanities have been debated in various forums, the value of tool development as a scholarly activity has seen little discussion. As a way of filling this gap, the authors conducted an online survey of developers of digital humanities tools in March 2008. The survey focused on their perceptions of their work, how they felt their tool development fit into a structure of academic rewards, and the value of tool development as a scholarly pursuit. Survey results indicate that tool development is indeed considered a scholarly activity by developers, but recognition of this work and rewards for it lag behind rewards for traditional scholarly pursuits (such as journal articles and book publication). This paper presents a summary of the results of the survey, ending with some suggestions for further research.

Tool development in the Digital Humanities has been the subject of numerous articles and conference presentations.^[1] While the purpose and direction of tools and tool development for the Digital Humanities has been debated in various forums, the value of tool development as a scholarly activity has seen little discussion. This may be, in part, because of the perception that tools are developed to aid and abet scholarship, but that their development is not necessarily considered scholarship in and of itself.

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This perception, held by the vast majority of tenure review boards, dissertation committees, and our peers, may be an impediment to the development of the field of digital humanities. Indeed, as our survey results indicate, some tool developers also subscribe to this. A majority of respondents, however, consider tools development positively linked to more traditional scholarly pursuits. As one respondent indicated,

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I develop a tool as a specific means to an end, and the end is always pertinent to some literary question. Tool development is deeply informed by the research agenda and thus the tool development might be seen as analogous to other “research” activities. Archival research is one way of obtaining data. To get that data one must employ a methodology etc. The development of a tool is akin to this.

Tool development as a methodological approach was considered no less rigorous and scholarly than other approaches:

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My field is the digital humanities, and some part of my research is on how computing affects (positively and negatively) scholarly activity. Building the tool — which expresses a particular intellectual stance on certain issues — is meant to be a research activity.

Several major recent reports urge the academic community (particularly in the humanities) to consider tool development as a scholarly pursuit, and as such, build it into our system of academic rewards. The clearest statement of such a shift in thinking came from the recommendations of the *ACLS Commission on Cyberinfrastructure for the Humanities and Social Sciences*, which called not only for “policies for tenure and promotion that recognize and reward digital scholarship and scholarly communication” but likewise stated that “recognition should be given not only to scholarship

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that uses the humanities and social science cyberinfrastructure but also to scholarship that contributes to its design, construction and growth.”

The hurdles we might expect in seeing these recommendations implemented are complicated by a parallel but distinct issue noted by the *MLA Report on Evaluating Scholarship for Tenure and Promotion*: namely, that a majority of departments have little to no experience evaluating refereed articles and monographs in electronic format. The prospects for evaluating tool development as scholarship, at least in the near term, in these departments would appear dim. However, coupled with the more optimistic recommendations of the ACLS report, as well as the MLA Report’s findings that evaluation of work in digital form is gaining ground, the notion of tool development as a scholarly activity may not be far behind.

In 2005, scholars from the humanities, the social sciences, and computer science met in Charlottesville, Virginia for a *Summit on Digital Tools for the Humanities*. While the summit itself focused primarily on the use of digital resources and digital tools for scholarship, the Report on Summit Accomplishments that followed touched on development, concluding that “the development of tools for the interpretation of digital evidence is itself research in the arts and humanities.”

The present study was thus undertaken in response to some of the questions and conclusions that came out of the Digital Tools summit and also as a follow-up to our own experiences in conducting an earlier survey in the spring of 2007 on the perceived value of *The Versioning Machine*. One of the intriguing results of The Versioning Machine survey, which was presented as a poster at the 2007 *Digital Humanities* conference [Schreibman et al. 2007b] was in the area of value. The vast majority of respondents found it valuable as a means to advance scholarship in spite of the fact that they themselves did not use it, or at least did not use it in the ways the developers of *The Versioning Machine* envisioned its use. As a result of feedback during and subsequent to the poster session, the authors decided to conduct a survey focusing on tool development as a scholarly activity.

