Abstract
The prospect of ubiquitous digitization will not change the fundamental relationships among scholarship, academic libraries, and publication. Collaboration across time and space, which is a principal mechanism of scholarship, ought to be enhanced. Reforms in copyright law will be required if the promise of digitization is to be realized; absent such reform, there is a serious risk that much academically valuable material will become invisible and unused. Ubiquitous digitization will change radically the economics that have supported university–based collections of published material. Scholars and scholarly institutions (including libraries and university presses) must assert vigorously claims of fair use and openness.

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Introduction
There has been a lot of buzz about Google lately. Will Google destroy libraries, save them, or not make much difference? Is Google responsible for the economic problems of publishers in general, and academic presses in particular? Are the sloppy habits of scholarship among students that make faculties so grumpy the fault of Google? Does putting “Google” in the title of a talk or a paper increase the probability of attracting an audience?

The answer to the last of these questions unambiguously affirmative, hence the title of this talk. But the choice is not merely a marketing move on my part. “The world of Google” is emblematic of something more important, namely the world of ubiquitous indexed digitized content. Google is likely to be a player well into the future, but what is most important is that Google’s arrangements with Michigan and other libraries have shown us that we are
going to live in that world, and that it will encompass material that started as print, as well as material that was or will be born digital.

My discussion will focus on research universities and related institutions, with an emphasis on academic libraries. (It’s interesting to think about what generalizes to museums and what does not. And much of it generalizes to other kinds of libraries and collections. But I was taught to teach what I know, and the academy is what I know.)

For a good deal of what I say, I will use the University of Michigan as an example, not because it is typical, but because the issues I want to focus on have to do with the support of scholarship and research at the highest levels, and Michigan is one of a large handful of institutions committed to — indeed, defined by — such activity. (And again, Michigan is the institution that I know best.)

The Google announcement in December 2004 — the announcement alone — changed the world. Five libraries, including the University of Michigan, agreed to have their print collections digitized. Exactly what will be done with digitized material — by Google, by us, by the other libraries — is yet to be determined. But I want to suggest that the existence of this material, even in prospect, changes the world in important ways. For one thing, it solves a Grand Challenge — the digitization (and preservation) of printed material in the public domain in one fell swoop. We had not known how we would accomplish this task. We at Michigan were on pace to get the job done in 900 years. We now expect to have it done in six years.

Scholarship and the Public Interest

What have not changed are the purposes or fundamental mechanisms of scholarship. Scholarship is what research universities and related institutions are about, and I want to claim that we make a distinctive contribution to society that the Google announcement and the prospect of scholarly information being ubiquitously available on line can, if well managed, enhance greatly.

Let me define scholarship as the craft of learning and teaching (activities that encompass research and creative expression). I want to assert that scholarship serves a broad public interest. Yet connecting up what we do in the academy with the public interest, with obtaining public support, and appreciation, and funds, is increasingly difficult. The American research university is under attack, for being costly, for being irrelevant, for being left–wing. Michigan’s legislature and others sometimes seem skeptical that first–rate universities (or perhaps even anything more expensive than last–rate universities) are worth the money.
irrelevant, for being left-wing.

At one level this is slightly bizarre. By any plausible set of measures, U.S universities have been spectacularly successful, for their students, for their cities and regions, for their states, for the country as a whole. The Economist (2005) in a recent survey of higher education, concluded that the U.S. is, quite simply, the best in the world. That’s right. Although most faculty would argue (as would I) that we do not organize ourselves with the specific purpose of producing prosperity, it turns out that prosperity is among our many products, at scales from college towns to the world as a whole. And we create this prosperity by fostering habits of mind and methods of inquiry that allow us, and our students, to solve unfamiliar problems. Indeed the higher education establishment of the U.S. can be thought of as a huge problem-solving machine. (“Interdisciplinarity” and other buzzwords are simply instrumental correlates). It’s very American and not very simple. Political and educational leaders from all parts of the world visit us frequently, wanting to understand how we do it.

