## Online Catalogs and Their Users

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A review article on the CLR study of online catalogs.



he current interest in research on computer catalogs is fortunate at this stage of their development when so few libraries

have them. Not only can other librarians, if they are smart, take advantage of the experiences of pioneers, but a good deal of standardization can be postponed until more knowledge is gained. Who knows what card catalogs would be like today had they been studied with such diligence in the latter part of the nineteenth century?

During April and May 1982, questionnaires were administered to users and nonusers of online catalogs in twentynine libraries across the United States. The emphasis was on "the interaction between the human user of the computer catalog terminal and the computer system which supports and responds to the user's request for information" (p.30).\* The research was sponsored by the Council on Library Resources; but five other organizations were involved, each preparing its own report pertaining to a group of libraries and/or offering general interpretations.

Four of the reports, <sup>1</sup> each covering a different set of data and representing a different emphasis, are summarized and synthesized in Matthews' report, *Using Online Catalogs*, which is the focus of this review. The fifth organization, Online Computer Library Center, Inc. (OCLC), administered questionnaires in ten li-

braries, five of which used OCLC terminals as catalogs. OCLC submitted a three-volume "Final Report to the Council on Library Resources," which was received after this article was substantially complete. The Matthews summary includes data from the questionnaire survey in nine of these libraries (one was dropped) but not interpretations given in OCLC's reports.<sup>2</sup>

#### SCOPE AND METHOD

The specific goals of the survey were:

 to produce data for analysis that would enable designers of public computer catalogs to improve computer catalog system interface features. The system interface includes commands, displays, indexes, and similar software- and hardware-related features.

to gather data and prepare an analysis that would enable libraries to improve the implementation and support services for online public access catalogs.

to collect additional data that would enable libraries to extend public access computer catalog services to patrons who were not yet users (p.8).

The twenty-nine participating institutions included two state/federal libraries (one being the Library of Congress), fourteen ARL libraries (including nine campuses of the University of California with its online union catalog), seven other academic libraries, two community colleges, and four public libraries. Not only were

<sup>\*</sup>Page numbers in parentheses refer to the summary report: Joseph R. Matthews and others, eds., Using Online Catalogs: A Nationwide Survey, A Report of a Study Sponsored by the Council on Library Resources (n.p.: 1983).

there many types and sizes of libraries, sixteen different computer systems were

investigated (p.16).

jects.

The principal means for gathering information about these phenomena were printed, self-administered questionnaires. One questionnaire had fifty-nine questions for persons who had just used an online catalog; another had fifteen for those who, though encountered in the library, said that they had never used such a catalog. All library staff members were excluded. The University of California administered the questionnaire online, "but the text of the questionnaire and the method of administration parallelled those used at other locations."3 This library system did not question nonusers.

The questionnaires evidently were prepared and administered with great care. Planning began in December 1980, and a pilot survey of three thousand subjects was conducted in 1981. In the forty-ninepage Data Collection Manual, precise instructions were given to study coordinators, supervisors, and data collectors in each library. Included were scripts for use in explaining various matters to the sub-

There is an advantage in bringing so much expertise to bear from different sources on one study. The fact that all users responded to the same set of questions (and all nonusers to another) gives the study a unity and power not achievable by dozens of piecemeal approaches. The disadvantage, however, is that the questionnaire did not fit all libraries equally well. One may wonder whether a respondent was affected by question 3, "I searched for what I wanted by . . . A subject heading or headings," if that particular catalog offered no such option. It may have been distracting to see question 26, "Using logical terms like AND, OR, NOT is difficult . . . Strongly agree . . . Agree," in those fifteen libraries that did not offer Boolean

searching. Another problem is whether respondents understood all the questions, even those applicable in their own libraries. Apparently a fair number of subjects dealing with question 46, "Select up to FOUR kinds of material you would like to see

added to the computer catalog," mistook "Journal or magazine titles" for titles of articles.4 At Northwestern University, 15 percent of the users checked "Journal titles" as a kind of material they wished to see added to the database, though the library already had practically all its periodical titles in the computer catalog. Did all people responding to question 3, "I searched for what I wanted by . . . ," distinguish "A topic word or words" from "A subject heading or headings"?