The authors developed the survey to meet in one small way John Unsworth’s challenge, made at the 2007 *Digital Humanities Centers Summit*, “to make our difficulties, the shortcomings of our tools, the challenges we haven’t yet overcome, something that we actually talk about, analyze, and explicitly learn from.” There were many ways to approach this study: by surveying the community for whom the tools were developed; by surveying digital humanities centres where much (but certainly not all) of the tool development takes place; by questioning department chairs or tenure committee heads as to their perceptions on tool development as a scholarly activity and how it fits within the academic reward system.

In the end it was decided to focus the study on developers of digital humanities tools: their perceptions of their work, how it fits into a structure of academic rewards, and the value of tool development as a scholarly pursuit. Rather than invite select respondents to take the survey, we decided that we would allow the field of respondents to self select. Notices of the survey were sent to mailing lists such as Humanist, the TEI list, XML4Lib, Code4Lib, and Centernet. Additionally we sent invitations to about two dozen people whom we knew developed tools.

An initial set of questions were drawn up in autumn 2007. This was circulated to several prominent tool developers for feedback. The survey was refined on the basis of their feedback and issued to mailing lists in December 2007. By March 2008, when the survey closed, 54 individuals had completed it. Survey questions were grouped into four main categories: *Demographics*, *Tool Development*, *Specific Tools*, and *Value*. These categories reflected the main emphases for the survey — i.e., what kinds of tools were being developed and why; and specifically whether the process of developing tools was considered to have value to the developers, particularly with respect to career development and scholarship.

In order to allow developers to comment on their experiences with more than one tool, the survey provided for demographic information to be collected once and linked to any number of tools developed by an individual. The survey was constructed in this way because we were curious as to whether developers had different experiences with particular tools, or whether perceptions of value would be consistent regardless of the type of tool developed. For the most part, developers who described experiences with more than one tool had similar perceptions of value regardless of the tool.

There were, however, some differences, including a developer who did not feel that one tool developed early in his career could be categorized as a scholarly activity, while two others were. The “non-scholarly” tool was singled out as being “merely a response to needs for workable data management, even though quite a lot of the conceptual work was reused later [in the development of another tool].” The two tools that this developer considered scholarly conferred benefits to his individual research agenda and raised his profile in his field. 12

We were impressed with the thoroughness with which the majority of respondents completed the survey. Most respondents took the time to provide lengthy answers to questions that demanded more than a quantifiable response (such as yes/no/maybe). As returns came in, however, we realized that there were several questions we did not ask but wish we had. One involved geographic location of the respondent. It was possible to extract some of this information based on IP address, but it is cruder than we would have liked: we know that approximately half of the respondents were in the United States (51%), 27% were in Europe, most of whom were in the U.K., which by itself accounted for 13% of all respondents, while 7% were in Canada. Another question we regretted not asking is what career stage the respondent was (tenured, tenure-track, non-tenure, etc.), although we could ascertain if respondents were graduate students. And lastly respondents were not asked their gender. 13

We approached the survey with several assumptions. The results of *The Versioning Machine* survey indicated that users found tools valuable even if they did not use tools in the ways their developers intended them to be used. We also assumed that developers might be less optimistic about the value of tools that were not widely adopted. 14

Survey responses did demonstrate that low adoption rates were something that developers felt hurt the value of their tools, but it was not their biggest concern: level of adoption was ranked fourth among four potential measures of a tool’s success. We also assumed that there might be a more negative response regarding tool development and career advancement. While our survey did not reveal an academia suddenly receptive to tool development as a scholarly activity, we were surprised at the relatively positive response, as well as the range of ways that developers articulated scholarly value in relation to tool development. 15

Analysis of Data

Basic Demographics

There were 108 responses to the survey. Of those, 63 were complete responses — in other words, all questions in the survey were completed. This represents several individuals who returned multiple times to describe different tools (in total 54 individuals completed the survey). Of the four respondents who filled up the survey multiple times, one person described six tools, two described three tools, and one described two tools. 16

Partially completed surveys that were partial because the respondent was returning to discuss a second or third tool, or because the respondent had skipped a question that was not relevant, were kept. Partially completed surveys in which the respondent had only filled out the consent form and demographic information were discarded. 17