Our ability to work in the way that we do is not because individual faculty are necessarily into solving social problems, although some are. Rather, our value is in large part that we provide the mechanisms and methods for solving real problems, and also that the work we do helps to develop lively, engaged and at least partially realized human beings, enjoying the fun of life that good education and disciplined thought can bring.

In other words, while we can and should assert the public interest that we contribute to as deriving from teaching and learning for the joy of it, we can also make a very powerful narrower claim based on economic contributions. I am unapologetic about this. It has been a reason for public support of higher education since the idea came about. It was a motive for the land grant act that helped to create my university and many others. Although our contribution to the public weal may not motivate everything we do, I am unembarrassed to point out that the contribution is large and tangible. (Elsewhere [Courant, 2004] I have argued that liberal education, so impractical on the face of it, survives because it is highly practical. It is a persuasive argument, based in part on the notion that liberal education and basic research position us to solve the next new problem, without knowing in advance what that problem will be.)

The main point I want to make here is that the public interest as enacted and articulated by universities and their kin is done via learning (research) and teaching. These are our craft; they constitute scholarship. They may be construed broadly, to include, for example, community service learning, or narrowly. But no matter how done, if we do not have a distinctive contribution to make via scholarship — via learning and teaching — then there is nothing special about us. And I would argue that there is a great deal about us that is special and valuable.

Scholarship is what we do that other institutions don’t. It is the source of the distinctive value that the academy provides. As we shall see, the purposes scholarship imply a great deal about libraries and publication and about how we ought to employ information technology.
Publication is the essential technology of learning and teaching. Ideas must be made public to qualify as ideas; art must take physical form in order to qualify as art.

Remember the old puzzle about the tree falling in the forest. Does it make sound of no one hears it? Sure, but so what? Does it make sound if no one ever even knows about it? Sure but very so what? Take an idea. If you don’t write it down, the thought will have had no public effect. If you write it down in a way that no one reads it (at least not until they get to your attic a hundred years later) it has no effect. That is to say if you don’t publish (or at least teach) then you almost certainly have no effect, not even on the life of the mind.

Ideas must be conveyed to qualify as ideas. In essence, what we academics do is we think thoughts, read books, gloss texts, run experiments, make notes, interpret data and put what we know or think we know in the library where others can find it. The rest of it is superstructure, including the mechanisms of publication. The fundamental requirement of an effective infrastructure for scholarship, however, is that it puts ideas into the library and lets others get them out again, reliably, the same ones every time, with full metadata, lab notes, who did it where, how and so on. The new information technologies may change all of the details of these transactions, but the fundamental methods and purposes are intact.

Publish or don’t waste our time. If we can’t retrieve what you have learned, you have violated your implicit scholarly oath. Note that “publish or perish” is a summary of all this, and is more virtuous than sadistic.

Public or don’t waste our time. If we can’t retrieve what you have learned, you have violated your implicit scholarly oath. And, going back to the public interest, if we don’t publish we risk that the value of what we do — including economic value — will perish. Publication as a requirement of our craft is fully legitimate.

The process of publishing itself will vary with technology. Editing, to push the point, is part of the curatorial function. It helps us figure out what gets into the library and how to get it out. One of the really hard questions for institutional repositories is going to be whether and how the material is recombined and improved by editors. Do we want all of the raw files? Probably. Do we want some sorting and labeling and quality control? Certainly.

Universities’ stake is in this whole system of scholarship and its publication, which is the reason that we have university presses. The future roles of university presses are unclear — their current business model is not working well, and we are completely ambivalent as to whether we want them to succeed as businesses or as parts of a subsidized scholarly infrastructure. There is a pining for an imagined golden age in which there was no issue here; the presses were close to self–supporting and got the job done. Well, pine away. It’s not clear that the current world allows both self–sufficiency and traditional methods of publishing an ever–increasing number of scholarly monographs.

If there must be continuing subsidy to publication (and here I mean to use the word publication broadly) we have to figure out what to subsidize and how. If, for example, the
problem is how to support the communication of scholarship in the humanities, let’s think about how best to do that. Propping up old business models may not be the answer. I note, by the way, that the current malaise of many university presses has not been caused by Google. Near the top of the list of contributing causes are enormous technical changes in storage and distribution of text and images and enormous economic changes in the production and distribution of scholarly journals, especially in the sciences. Google isn’t on the list at all, except insofar as it distracts the American Association of University Presses and others from attending to real problems.

