What We Heard at the Roundtable:
Supporting Digital Humanities at Scale
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at the CNI Fall 2014 Membership Meeting on December 9, 2014**

Note: this is an edited transcript. Some of the discussion was inaudible on the recording and has been omitted.

Clifford Lynch: Welcome to this session on "what we heard at the Executive Roundtable on Digital Humanities." I want to give you a little explanation of how this session came to be and what you're in for.

I'm Cliff Lynch, for those who I haven't had chance to get introduced to, and I actually moderated both of these roundtables, so briefly here is how this session came to be. CNI convenes something called the Executive Roundtable, usually that is a session that takes place in the morning of the first day of the membership meeting, a conversational event; we normally have about somewhere between 10 and 14 institutions that send 1 or 2 people. Historically it was usually the head of the library and the CIO but as we've explored different topics in recent years, we've found that those topics often don't map neatly or consistently to the administrative structures at various institutions and that many people have a piece of the responsibility and important perspectives, so institutional representation has become more varied.

For this roundtable we wanted to take a look at strategies for supporting digital humanities at scale; in other words, not what you do with that lucky faculty person who's got very generous funding from somewhere and is able to hire or otherwise pay for specialized and specific support staff and equipment, but rather how you really institutionalize this and run it on a sustained basis across your humanities faculty at scale. Fully a quarter of the CNI member institutions responded to our call and said they wanted to be part of this roundtable. So the first thing we did is said we'll have two roundtables: one on Sunday afternoon, and then another one on Monday morning. That got us to about 28 institutions, give or take, out of something like 50 who wanted to participate. We didn't have any place or time to add any more roundtables, so I thought what I would do instead was a report out as a breakout session. Obviously we

can't have the kind of protracted and in-depth discussion here that characterizes the roundtables, but I hope this session might serve as an opportunity to share some sense of the major themes that emerged at our roundtable discussions.

I should note that we do issue reports from our roundtables – though sometimes it takes us a while to do them. So ultimately what you'll hear here will be supplemented by that which probably will be a better synthesis than you're going to get here and now and will probably also reflect some of things that I hear today and that we talk about today in the discussion in this session. You're going to get some fairly raw material here.

I tried (mostly last night), to digest two and a half hours of conversation yesterday morning and another two and a half hours of fairly intense conversation on Sunday. So, you are fully warned about what you're in for.

The roundtable, as I said, typically brings in representatives from about 13-14 institutions in each convening. We had a particularly rich set of perspectives at this one: we had library leaders, we had CIOs, we had deans of arts and sciences or liberal arts, we had faculty members, we had a number of people who were involved in some form of humanities center or digital scholarship center – so really a nice range of diverse perspectives.

One obvious and central question: What is your institutional strategy? Do you have one for support at scale at this point?

Note there's actually a lot of disagreement about exactly what the scope of digital humanities is, what kind of skills and support humanists need, what they're really looking for from various other parts of the institutions (be it central IT or a digital scholarship center or the leadership within their own school). There was very substantial disagreement about what kind of support faculty were looking for institutionally and this set up a real problem if you had a provost or dean of the arts and sciences who said "I want to put some money into this," because all of a sudden it triggered a great deal of disagreement and in-fighting about what the money should actually be spent for, rather than what one would like to see in that situation, where the new investment brings together and catalyzes activity. We spent a good deal of time exploring these disagreements and differing opinions.

We talked about what's different in the humanities and, actually, I framed as a question for people to comment on: why is this so hard? This seems to be a genuinely hard problem that institutions are really struggling to address, but you don't, when you talk to institutions, run into the same thing about "Those molecular biologists, we got to do something for them and I don't know what to do and it's just an intractable problem. Somehow most of the sciences and a good slice of the social sciences have muddled through technology-based transformations on their own, it has not required (or responded to) a very systemic kind of intervention with the exception of a few

technologies historically, like maybe GIS, where there have been some focused attempts to propagate that across campus. And of course infrastructure, like high-performance networking and supercomputing (the latter being a very complicated area that we did not explore here). So that question, about why is this hard in the humanities, turned out to be really interesting.