Of those users in systems with no online aids, 28.5 percent said they had received help from instructions on the terminal screen, and the wry comment from the University of California is justified: "One might wonder just what 'instructions on the terminal screen' were used by [these persons]."6 On the other hand, the RLG report, questioning the number of people who claimed they had received no such help, points out that practically all users necessarily got some "minimal assistance" from the screen. Undoubtedly there was a problem with the questionnaire's meaning here. The Data Collection Manual instructed surveyors to respond, "Please just decide what you think it means, and answer accordingly," when told by subjects, "I don't understand what this question means."8

The original goal of the combined surveys was to collect information from 25,000 persons, but only 13,591 users and 7,625 nonusers were approached (p.199a) and 8,094 users and 3,981 nonusers responded-still a respectable number. Well over half the questionnaires were collected from ARL libraries, about onefourth from public libraries, 8 percent from other academic libraries, 7.5 percent from state or federal libraries (almost all of these representing the Library of Congress), and only 3 percent from community college libraries. The numbers of questionnaires completed at various institutions differed widely. The Ohio State Library furnished only five for users and eighty-six for nonusers. The University of California, because of its online survey, contributed no nonusers. Four of the twenty-nine libraries accounted for fewer

than fifty users each.

The overall rate of response (percentage of those who, when approached, agreed to complete a questionnaire) was 59.6 percent for users, and 52.2 percent for nonusers (p.199)—not a bad rate as surveys go, but the investigators are aware that some results could have been distorted by the failure to obtain answers from many other people. This response rate differed from library group to library group. For the six analyzed by Matthews, the rate was 46.5 percent for users; 62.2 percent for nonusers. 10 Furthermore, there was remarkable variance, apparently, from library to library. At Syracuse University, of the users approached, a whopping 93.9 percent agreed to work on a questionnaire; of nonusers a mere 24.1 percent (p.199, 199a). However, there is a discrepancy between these figures and those in the OCLC report.11

Not all questions were answered by every subject. At the University of California many of the items were passed over—a cause for concern as expressed by David Bishop. <sup>12</sup> In fact, of the 8,094 users' questionnaires, only 2,501 included all the thirty-one answers to part II, which dealt with "your experience with computer cat-

alog features" (p.202).

The study's validity was measured, to some extent, by checking questionnaire answers against records of users' behavior. The records were indicated by the computer transaction logs provided by some of the participating libraries. For instance, in the California system, answers to the question about type of search made (author, subject, etc.) agreed reasonably well with transaction records. For example, 15.2 percent of the users said they had used an author search; 44.5 percent said they had used a subject search. The log indicated that these percentages were 12.0 and 43.8, respectively.13 There are problems, however, in a comparison of the transaction log at Northwestern and their questionnaire responses. According to the log, 38.4 percent of the access points used were Library of Congress subject headings and 25.1 percent were author headings.14 However, the search information reported on the questionnaire was: complete author, 23 percent; part author, 11 percent; subject heading, 17 percent; and topic word(s), 10 percent.15 Here the logs represented not the same individuals who responded to the questionnaire, but those who used the catalog a month or two before the survey. It should be noted that transaction logs can record all users (during the time period covered); no one can refuse to be "questioned." Unfortunately, it was not possible to check responses to many questions in this way. However, the results obtained, while raising doubts, do bring some measure of assurance, as the same general findings seem to occur with regularity in all five of the group reports.

### FINDINGS AND APPLICATIONS

To focus more on what the survey discovered and how the material was analyzed and interpreted, the first thing to note is the tremendous problem faced by the investigators. With so many libraries, catalog features, and questions, some of them having various response options, there are millions of bits of information that could have been brought out and examined. The analyses and presentations are, on the whole, admirable. This article will examine some of the findings in roughly the same order as they are given in the Matthews summary, and then will indicate some unsatisfied curiosity.

First, though, the important overall conclusion: "To say that users have very positive attitudes towards the computer catalog is perhaps the understatement of the year" (p.139). "Over ninety percent of users like [it]" (p.140). "The evidence shows that those who have used the computer catalog love it, and those who have not used the computer catalog like it almost as

well" (p.176).