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Collaboration, across time and space, is the fundamental method of scholarship, and without it we can do nothing of value.

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One can summarize much of what I’ve said so far by an implication: Collaboration, across time and space, is the fundamental method of scholarship, and without it we can do nothing of value. Collaboration takes wildly different forms in different disciplines, and how it is done and can be done is affected in different ways by the new information technologies. But a positive (and disruptive) element of the new IT is that almost everywhere it makes collaboration easier, provided we can get at the material. In other words, if we focus on the purposes and mechanisms of scholarship, the new technologies are (or should be) our friends.

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Copyright

Which brings me, perforce, to copyright.

I believe that in many ways the institutional framework of intellectual property is inimical to scholarship. Something is deeply wrong when the tools for extended and easy collaboration are plausibly frustrated by excessive concern with intellectual property. The purpose of copyright, as we all know, was to make ideas available for human progress, not to lock them up.

Now it’s gone bad on us, although fair use, if understood and vigorously applied, can help.

In particular, in scholarship we care about giving credit for ideas. In copyright we care about giving credit for the tangible expression of ideas. These are actually quite different. In my discipline it is quite common to include as a co-author someone who participated in a project only through conversation about an idea. Scholarship is largely about collaboration. Get the ideas out there, use them, give credit where credit is due. Copyright is largely about parsing out who exactly has what claims to what piece of the work. It requires elaborate contracting, which is inimical to cooperation. We have a faculty member who won’t work
with students any more, and students who want their IP lawyers in on class projects.

And, of course, most copyrighted and potentially copyrighted material has no street value, while the corpus of it is of great value indeed. Somewhere between 95 and 97 percent of the copyrighted material in the University of Michigan libraries is out of print. The cost of getting permissions and finding rights holders for the vast quantity of material that is neither current nor very old can be prohibitive (Covey, 2005). And there is no gain in this for anyone.

Some kinds of current research and publication are rendered nearly impossible by copyright. My colleague Margaret Hedstrom (2005) offers the following example: An independent filmmaker is working on a project to produce a documentary on the evolution of video and computer games and gaming culture. She wants television coverage, commentary on games, ads, clips from movies of people playing games, interviews with developers, enthusiasts, and the games themselves. She may want pictures of old games to show the evolution of the genre. To proceed, the filmmaker will need researchers to find the material and its owners, and legal counsel to clear rights and to gain permission to reproduce few seconds or minutes of everything. She will need permissions for the interviews. And more. All of this imposes costs over and above the cost of doing the research itself, plausibly a multiple of the research costs.

The preceding is just one stylized example. The current rights environment makes it extremely difficult to use any commercially–produced material, including advertising, in scholarly work. While scholarly work should generally be considered a fair use, it is expensive and risky to make the case. As a result, otherwise feasible projects that would be of social and academic value will simply not get done, and valuable work will not get published solely because of the risk of lawsuits.

This is a system that must be disrupted, and for reasons that I hope will become clear later in this discussion, I believe that the digitization projects that Google and others are undertaken will help in the disrupting.

Some Economics of Libraries

First, however, I want to spend a little time on the economics of libraries. Literally and metaphorically, universities are built around their libraries. They hold, catalog, and curate expensive material that not everyone can afford to have, and yet make it available to everyone. The curation and cataloging are as important as the holding. If it’s “printed,” broadly speaking, the university library and its staff will find it and get a copy to you and tell you, reliably, its provenance. (Remember, scholarship is not just putting material in the library, but also about getting it back out.)

In a world of text, and then a world of print, the difference between one copy and none was huge; if the local library had a copy you could get stuff fast. Big collections provided a serious competitive advantage to those that had them. (Although inter–library loan allows you to find a copy of there is one somewhere, it often takes a long time get one.) So great universities were built around, and built, great libraries.