One of the answers that I found very provocative went along financial structural lines – much to the astonishment of many people who work in the sciences in major universities, the vast majority of faculty in the humanities don't get grants (and certainly not big grants, with overhead and support positions) and the science folks are just blown away when they understand this for the first time because it's an alien way of life. There are a few large grants from NEH, IMLS, the Mellon Foundation, etc., but it's uncommon. The common grants in the humanities mostly offer some travel funds to research a book, or to buy faculty out of teaching for a semester or help underwrite some sabbatical costs; or to help graduate students or post-docs with salary or tuition support. So part of the problem there is that the revenue stream for technology and for people to support technology mostly has to come from the university, from their own operating funds and it's kind of a double-whammy because the science grants also come with overhead, which provides another revenue stream that the institution can at least make choices about and one possible choice is to apply some of it to building out and renewing infrastructure on an ongoing basis.

The trouble with the humanities is actually that it's not just a single commitment, sort of like "let's do something for them for a year; let's have a two-year program to make digital humanities happen here." It really looks like there's a need for sustained institutional funding, and that sustained institutional funding, when you look at it from let's say a provost's point of view, doesn't necessarily have a very high return. We talked about places where it did potentially have a high return and a high impact, one notable example being public engagement, which has become a particularly important issue for state universities as they try and demonstrate the scope of their responsibilities to the people of the state that fund them. Indeed, universities of all kinds are concerned about these public engagement issues, but that's a pretty niche win compared to some of the benefits they get from trying to improve their competitiveness in large grants from the science funding agencies. That word "sustained" comes up again and again everywhere in relation to digital humanities.

Another set of issues was the need to make transitions in some, not all, but certainly a substantial part of digital humanities work, from individual researchers to various forms of team and collaborative research, and that has a much longer tradition in the sciences and social sciences than it does in the humanities. That lack of collaborative tradition has been a genuine barrier to progress here as well and this took us into some kind of depressing conversations that you've all heard before about the conservatism (actual and feared) of the tenure and promotion process and the expectation, the very

heavy emphasis on single-authored monographs in the evaluation process for humanities faculty. I really don't see a whole lot of strategies for supporting digital humanities that can do a lot to change that; those are disciplinary norms (and other kinds of institutional practices) and, at least in my mind, really are a problem of a somewhat of different nature.

A place where I would have liked to be able to explore in a little more depth in our conversations is a very interesting connection that starts to be emerging where you see people who are doing work in digital humanities becoming very concerned about how that work is going to be disseminated and preserved. It's often in various kinds of digital works that need ongoing care and maintenance and updating of some kind. Many of the traditional scholarly press venues that deal in humanities monographs have been totally unable or unwilling to rise to the challenge with this kind of material, so this sets up a really serious problem. The digital humanists are worried about the ongoing availability of their work, which is tied up in issues about legitimacy: How can it really be legitimate high impact scholarship if we're not confident that that scholarship is even going to be accessible in five or 10 years? We are certainly seeing a set of activities in significant part driven by library-based publishing and preservation activities and assorted mixes to address this.

Interestingly, there seems to be a potentially quite strong emerging synergy between these library or joint library-press experiments in publishing and disseminating the outcomes of digital humanities research, and the whole set of problems about supporting digital humanities. There are some treacherous things here that people are just beginning to struggle with: there's always a certain sense when you get a dissemination mechanism at an institution that really serves that institution alone (or almost alone) that it has elements of a vanity press to it on one side, and therefore that weakens the legitimizing affect; on the other side, it creates a headache for the library, or whoever is running the dissemination process, because they actually find themselves in the trap of having to make choices in allocating resources somewhat competitively among their own faculty, which is an uncomfortable place to be in. You would like to see more sharing across institutions of that burden and external peer review, if you will, of the sort that university presses have historically done with monographs: you might publish in your own university's press but you might equally well publish in some other university's press. So it seems clear that we need to do things inter-institutionally to strengthen acceptance. This connection, at least for me, emerged pretty strongly.