While these statements are justified perhaps by the fact that 67 percent of the users said their attitude toward the catalog was very favorable and 25 percent somewhat favorable (p.141), we might feel more comfortable if the exuberance were toned down. What of the 5,500 persons who, having just used the online catalog,

refused to cooperate? While it is easy to imagine a user, angry at failure, wanting a chance to express that on paper, it would seem more likely that those willing to take twenty minutes or so to fill in the blanks were in a better mood than were those who refused. For some users, the act of rejection could have been a sign of negative attitude toward the whole situation.

Also, the acquiescence bias-the tendency to say yes as a way of not seeming disagreeable-may well have affected responses to some of the questions. Generally in surveys this factor is hard to evaluate. Though it is supposedly less serious on a written questionnaire than in face-toface interviews, it cannot be discounted

entirely here.

Two other points bear on this matter. Data collectors were told in the Data Collection Manual that they should not approach users when the catalogs were out of service, because these people "will have a bad impression [of the catalogs]."16 Also, the RLG report, in addition to analyzing questionnaire results, gives quotations derived from interviews with library staff members at Stanford, Northwestern, and Dartmouth, not mentioned in Matthews' summary. The tone here is less positive. 17

The overall conclusion on favorability, then, would seem a bit exaggerated, though it is virtually indisputable that most people like the online catalog.

It is unfortunate that the report makes so few direct comparisons between those who have used and those who have not used the new catalogs; some of the differences between the two groups were not so great as may be implied by a few of the conclusions. Thus, the statement that users of the online catalog are also frequent library users (p.44) should be viewed in light of the fact that even of the nonusers, a full 59 percent claimed that they visited the library daily or weekly (p.55).

The interpretation of findings regarding male and female subjects is not complete. Under the subheading "Computer Catalog User Is a Young Adult" (original in italics, as are all subheadings) is the sentence, "The typical user of the computer catalog is male (60% of the users were male)" (p.48), improved somewhat by the observation (p.56) that "women are somewhat less likely to be users of computer catalogs than men. While women make up only 40% of the user population, they comprise 48% of the non-user group. The relatively low amount of online catalog use by females (only 22.5 percent at UCLA and only 33.1 percent in the entire University of California system)18 is somewhat confusing. However, it would seem relevant also to state the findings in this way: Of all the females who responded to the question about their sex, 61.2 percent were users; 38.8 percent, nonusers. Of the males, 68.5 percent were users; 31.5 percent nonusers.19 This information is balanced by the comment in the OCLC report that in the Syracuse, Ohio State University, Dallas Public, and OCLC system libraries, females outnumbered males as firsttime users, a sign that females are beginning to use these catalogs more.20

The subheading "Computer Catalog Users Are Highly Educated" is backed up by the fact that 90 percent said they had completed some college work or were college graduates (p.48), but surely that was to be expected in view of the great number of respondents in college and university libraries. Table 7 (p.57) shows that for nonusers the corresponding percentage was even higher, at 91-a fact ignored in the text. The University of California report, Users Look at Online Catalogs, presents information about users and nonusers in parallel columns. These tables must be read carefully or they may be misleading, but they do give the facts in more conven-

ient form.

"There is no evidence of an a priori bias against use of the computer catalog by any disciplinary group. Users from the Arts and Humanities, Social Sciences, and Business Management represent 57% of all respondents" (p.49). Under the subheading "Academic Non-users Similar to Academic Users" (p.58) is added, "More non-users of the computer catalog come from the following disciplines: Business/ Management, Arts and Humanities and Engineering." A better picture is presented in table 16 of the University of California report,21 which reads in part:

		Nonusers
Arts and Humanities	77.5%	22.5%
Physical/Biological Sciences	66.6	33.4
Social Sciences	74.0	26.0
Business/Management	55.0	45.0
Engineering	61.3	38.7

The table is to be interpreted: of all the Arts and Humanities people who answered questionnaires, 77.5 percent were users of the online catalog; whereas of all the Business/Management people, only 55 percent were users. This is a somewhat different impression from that given by the text of the summary volume. It still might be a mistake to interpret these percentages as if the persons answering (users and nonusers) constituted an adequate sample of the population who visit these twenty-nine libraries.