Forty-eight respondents answered the multiple-choice question about who they were: 32 respondents (67%) identified themselves as Faculty (teaching). The next highest was Programmer/Developer with 6 respondents (13%). Libraries (faculty or non-faculty) came in third, with 4 respondents (8%). Departmental affiliations were entered by the respondent (i.e., there was no controlled vocabulary): English departments were the most represented (11 respondents); Libraries and Information Studies were next (eight respondents); six identified their primary affiliation as a Humanities Center. 18

Tool development was categorized in four broad areas: text analysis, authoring, teaching, and visualization. Interestingly, the percentage of tools developed in each category were remarkably similar. 19

What is the purpose of the tools you have developed? (Choose all that apply)		
Answer Options	Response Percent	Response Count
Text Analysis Tools	54.0%	27
Authoring Tools	46.0%	23
Teaching Tools	44.0%	22
Visualization Tools	54.0%	27
	Other (please specify)	20
		<i>answered question</i> 51

Figure 1. Responses to the question of the purpose of the tool development.

Other categories that were not captured but which had more than one response were database management tools, indexing tools, and archiving tools.^[2] Many of the tools developed by practitioners in the digital humanities community are represented in the survey. These include tools with “brand” names many might recognize: Hyperpo, Image Markup Tool, Ivanhoe, Collex, Justa, nora, Monk, Tact, TactWeb, Tamarind, Tapor, Taporware, teiPublisher, TokenX, Versioning Machine, and Zotero. It was clear that frequently more than one project participant filled up the survey. Equally, many respondents developed “unbranded tools,” simply describing them as scripting tools, perl routines, tei stylesheets, or exercise authoring tools.

This latter category seemed to the authors to be the more invisible side of tool development. While branded tools frequently gain public recognition through their websites, public announcements on mailing lists, conference presentations, and published articles, tools developed to do particular routines or to make work easier for a particular developer or project, are less frequently considered in discussions in the academic system of rewards particularly to those on tenure or tenure track lines.

There does appear to be some correlation between branding tools and the perception that tool development has contributed to career advancement. There were twenty-two “yes” answers to the question, “Has your tool development counted towards career advancement (i.e., it has counted towards tenure or promotion)?” Of those 22, it was possible to correlate 18 with degree of collaboration on tool development and name or description of the tool developed. Of those 18 individuals, 8 reported that they had developed tools with “brand” names. Compare these numbers to those who answered *no* to the career development question — out of 11 who felt that tool development had not helped advance their careers, only 2 reported working on tools with “brand names.”

Our presumption going into the survey was that tool development in the Humanities is an inherently collaborative activity. The results bore this out: 50.8% of respondents described their collaboration as extensive. Interestingly, 15.3% described collaboration from *not at all* to *moderately* (or 1-3 on a scale of 5). In terms of whom collaboration was with, 85% were with programmers, with nearly 80% of collaboration with colleagues in the humanities. In one way this is not surprising: a majority of humanities scholars probably need to collaborate with programmers in tool development. What was unexpected was that nearly as many respondents indicated that their collaboration involved humanities scholars. As only 12% of respondents self-identified as programmers/developers, it seems logical to presume that tool development takes place within teams in which there is more than one humanities scholar.

Value and Success

Success of Tools Development Activities

Overall, survey respondents responded positively regarding the success of the tools they had developed. 94% of the respondents (54 of 58) said that the tool they had developed still fulfilled its original purpose. A lower percentage (though still a majority) reported that they considered their tool development endeavors successful — 33 of 54 indicated “yes” (61%); 21 said “somewhat” (39%); interestingly, not one respondent ticked the “no” box.

Respondents who felt their tools were successful described how they measured the success from a controlled list. The highest ranked answer was “ability of the tool to do the job it was intended to do” (with 96% of respondents choosing that option). The next highest option was that the “tool enabled the respondent to further their research,” (with 78.4% of respondents choosing that option). The lowest choice, but still with a majority (52%) measured success by the “number of users who have adopted the tool.” Nine respondents chose “other” and their answers tended to focus on tool development as an activity that enables further research.