There is an element of supporting digital humanities at scale that is community building. This strategy came up again and again on individual campus and across campuses: DH needs to move from taking the six crazy people who were interested in this and finding a place where they can find each other and then have lunch together once a month to really getting a much broader-based conversation going about these topics. Tools like digital scholarship centers, particularly if they're structuring certain

kinds of lightweight training programs, for example, or consulting programs, working with faculty, seem to have a very useful potential role in this.

There's some very interesting discussion that we picked up on that goes to this "what's needed" question. What do the digital humanists to be actually really want out of support at scale besides a way to disseminate and preserve their work, and some of it is they seem to want personalized technical support. They don't necessarily, interestingly, want to obtain high-level technical skills themselves. What they really want is to understand better what's possible and sort of what the order of magnitude costs are and then have access to people who can do the actual grounded out work for them. So that's actually a reasonably expensive profile if we end up staffing that at scale.

They are of course interested in easy-to-use tools; those have been challenging to produce in this area (in part because of the diversity of needs). There are certainly lots of interesting tools; some of them are pretty easy to use, some of them have a real nasty learning curve, and it's been difficult to find resources to polish tools and really make them robust and easy to use. That tends to be kind of the second phase of software development; the first phase, the one the funders want to pay for, is always "let's build some software that does something really new and innovative that hasn't been done before" to let some highly motivated person get at a research question, but then the next step is, "Now that we have some experience with it, I'd like to mostly re-write it, put in some error messages and diagnostics, and clean up the interface," this sort of thing. The reaction of a typical funder to a proposal to take those next steps is that it's not research, that it's really boring basic software engineering, that we're not going to pay for that. This is not limited to the humanities by the way; this is absolutely epidemic in places like the National Science Foundation. They are a wonderful example of people who cause software to be written and then equally cause it to wither away for lack of support; it's a very inefficient process and we need to think pretty hard about how to get better across all disciplines.

We're seeing lots of institutions also struggling with what I would characterize as tiered support: they try and make decisions about some basic things they're going to do for all of the humanists who want them, give them some basic training and some basic consultation on a certain set of tools and methods, but then they will select other projects that will get a very substantial support investment. These almost feel like internal grant programs and because of that they have all of the nastiness of competitive internal grant programs. Others have framed it in slightly different ways: rather than thinking of tiers, they think of a sort of core support organization, which is kind of like the basic services that IT is accustomed to doing in various areas and contexts and then they'll have some kind of a center or a lab or something where projects are allowed to go and grow and get much more intensive support. So that's another kind of model where they make some specific commitment to innovation that's quite distinct from this core support. I'm not sure anybody in our sessions felt that they had it 100% right, but

just looking at the scope of the demand versus the scope of the resources, some tactic of this kind seems essential.

Back on the question of what kind of support is needed for the digital humanities. The issue of just getting basic equipment and hardware, laptops, storage, things like that, didn't come up much, or how that equipment gets refreshed; I don't know whether that was just an oversight or whether it's just really a genuine problem. Often in the sciences you just refresh your laptops and desktops out of each grant when you roll them in and don't think about it very hard. I don't know what the genuine situation is here. Surprisingly little call from the humanists for most kinds of infrastructure services. To the extent we have discussed visions of distributed infrastructural services supporting digital humanities—computational, analytic visualization services and things like that that are oriented to humanities applications—the demand is very limited, the faculty base doesn't seem to be ready. There are a few services that are out there but not a lot and there didn't seem to be a huge demand for building a lot of them, at least among the folks who are talking about it at scale here. This is not reflecting back well from faculty demand.