Those who frequently used other computer systems were not much more likely to consult the online catalog (p.46,47) or to express satisfaction with it than the general run of library clients (p.172). In fact, those who never used other computers had a somewhat lower error rate, according to the University of California transaction log, than those who used them fre-

quently.22

Here is a disconcerting observation about the reporting of the study: the user questionnaire for the pilot study had question 72, "I use this library's book, card, or microfilm catalog: a. Every visit b. Almost every visit c. Occasionally d. Rarely e. Not before today." Response e. was a little odd in that it implied that the number who used the conventional catalog "today" for the first time might be substantial. The line was changed in the final (main) user questionnaire, where question 50, response e. reads, "Never." Question 8 of the nonuser questionnaire keeps "Not before today" as a possible choice on the same item, and apparently the University of California retained it for its online user survey. In table 3 (p.46) of the Matthews summary report, however, there are recorded percentages for users who, on question 50, are said to have indicated, "Not before today." The same occurs in several of the intermediate reports (though RLG, in table 25, has the response as "Never"). It may be that the error is merely a harmless mislabeling, but because of the wording of the pilot questionnaire and question 49 of the final user version (which includes "Not before today"), the reader is left with an uncomfortable feeling.

The subheading "Non-users Say They Like to Use the Computer Catalog" (p.61) when read ". . . are Likely to Use . . " is better understood in light of the fact that nonusers of the online catalog don't consult other forms of library catalogs very much either, a point strengthened by the analysis in a University of California report to which passage the summary volume refers.

## Organizational Setting and Computer System

Answers relating to the systems and settings indicate that users are generally satisfied with the way libraries have provided facilities and instructions for utilizing the new catalogs, though 51 percent feel that their respective libraries need more terminals (p:77), and 34 percent want more writing space (p.74) or, perhaps, more printers.

A confusing fact is that users seem to rely more on library staff for help if one online aid feature (as opposed to none) is available; whereas two online features of this kind (say both instructions and HELP) seem to reduce the need for such aid

(p.72)

Response time of the system was a problem, especially for users of public libraries, for 30 percent of all users (p.88,89). Most of them preferred the waiting times to be more uniform, rather than a delay of about eight seconds followed by one of forty. Thirty percent wanted newspapers added to the catalog coverage (p.93), but possibly some of them were thinking about indexing rather than mere titles. Government publications, older books, dissertations, and "journal titles" (articles?) were also requested, each by more than 20 percent of the respondents. Answers to this question are difficult to evaluate because the content, clientele, and size of database differed so much from library to library.

The "Human-Computer Interface" was examined by questions relating to twenty-seven features of the catalog, calling for Likert-type answers ("strongly agree, agree, neither, disagree, strongly disagree, does not apply"). Respondents either agreeing or strongly disagreeing are grouped together in table 17 (p.101). Although the positive/negative orientations were alternated for the actual questions in this section of the instrument, table 17 points up the problems by showing, for each question in this group, the percentage of responses in the two (of five) categories least favorable to the online catalog.

Users' perceptions of problems did not differ greatly by type of library (p.101). The problem most often (46 percent) checked was, "Increasing the result when too little is retrieved . . ." Forty-three percent agreed that "Finding the correct subject term is difficult," and 37 percent had trouble remembering what was included in the computer catalog. Thirty-one percent of the users agreed with the statement, "A computer search by subject is difficult," but most of them expressed no difficulty with searches by author, title, or

by a combination of the two. The summary provides more in-depth analysis by showing what problems seemed to occur in relation to the features offered by the sixteen different systems. For instance, the difficulty of increasing the result seemed less severe where online printing was available; more of a problem in those systems that were menu-driven (p.106). As the authors point out, the great number of variables make such analysis extremely difficult, and the results possibly misleading (p.103) because the "evidence is not strong enough to demonstrate clear superiority of any particular feature" (p.111). The full values of the survey, however, can be realized only by such attempts.

Also useful is the discussion of design trade-offs (p.112), e.g., a feature may make a certain kind of search easier or more effective, yet so add to the complexity of the catalog that more users find it confusing.