If yes or somewhat, how do you measure that success? (Choose all that apply)		
Answer Options	Response Percent	Response Count
Number of users who have adopted the tool	52.9%	27
Ability of the tool to do the job it was intended to do	96.1%	49
Tool has enabled you to further your research	78.4%	40
Tool has enabled others to further their research	74.5%	38
Other (please specify)		9
	<i>answered question</i>	51
	<i>skipped question</i>	14

Figure 2. Responses to the question, “How do you measure the success of tool development activities?”

Twenty-one respondents checked that their tool development was “somewhat successful.” The reasons for their lack of success fit, by and large, into one of three categories: lack of resources or funding (5 answers); too early in development to determine success (5 answers); and the tool was somehow not suitable for users — either not adopted by many users or not as useful as intended (5 answers).

Relationship to Scholarship

While we were interested in the value developers placed on their own tools, we were also interested in how valuable they felt the development of tools was to their own research and how they perceived the value placed on these activities in terms of scholarship, promotion, and tenure. All of the respondents answered the question, “Do you consider tool development a scholarly activity?” 51 respondents, or 94%, said yes. The three respondents who answered no gave these reasons:

1. didn’t want to check “yes” or “no” — consider it more a service activity than scholarly activity;
2. one respondent focused on their particular tool, which they said was only a “response to needs for workable data management”;
3. the third respondent wrote that “it does not in itself advance scholarly knowledge; it is implicit in the word ‘tool’ that its just a tool which other use to do scholarly activity.”

More interesting, however, were the detailed responses to the question for those who answered that they derived scholarly benefit from tool development. Respondents cited benefits such as a better understanding of source materials or processes (11 of 51 or 21%); creating traditional intellectual output, such as publications and conference papers (6 of 51, or 12%); cognitive benefits — such as a better understanding of analytical methods, systematic reasoning, and “the problem space” (3 of 51, or 6%.) Several responses clustered around the area of creativity. One of the respondents answered that the tool is a community/public artwork/creative work that enables interdisciplinary collaboration, while another answered that tool development furthered the relations between objects, making it a playground for innovative user interfaces and browsers with visualisation capacity.

Two responses described deferred benefits. One simply replied, “Awaiting benefits.” Another deferred benefit was tied to traditional publication: “None so far but we will publish in journals later.” One respondent’s experience was clearly mixed when describing the scholarly benefits derived from tool development: “None,” was the reply: “Was never promoted and lost salary, but was amply rewarded by the sales of the product.”

Relationship to Career Development

When asked if tool development has counted toward career advancement, respondents were less certain (*although more confident than our assumptions going into the survey*). All of the respondents answered this question: 22 (40%) ticked “yes”; 18 (33%) responded “don’t know”; and 14 (26%) ticked “no.” We correlated those responses with the respondents’ departmental affiliations to see if patterns emerged. Of the two departments most represented in the survey, those in English responded with six “don’t know”s, three “yes”, and only two “no”. Library and Information Science was similar, with four “don’t know”s, two “yes” and two “no”. Those who identified a Humanities Center as their primary affiliation were most confident as a whole, with four “yes” and one each for “don’t know” and “no.”

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Has your tool development counted towards career advancement (i.e. it has counted towards tenure and/or promotion)?		
Answer Options	Response Percent	Response Count
Yes	40.7%	22
No	25.9%	14
Don't know	33.3%	18
answered question		54
skipped question		11

Figure 3. Responses to the question, “Has tool developed counted towards career advancement?”

There were several repeated themes among the 51 respondents who elaborated on their answers: the most-often-cited positive responses included raising one’s profile in the field; winning grant money; increasing avenues for publication and presentations; gains in salary; and new job opportunities. One respondent concluded that it must not have hurt as “I continue to be gainfully employed.” Others were more positive: “It was an important part of my tenure package and understood well in my department.”