Certainly folks like Mellon have invested heavily in tools like manuscript readers and annotators that will allow you to navigate a multi-layer document with an image and then a transcription, then a translation, then layers of annotations and links, and there have been some efforts in recent years to reduce the number of pieces of software that are trying to do the same thing or very similar function to narrow this down to a couple of platforms. Clearly this helps focus funding and aids in sustainability. But I was not hearing reflected in the comments from participants any sort of a big move from the mass of people wanting to do digital humanities saying we need to spec out these kinds of services and get them deployed, and that was interesting.

One of the things we just touched on very, very briefly was Bamboo and its aftermath and why that didn't get as far as some people had hoped it would have gotten and there was an interesting tension in there too about the same thing: how much should go for common infrastructure. There were some technology people that were very eager to build some sophisticated infrastructure but when you talk to the actual humanists in there they were more skeptical about that. Many of them were interested more in access to databases and other kinds of reference collections and a few tools around them than stand-alone services. So I think there's some real work to do understanding how the consensus on community priorities stands, how it's developed and documented, and the directions it is moving in. There's a nice article looking at the history of the Bamboo project and some of the structural tensions in it, that came out about two months ago, by Quinn Dombrowski of the Berkeley IT group, that supported some of that work.[1]

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[1] Quinn Dombrowski, "What Ever Happened to Project Bamboo?" *Digital Scholarship in the* Humanities 29:3 (June 2014): 326-339, DOI: 10.1093/llc/fqu026.

[2] Andrew Bonamici, Kevin Hatfield, Heather Briston, and Matt Villeneuve, April 2010, "Rebooting The

There were some questions about scope, whether this really should be viewed narrowly as a humanities problem or whether it should be viewed quite expansively as reaching into the social sciences, the arts, and perhaps even into the sciences, and you see some of this tension reflected into the mission statements and scoping of some of these digital scholarship centers.

We also need to be careful about introducing barriers to multi-disciplinary collaborations. A really good example being archeology, which is often framed as a humanistic discipline but at the same time draws very heavily on all kinds of engineering and scientific knowledge to do much of its work. We need to be setting up structures that facilitate those kinds of genuinely inter-disciplinary collaborations.

There's an interesting conflict that pops up between people who want to build tools and people who want to use tools. Sometimes you'll see jump-starter competitions being held on a campus where maybe a provost or a dean will find $30-50,000 and say, "I'm going to competitively make a set of smallish grants in the $5-10K range to faculty in the humanities who want to do digital humanities work," and over and over again we heard anecdotally that, when you look at the proposals that come in, they are very, very often to build tools of various kinds as opposed to employing or adapting existing tools to pursue some specific scholarly objective within the scope of the small grant. The tool builders will certainly say that, once we get the tool built, maybe we can get some more money and we will genuinely, at some point, do something wonderful, but that's about five years out and the immediate issue is building more tools. So this question of how to mix tool investment and tool application, and how to manage redundant tool building, I think is very important.

One of the useful things that came out of Bamboo and that actually has out-lived Bamboo is a directory of software called DiRT. I think the project overall is now referred to as Bamboo DiRT but this carries on, and doing things like that to reduce this kind of redundant development, I think, is probably very desirable, but when everyone starts having these conversations about allocating resources, tools versus tool application becomes a significant issue, especially in the presence of this discomfort about the long-term sustainability and maintenance of many of the more public tools.

In terms of preservation and publishing of digital humanities outcomes, some very interesting comments, which I would have liked to explore in more depth about relationships between the publishers and preservers and the people who are creating the resources and specifically things like how to preserve a dynamic resource, and at what point does responsibility start to shift from the creator to some kind of dissemination cycle. These are all very poorly understood and delicate issues; they're very well understood in the world of the traditional monograph where there are pretty clearly hand-offs and very little going back and certainly no promise of a second edition of a given monograph anytime soon. This is a different world here and a number of people on all sides of this challenge recognized and stressed that.