It would be extremely helpful if librari-

ans could learn what added features would be most useful to users. Such information is unusually difficult to obtain because average laity have no way of knowing what they need/want until they try it, or until it is at least suggested to them. The questionnaire method is not very effective for gathering ideas of this kind, but the investigators made a good attempt by proposing fourteen possible features, plus the category "None." Even here, the question must be raised: Were respondents aware of what it would be like to "search by call numbers" or to "search a book's table of contents, summary or index''? The latter was ranked second highest, in any event, after "Ability to view a list of words related to my search words." About one-fourth of the respondents checked "Ability to know if a book is checked out," but only 10 percent wanted to know the location of books in the library (p.114). (The University of California and Library of Congress reports give 15.1 as this percentage.)24 Only 18 and 24 percent, respectively, desired ability to search by title word or by subject word. Analysis of these data, leaving out responses obtained in those libraries already offering the proposed feature or features, is offered by a University of California document, and the percentages for most of the features noted above are thus a little higher.25

The Matthews summary volume also uses factor analysis to bring together in groups those features that seem to cause problems for users. The seven factors derived are helpful in giving a clearer picture than the raw data.

#### Catalog Use and Satisfaction

In those catalogs that provided subject access, about 59 percent of users searched for subject information (p.129), a finding not surprising in view of the great number of undergraduate students responding. In community colleges, this percentage was higher. Searching by keyword was employed heavily when available (though not missed much where it was not); keywords in subtitles were frequently utilized (p.136).

About 85 percent of all users found

some or all of what they had been looking for (p.138), including 17 percent who found more than they had intended. Though 16 percent didn't find what they were seeking, about half answered yes to the question, "I came across things of interest other than what I was looking for." Serendipity did not seem to be related to the proportion of a library's holdings that

had been put into the database.

Another important finding was satisfaction rate. Responding to the statement "In relation to what I was looking for, this computer search was . . . ," 46 percent marked "Very satisfactory" and 34 percent, "Somewhat satisfactory." Overall, these users, especially the younger ones, expressed a general liking for the computer catalog and seemed quite positive that it was better than the card, book, or microfilm catalog. Even those who had just finished an unfruitful search had high opinions of the online catalog (p.140-42). In the group of libraries surveyed by OCLC, 50 percent of the nonusers who said they did not like to use computers expected to use the online catalog in the future26—surprising in view of the fact that 43.6 percent of the nonusers in the aggregate said they consulted the traditional catalog rarely or "Not before today" (p.55). There were discrepancies that may prove meaningful when checked against the differences among systems. On the University of California campuses, 70.8 percent used "Very favorable" to describe their attitudes toward the computer catalog, against 67.0 percent for the total respondents in the study. However, comparing the computer catalog with a manual one, only 68.3 percent of the California users considered the former better, whereas overall, 74.5 percent did. ("Can't decide" was excluded from this tabulation.)27

What variables, as indicated by respondents, were related to success or failure in searching? While the investigators are not able to answer decisively, they often make good attempts. Some of the findings were far from sensational; for example, difficulty in subject searching corresponded to a lesser amount being retrieved (p.146). On the other hand, it was startling that us-

ers found less of what they were looking for in those systems that allowed subject searches (p.148). The libraries not using OCLC as a catalog were the ones that allowed such subject searches, and the available databases in these libraries were generally smaller than in those libraries using OCLC. The researchers speculate, therefore, that it was really the smaller size of the databases that caused the failure to retrieve greater amounts of material by subject searches. Yet, Ohio State University, which offered subject searching, had a large database (about 1,500,000 titles), and some of the other "subject search libraries" had sizable bases. It should be noted that only 329 (4.1 percent) of the total user questionnaires were completed at libraries that did not offer subject searches,28 so they could not have affected seriously the overall outcome. Taking all twenty-nine libraries into account, subject information searches were 56.5 percent of all searches. When the five libraries not providing subject searching were omitted from consideration, the percentage of subject searches in the remaining libraries was not much higher, 58.8.29 Surely this important matter calls for more analysis, as does another curious finding: difficulty in understanding displays was associated, though not strongly, with retrieval of more wanted information (p.149).

What variables were associated with the users' perceptions of searches as satisfactory or unsatisfactory? Again, some results are obvious. For instance, where there was a higher degree of satisfaction, fewer problems had been encountered with subject searches (p.151), but both satisfaction with search and favorable attitude toward the catalog generally were related negatively to a system's allowing searches by local accession numbers (p.153,160). Also, ability to search by call number was related to a lower satisfaction level (p.162). Perhaps the problem was that users were further confused by one more option, as the authors suggest. This is another point that needs further exploration, especially in view of the fact that the provision of unusual access points was associated with greater favorability toward the catalog (p.161). One report makes the comment that "it is surprising that more users did not encounter more problems with a greater number of the available computer catalog features." <sup>30</sup>

In libraries providing for combined author/title searches, users tended to report finding more information than they had been looking for (p.155). The reason, as the authors note, is difficult to see, but even more difficult to account for is that users who had problems understanding displays on the screen also were more likely to find more than they were looking for (p.157).