The underlying economics that make this interesting is that the user’s cost of getting access to the material is much lower if the material is in the local library. Once the library has a
copy, the cost of use is relatively small. You have to go and get it, or send someone. You might need to read the catalog (until 20 years ago not online.) But the huge costs are fixed; having the space, buying the material, cataloging it, taking care of it. There are also annual maintenance costs that are large. Actual use costs, provided you are in the neighborhood, are low.

Markets, by the way, are very bad at producing resources that have these characteristics, because they operate generally by charging for use. While there are many successful “business models” for academic libraries, there is none that looks remotely like a business. That’s not (at least not exclusively) because we are fuzzy–headed intellectuals. It’s because the services provided by academic libraries cannot be efficiently provided on a charge–for–use basis.

When the principal technology for getting material from the university library was walking to the library or telling one’s assistant to walk there, there was a payoff to individual universities to have excellent local collections. The better the library, the better the quality of faculty and student work (and hence faculty and students) at the university. The library’s collections and services constituted (and still constitute) a source of competitive advantage for the institution.

The minimum desirable scale for use of digitized collections is much bigger than any one university and the relative cost of acquiring and maintaining versus using becomes even more skewed. This adds a whole new dimension of required cooperation that makes inter–library loans look like anarchy. And it changes radically what it means to “collect.” When an electronic collection is available on one’s desk top, it is unimportant (for many purposes) where the physical collection resides.

Once produced and put on a server, digital materials become public goods.

Once something is in digital form, and on a server, the cost of use, pretty much anywhere in the world, is essentially zero. You can restrict use, of course — put up a bar, charge for a look, limit use to those in the local domain, but if everyone does this it’s terrifically wasteful. The efficient equilibrium, for the vast majority of text and copies of images, is one in which there are a small number of secure digital copies (enough so that if one or two go off–line there is redundancy) that everyone can get at under reasonable terms. (Of course, there are also originals, but there is no need for lots and lots of locally–held copies.)

Once produced and put on a server, digital materials become public goods.

The phrase “public good” has come into fairly common parlance, among university leaders and communitarians. The idea is that there are good things — things of special social value — that on normative grounds ought to be produced for public use, rather than in the market place. The knowledge that resides in universities, and much of art and the arts, are spoken of in this category.

There is also an economic construct, not unrelated, but not the same, called a pure public good, defined by Paul Samuelsen (1954, 1955, 1958). The idea was well articulated as early as Adam Smith. It is a technical term, deriving from the structure of production and
use of a good.

The key technical property of a pure public good is that one can add more consumers without diminishing the quantity of the good available to others. The example that I often use in teaching is the huge flagpole at the center of the University of Michigan campus. Within the plausible range, one more person seeing it does not in any way diminish the experience for others. National defense, the system of contract law (as distinct from litigation itself), standards, and, yes, information, are pure public goods. Once we know some constant in physics or that Columbus sailed the ocean blue in 1492 adding another person to the cognoscenti is without cost to the existing holders. Private goods, such as apples, are a clear contrast. If I eat the apple, you don’t. If I teach you how to spell apple, we both know how, in full glory.

The technical property that matters most is that the cost of adding another consumer is zero (or approximately so). The good is non–rival. It then follows, as a matter of economic efficiency, that the market price ought to be zero. Why? Because if I charge you something for an item that costs nothing to produce at the margin, I am passing up possible value. I could make you better off while doing no harm. This notion of efficiency underlies what economists love about market economies with respect to private goods. But when there are public goods, charging invariably reduces social welfare relative to what is technically possible.

With respect to information, Thomas Jefferson (1813) put it beautifully. (I’m giving you the long form of the quote, because it’s simply lovely.)

If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of everyone, the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me.

That ideas should freely spread one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them like fire, expansible over all space, without lessening their density at any point and, like air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation. Inventions then cannot, in nature, be a subject of property.

Jefferson didn’t know about Google. (Washington, who engaged in electronic eavesdropping, according to U.S. Attorney General Gonzales [1], may have known. But Jefferson didn’t); Google makes Jefferson more true than he could have known.