The last thing I'll mention is just a cautionary tale, which really resonated with me about how we punish people for doing the right things, and how we need to do much, much better. Imagine you've got a team that's building some kind of digital humanities resource that's going to be used by people on campus and people beyond in the broader academic community and for various reasons this resource needs to understand notions of user identity and login. The historic thing to do has been to cobble together some kind of nasty local password system that doesn't work very well and requires registration with the service, and very likely is far away from best security practices as understood by central IT. Campus IT leadership has been pleading with developers of services like this in all disciplines, not just the humanities: Please don't do this. Integrate with the evolving campus and national identity management and authentication infrastructure. Well, what happens when you try and do that and you're not a central application from the IT organization, or even one of the administrative units that's a long-standing collaborator and client of central IT, but rather something based in an academic department? In fact what you find in many cases is the communication is not so good; you get a lot of surprises, you're sort of an afterthought in the collection of things that the folks who run central identity management and authentication want to deal with. We really do want to leverage these very general core services, infrastructure services, across academic and research applications we want to see, built and deployed within our academic departments, but I think we've got a significant problem in managing that relationship in many of our institutions and I think that there is an important message there about relationships and roles and the scope of those relationships for the digital humanities work and other kinds of things.

Final points. There was a very strong sense among roundtable participants that libraries and librarians are going to play a very key role in sorting this out, and one of the things that happens is that the library gets more actively engaged. There were several people who talked about a new generation of scholarly librarians with joint appointments in humanities departments and libraries and about libraries actually taking perhaps a more aggressive role than they have historically taken in moving this along in some dimensions. There were repeated mentions of the impact that programs like the CLIR Fellows were starting to have in providing examples of people who work across the library and the disciplinary scholarship. It was striking to me the number of times that was mentioned; it wasn't just once in passing. So, I think there are some interesting structural things in terms of the library's relationship to the academic programs that are starting to surface here as well.

That's my quick summary as I said, it's a pretty raw synthesis, but I hope it's at least of some help in getting a handle of the topics. I'd be very happy to answer questions about what else we talked about, or what we didn't talk about.

Question: What about the shift from textual to visual and image based resources and modes of communication?

Lynch (41.51): It didn't come up explicitly in terms of, for example, moving from entirely textual to more visual approaches to thinking about problems, but it kind of came up tacitly, I would say, in the sense that they want to understand what tools are out there, what the tools can do, and rough levels of cost and difficulty for using the tools. Faculty can very easily come up with these pictures of things they want to do and maybe even seen something similar—like reconstructing a digital representation of an ancient city and then try and understand how people moved through that city in their day-to-day life or something. What people don't have is any sense of is whether this is an enormous project that requires a $5 million multi-year grant and an army of specialized expert folks to reconstruct the city as an up-front investment before you can get anything out of it in terms of your research questions? Or is it something that you can do with an undergraduate intern hacking around with Google Maps? How do I understand this as someone who isn't deeply expert in the underlying technologies? There's a great need for help with this.

Question 2 (43.48): Was there discussion about student involvement, and how to move digital humanities research into the classroom and into student engagement?

Lynch (43.57): It turns out that a number of these digital scholarship or digital humanities centers have programs inside them that deal with the pedagogical and class uses of material focusing solely on research. Certainly there was a strong recognition, I would say, that there are pathways to greater student engagement through the use of this, particularly with undergraduates, and that was generally viewed as an attractive outcome; maybe not enough to all by itself lure people into this but one of the places where I think many people hope to get a significant early win.

Question 3 (45.35): After listening to your report on this, I couldn't help but think about another seminar that I came from via Twitter, which was about digital archives and so it seemed like the conversation had practically swapped in and out from each other in many, many ways and I didn't hear anything in what you said really explore whether the potential here either in growing up in two silos on our institution, I'm wondering – agree or disagree, thoughts?