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However, at least four respondents felt that despite the other rewards they might have gained, promotion or tenure were less likely due to the inability of tenure committees to properly evaluate tool development as a scholarly activity. Other responses were even more succinct as to the negative impact the activity had on their careers: “It derailed it”; another answered, “For whatever reason, the University never rewarded this activity.”

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Other responses hint at the grey area that many practitioners work in — neither knowing if their development activities hinders or helps: “I keep including tools in my professional reports, but I doubt the time, intellectual investment, and impact are considered. I keep hoping for a turning point . . .”

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Another grey area emerged from a closer examination of degree of collaboration reported in the survey. The average degree of collaboration was somewhat higher among respondents who reported that tool development had advanced their careers than among those who reported that it hadn’t. On a scale of 1 to 5 (with 5 being the highest level of collaboration) the combined average for the “no” group was 3.09 while the “yes” group was 3.68. The “yes” group included 9 of 19 respondents reporting “5,” the highest level of collaboration, with only 2 reporting “1” or essentially no collaboration. In the “no” group, 4 of 11 respondents reported a “5,” and 3 reported “1” or no collaboration. What our survey cannot tell us, however (and this may be future research), is whether those who reported both a high degree of collaboration *and* career advancement felt that their advancement stemmed from the collaborative development of the tools themselves, or from single-author papers and presentations that resulted from their work. In other words, is collaborative, cross-disciplinary work beginning to be better recognized and rewarded in disciplines that value single-author works, or are the secondary outputs of that work — i.e., articles and presentations — being rewarded?

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Distribution

We were also interested to know what avenues were used to publicize tools and what percentage of tools were developed for public use. The vast majority, 84% (48 responses), replied that the tools were made available to others. When asked about obtaining feedback on the usefulness of the tool, as a whole, tool developers were less systematic.

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The vast majority of respondents indicated that their main mechanism for feedback was asking colleagues (86%), while 47% obtained feedback via the tool website. Less than a third of the responses (31%) indicated that usability studies were conducted, and even fewer, 14%, utilized surveys. Mailing lists, or more specifically project mailing lists, were frequently cited as a mode for obtaining feedback.

Dissemination of tools was along traditional scholarly lines, with 75% responding that they made their tools known via conference presentations. This was closely followed by the project website (71%), with word-of-mouth- dissemination at conferences coming in third at 64%. Not surprisingly, Humanist was the most frequently cited mailing list, with TEI-L coming in second.

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Conclusion

There is clearly more research that should be done into this area, from surveying department or tenure committee chairs as to the obstacles in considering tool development a scholarly activity to surveying the secondary scholarship that results from tool development.

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It is equally clear that the survey supports the findings of the reports mentioned at the outset of this article in that as a discipline we have considerable work to do in making tool development an activity that is rewarded on par with more traditional scholarly outputs: articles, monographs, and conference presentations.

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We found that tool developers, by and large, derived both personal satisfaction and professional recognition from their work. Sometimes this recognition translated into academic rewards such as promotion and tenure. But more frequently respondents wrote about the intellectual insights derived from their work, the new methodologies developed, deeper insights into their area of study and developing new models, and analytical methods.

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Equally, many respondents indicated that tool development led to more traditional scholarly outputs: conference papers and articles in journals (both peer-reviewed and non peer-reviewed). If the tool development itself was not rewarded, then these secondary products were.

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The overwhelming majority of respondents (94%) considered tool development a scholarly activity, although the range of responses to this question made it clear that many departments and institutions do not. Digital Humanities as a field has been pushing the boundaries of what is considered scholarship: from the creation of thematic research collections to e-literature. New tools that foster new insights into work with the ever increasing amount of digital data available to us are not a luxury but a necessity: who better to develop them than humanists who have both a knowledge of the content domain and of the content as data.

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Notes

[1] [Arts and Humanities Research Council 2006]; [Bradley 2003]; [McCarty 2005]; [McGann 2005]; [Ramsay 2003]; [Ramsay 2005]; [Schreibman et al. 2007a]; [Schreibman et al. 2003]; [Summit 2005]; [Unsworth 2003].

[2] If we are to do further work on this topic we would develop (or more desirably use) an established vocabulary for this question.

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