Unfortunately, although public goods can be extended to more users at zero cost, they can still be costly to produce in the first place. The case of digitally produced scholarship is of course an excellent example. What the theory tells us is that we ought to charge nothing for it at the margin — give it away. It tells nothing about how to pay for its production or how to determine how much to produce. What it tells us is that markets will under–produce. It also tells us that as a general matter, the solution of public goods problems requires collective action.
Except for the most arcane materials and users, that which is not available online will simply not be read.

Meanwhile, on the demand side, everyone wants and expects to do almost everything over the Internet, at least in the initial stages of search. Even our most curmudgeonly faculty, the ones who love breathing the dust of musty tomes, start their day from home looking at the online catalog and browsing collections that they can get to online. Except for the most arcane materials and users, that which is not available online will simply not be read. We have to figure out how to provide this material, and pay per view is not a good solution. And note that it implies, a fortiori, that the business model of publication that has served us so well for so long won’t work. Our students, and to an increasing extent the rest of us, only look online. We had better make sure that the good stuff is there, or all we will see is inferior material. The risks to the quality of scholarship itself, and to its practical uses, are profound.

In the world of digital archives (as in old–fashioned libraries) essentially all of the cost is in the assembly and maintenance of the material. In the digital world, where you can transmit material across the globe for no cost, it is in the interest of no one place to do this work. It is in everyone’s interest that someone do it, so we are going to have to develop a cooperative model among scholarly institutions and their cousins (museums and other libraries) to get the job done. We do not yet have this organized, although lots of people are working on it. There will be a great deal of quid pro quo. And there will have to be mechanisms to assure that the institutions that benefit most from this set up pay their share, as they do now. Just how this will work is yet quite unclear. Collective action is not easy, and, as I suggested earlier, the value to individual universities of large local collections (except for special collections) will become much reduced with ubiquitous digitization.

The good news is that among the relevant set of institutions there is a lot of money available, money that can be shifted from current activities, in part.

There will still be a great deal of value to universities deriving from the quality of local libraries and especially the services that they will provide. Both locally and collectively, there is an enormous amount of work to be done to make digitized materials easy to use, to create extensive, virtual archives and collections across space, to link working notes together, to develop and employ all sorts of collaborative tools. The new technologies make collaboration much easier, and make it much easier for users to find what they are looking for, for materials across the world. Universities and their libraries that are best and most creative about usability will still have a competitive advantage. And the main business of the university — turning information into understanding and knowledge — understanding what is good and not so good, separating the wheat from the chaff, being smart about collections of material, albeit “virtual” collections, will still be vital — even more so in a world of ubiquitous information. So we will need good librarians, and they will be a continuing source of competitive advantage for individual universities. (And I think that they may re–converge with faculty, relative to the specialization of the last century, something that will be salutary for all concerned.)
Crucially, for this utopian vision to work, universities have to get out of the business of competing on the size of their collection. Even the largest local collections will be way too small to matter. Compete on the shape, on the special stuff, on the expertise of your curating and archiving, on the ability to deliver to the faculty desktop. But there is no point to competing on the size of duplicable masses of material. I hate the Association of Research Libraries (ARL) rankings, even though Michigan is high in them, because they absolutely do not capture what matters. (Not all provosts agree on this one.)

By now it is common to observe that making material available online can increase the demand for use of the original, physical materials. (Publishers, take note.) Two examples involve special collections at the University of Michigan Libraries. One is a collection of papyrus, an area in which the University has had an excellent collection for decades. In collaboration with many other institutions, Michigan has scanned and digitized our collection and most of the known papyrus available around the world, leading to the creation of a resource that has greatly increased the capacity of scholarship everywhere, and that has also increased the demand to see the originals (see http://www.lib.umich.edu/pap/).

The *Making of America* is equally dramatic. For those who have not used it, the *Making of America* is a Web site developed by Michigan and Cornell, using primary sources from 1850 to 1876 (see http://www.hti.umich.edu/m/moagrp/). Funded by the Andrew W. Mellon Foundation (the hero of many stories of digital scholarship in the humanities) we scanned and catalogued hundreds of volumes — works that had sat for years in an off–site storage facility. But our librarians suspected there would be a demand for them because they cover such a rich period in American history.