Lynch (46.09): I don't think that they are growing up completely in different silos. The focus of our discussion was much more on faculty and I think there was a very strong tacit assumption that in order to support a lot of this faculty activity we needed digitized special collections, we needed deep digital archives of various kinds, there was some real interesting hints at conversation. But questions like what kind of acquisition strategies libraries should be following to identify and acquire the right resources to support some of this work in the digital humanities, what kind of evidentiary material needs to be collected for work that needs to be done in the future were important topics that we didn't get into in this roundtable. In my view, archives sometimes have trouble making that connection into the scholarly activity in a prospective way. I did hear some interesting hints that there was a need for better

collaboration, specifically from the point of view of a faculty member, or someone who is thinking about what a faculty member might be doing 10 or 15 years from now. This question of what should I as a selector, as a collection development person, as an archivist, as part of the leadership of a memory organization, be making a priority to actively acquire is, I believe, a really central question, and one that is very much part of CNI's broader agenda.

Question 3 Continued (48.05): I guess I'm wondering if there's not some conversation getting into the digital archives though that are actually about the same things I already talked about, like, let's give small grants so faculty start using these things that we've done so that's where I start to ponder about, so I get your point about the collections but I'm now worrying or pondering or on the lookout for that we don't create silos.

Lynch (48.31): I have seen some wonderful collaborations and we featured a couple of them in breakout sessions at our meetings. I would say these are maybe at least as commonplace in liberal arts institutions that are undergraduate focused as in really big research universities where people in the archives and special collections world connect up with faculty who are often doing these kind of small writing oriented or project oriented courses that are part and parcel of the high quality undergraduate experience, and they look at ways to engage the students with material from the archive. One of the nicest ones, and I'm going to get the details wrong because this was a couple of years ago and I'm going from memory, but we did take a video of the session that is up in our archives, it was I believe a liberal arts institution, the special collections folks had a whole bunch of diaries of students who went there at the turn of the last century and they read some of these diaries as part of a seminar course for undergraduates; they kept their own diaries and at the end of the course the students were invited to execute a deed of gifts to place the diaries that they had produced into the archives so that someone a generation later could come back and work with their material, which introduced them to the whole question of how things get in archives, how you feel about putting your own stuff in archives and all of that – it was just a brilliantly elegant piece of engagement – so I think we're going to see a lot more of that, I sure hope so.[2]

Question 4 (50.51): So Cliff, as we acquire and re-create, you license a lot of these digital collection, historical material, it's not just the digital humanists who are knocking on our doors, but the computer scientists and data scientists are also interested, for a very different reason, in this content and asking very different research question – did that come up in the conversation?

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[2] Andrew Bonamici, Kevin Hatfield, Heather Briston, and Matt Villeneuve, April 2010, "Rebooting The Past, Uploading The Future: Web 2.0 And The Study Of History Through A Living Learning Community". Presentation, CNI Spring 2010 Membership Meeting, Baltimore, MD, https://www.cni.org/topics/special-collections/web-2-0-and-the-study-of-history.

Lynch (51.16): No, we just didn't get into it.

Question 4 Continued (51.19): And have you observed that as well?

Lynch (51.21): Oh yeah, and it's not just computer and data scientists, I think that people know how wide the use and exploitation of archives is. Here is one of the great detective stories of our time: where did AIDS come from? When did it come out of the jungle? How did it get out there? And there are people who have been working on this, and these are the most amazing inter-disciplinary teams: public health people, molecular biologists, who are trying to estimate the rate of genomic variation in various clades of the virus so that they can go to a blood sample from 1950 and guesstimate that this travelled that way. They've now brought in people who are studying things like the introduction of commerce and transportation systems in Africa and making very good cases about how actually in the latter half of the 1800's this followed rivers and just never really got enough mass traction, but you start looking at how incredibly inter-disciplinary an important investigation like that is, the range of both physical archives, medical samples and more traditional written and documentary archives come into play there on an incredibly wide range of topics and you really see how that is underestimated.

I've occasionally thought it a wonderful thing to do a workshop at some point, which produces a really nice little book on totally unexpected uses of our archives for important things.

But to another part of your question: yes, there are a lot of people from a lot of disciplines who now want to *compute* on parts – often large parts – of library collections for an amazing range of purposes.

Question 6 (55.11): I guess my point is that it's not only whether we acquire or digitize; it's how we express this so there's circulation models for artifacts and monographs but what we do is trap our stuff in systems and data models that are very hard to share with other tools and I think that's a way that libraries can engage digital humanities is to actually have a standard space and make machinery instead of these commodity tools that actually take your stuff out.

Lynch (55.41): The liquidity of content here is very bad and has got to get better and I think there has been a tendency in the humanities to develop standards to go to the very elaborate sometimes, the Text Encoding Initiative being an excellent example. It's a very flexible standard but it's quite a heavyweight beast. If you look in some areas of scientific data exchange and curation they do very lightweight and very pragmatic, low barrier to entry, kind of stuff and I think we would benefit from helping humanists in some cases to move more in that direction and there are a bunch of tools around that could potentially offer a good head start.

Question 7 (56.43): Everybody has a different interpretation of digital humanities and as we work with other humanists and what we're noticing more and more their interest in methods and tools it's more new ways of understanding the human experience and culture. But it's not about the tools; it's also about critiquing the tools. For instance, we have some faculty members who are really questioning the mining tools and the algorithms and research methods, we have all these parameters, liabilities and so forth, they are looking for ways to work with librarians and understanding what it is they need to know and the tools to be able to use them in an intelligent or in the right way. I was wondering if these issues came up? And the other challenge we face is our scholars are finding content, they want to explore, they want to experiment with but we are running into licensing restrictions blocking them.

Lynch (58.06): So to take the last question first, it's very clear that for a substantial number of people who are interested in digital work in the humanities, content acquisition and licensing of various kinds is a key piece of support that they need. And they need tools to work with that content. It's very easy to think that this is a narrowly technical issue (they need to learn to use Excel better or something); but actually in many cases one of the really important support services they need is this complex of things around licensing and rights and negotiating the right kind of agreements. But running through both of your questions is the point that this is not purely technical and that was strongly implicit in the discussions that we had, that this is not just a matter of IT here, it's a matter of people who can advise them on planning research projects, getting the rights they need, evaluating research methods.

Now, evaluating research methods is really tricky. The good thing that the humanists have going for them is that they tend to be a pretty skeptical lot and that will serve them well here I suspect, but it's probably expecting too much in most cases for a library to help them to go through the detailed analysis of the workings of machine-learning algorithms or something like that. Now there may be some kind of campus center for data science or something where the library, some statistical consulting folks and computer scientists or other folks are collaborating, but some of that feels like it's probably beyond the expertise of most libraries to take on all alone. As an aside, I do think that there is some very scary stuff starting to emerge with the kind of uncritical deployment of a lot of analytic tools, you see people getting very mixed up for example with the difference between correlation and causation, which is a very bad thing to get confused about. So that I think is just an overall challenge as these tools come into wider use.

I tend to think of these tools as fairly hard to use, you need to understand things like some of the companies who do very slick visual products like in areas like data warehousing are now integrating tools for business analytics so that you can really with almost no knowledge of anything produce these fascinating graphs and reports that can

take you to conclusions that are utterly unsupportable. These tools are definitely moving into broader circulation fast in society.

Question 8 (01.02.16): We're almost out of time but this is a did-you-talk-about question on digital humanities centers.

Lynch (1.02.43): We talked about that but we did not focus down into the details. One of the things that came up again and again and again was the role of these various kinds of centers, but actually these centers are a pretty complicated and diverse phenomenon. We did a workshop[3] last April trailing the CNI Spring meeting that tried to look at some of that phenomena in much more depth and there's a report on that that we just completed that is in your packet and a bunch of Web pages attached to our site that go into that in more depth, but it's clear that those things are very important pieces of the tool kit, but we were trying to look at a slightly higher level here and not get bogged down on a very specific analysis of those.

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[3] "Digital Scholarship Centers: Trends and Good Practice," A CNI Workshop Held April 2, 2014, https://www.cni.org/events/cni-workshops/digital-scholarship-centers-cni-workshop.