The librarians were right. A collection of material that previously had been used intermittently by a campus of 40,000 was now online for all the world to see. Soon, the *Making of America* site was logging up to one million Web hits a month. And we keep adding books and journals. Moreover, we have recently developed print–on–demand capacity for the *Making of America* collection and people are beginning to use that capacity, buying copies of the material. This activity pays for itself.

We continually hear from users about new discoveries and new knowledge generated by their research on *Making of America*.

Mary Sue Coleman, Michigan’s President, likes to tell the following story: It involves the 1860 book, *Bees and bee–keeping* (by W.C. Harbison, printed in New York by C.M. Saxton, Barker, & Co.), a seemingly obscure work that, as a printed piece, had little demand at Michigan, a research university without an agriculture school. It has turned out to be the bible of beekeeping, with the business advice dispensed before the Civil War still perfectly applicable to today’s beekeepers, who continually download it.

The treasures unearthed through research on the *Making of America* site are what a Michigan librarian calls “instant gratification of a one–in–a–million need.”

Information technology and digitization are what make this possible.

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**Challenges**

In the world of Google, we have an interesting challenge. We need to show the broader
world, as well as our own communities, that our way of collecting, with meticulous attention to edition and provenance and attachments to other parts of the collection, with search tools that take advantage of the brilliant statistically–based work of Google but that go deeper into the metadata and, again to sources and replicability, really is of value. Not only to scholars but to others who will care about the reliability and meaning of the cultural record. Only librarians know how to do this. One of our institutional imperatives is to make plain its value. If we fail, we are at risk for losing access to our own history.

... we are observing a classic case of the irresistible force and the immovable object. The irresistible force is the ease of working and playing online... The immovable object is the rights environment ... with copyright law aiming for infinity less a day as being the ideal term of protection. I think that the force wins; I know that it should.

After we optimize on information technology, the essence of the library is still intact – the primary archive, in all its glory. What changes is how we deliver it and how we interact around it, at least mechanically. But if we were starting from scratch today, with the technology we have and a blank slate of IP law and practice, we would immediately invent archives and archivists. The rest of library function, I think, would be organized around services rather than collections per se, except for “libraries as museums.” Note, crucially, that we have to know what we are archiving and archive the “true” published copy, even if the form of publication changes.

One very interesting open question is whether our bibliographic and storage techniques are of value to commercial producers of the cultural record — networks and movie studios, and the like. If not, absent changes in copyright law and practice around fair use, it’s going to be very hard for us to get access to materials that are essential to work in the humanities, work that “used” to be mostly in print, which libraries could easily collect and make available.

The more I look at this new world we are in, the more it seems to me that we are observing a classic case of the irresistible force and the immovable object. The irresistible force is the ease of working and playing online, the billions of people who start and stop there, who expect to have access to all that matters there (meaning, again, that if it isn’t there it isn’t going to matter). Some of them are even the children of members of Congress. The
immovable object is the rights environment and the effort to save old business models, with copyright law aiming for infinity less a day as being the ideal term of protection. I think that the force wins; I know that it should.

Business models in which one can make money while giving away content (or making it easy to find) abound. Scholarship has always had that model. Now is not the time to back away.

About the author

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Note

1. In testimony before the testimony before the Senate Judiciary Committee, 6 February 2006, the U.S. Attorney General asserted that both Washington and Lincoln, among others, had engaged in electronic surveillance for national security:

   I gave in my opening statement, Senator, examples where President Washington, President Lincoln, President Wilson, President Roosevelt have all authorized electronic surveillance of the enemy on a far broader scale — far broader — without any kind of probable cause standard, all communications in and out of the country.

Jefferson was not mentioned. See http://www.washingtonpost.com/wp-dyn/content/article/2006/02/06/AR2006020600931.html, accessed 25 July 2006.

References


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Editorial history

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This work is dedicated to the Public Domain.

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