There was some tendency for users of those systems without subject search capabilities (the OCLC catalog group) to express even greater general satisfaction with the online catalog (p.161), and to favor it more strongly over the card catalog (p.165). Again, the only explanation offered is the larger databases available to these libraries, but the explanation is hardly sufficient here either. The finding could be related to the difficulty of subject searches in general. The OCLC analysis of tapes from three libraries not using OCLC as a catalog found that "subject searches result in zero hits more often than other searches, with the exception of a DUAL search (Boolean) at Syracuse."31

In the libraries that included formats other than books and serials in their online catalogs, users were less likely to express a preference for the catalogs (p.166). The evidence is not strong, and certainly does not mean that libraries should now decide to exclude nonprint materials from coverage in online catalogs. However, it does suggest further investigation.

Also hard to explain is that the capability of limiting search results by language of publication corresponded to a slightly negative attitude toward the online catalog (p.166), as did the capability of search by series title (p.167).

Not appearing to have been related to satisfaction were such features as keyword or Boolean searching (p.172). But, here again, the results are clouded because so many of the systems tested did not offer these capabilities. It is also possible that because features like these are not found in traditional catalogs, users were

not accustomed to them and did not even try them. In the future, with more users taking advantage of such features, there will be better opportunities to test their utility.

#### **Implications**

The last chapter of the Matthews summary report draws practical conclusions, directed at library managers, reference departments, systems designers, and the library profession as a whole (p.175). In addition to urging provision of more online catalogs, this chapter stresses such needs as placing catalogs where users "can't miss them" (p.176) and improving subject access. Important with respect to the latter is the capability of allowing users to search by keyword of subject headings and titles, and to browse the subject list or a thesaurus. There is a good deal of comment in the various reports about the possibility of augmenting the bibliographic entry with the work's table of contents and/or index, and of making these terms access points for searching. Two serious factors for consideration, however, are costs and the possibility of confusing clients even more. Briefer bibliographic records are, according to some indications, about as satisfactory as full entries—a finding in agreement with the recent article by Seal.32 One report suggests the provision of optional displays for those people desiring full entries.33 If additional elements are added to the bibliographic record, deciding which of them should be access points will be a problem.34

Making it easier for users to give commands would also seem to help, as would providing them with the opportunity to determine whether a given book is available in the library (p.183).

#### A FINAL WORD

Among the many unanswered questions are: How do responses of those using touch-screen systems, as at Evanston and Iowa City public libraries, compare with those from public and other libraries with keyboard systems? Another: 8 percent of the aggregate sample of users indicated that they found the terminal table either too high or too low. The University of

California traced the problem primarily to the Irvine and Berkeley campuses, 35 but they did not reveal the heights of the satisfactory and the offending tables. In the printed questionnaire survey at various libraries, a few facts were noted about each person who, when approached, refused to answer questions 40—approximately nine thousand in all. So far the results have not been published.

The final summary does not include analysis by individual library, but fortunately the intermediate reports do. Those by the University of California, RLG, and OCLC reproduce Statistical Analysis System or Statistical Package for Social Sciences printouts-a very good source for more details. The Library of Congress report reproduces, as appendix 9, the questionnaires with percentages of responses received for each item, both for the Library of Congress and for respondents in the aggregate. All this information should prove invaluable to future planners of online catalogs. Furthermore, data from the transaction logs, as published by the University of California and OCLC's volume 1 should be helpful in showing (to take one example) what the users of various libraries had done just before pressing the HELP key. Many libraries will wish to obtain the computer tapes for questionnaire data, available at \$50.

The investigators were right in limiting the survey to library clientele, and so avoiding unmanageable complexity. However, it should not be forgotten that needs of library staff are important also. Nor should it be assumed that a popular vote is the sole test of effectiveness. There may be small minorities whose work is socially significant and who badly need some features that the vast majority ignore or perhaps find confusing. Before stakes are driven down too far, these matters also should be investigated.

There is still much to learn, many questions yet to be answered, and some to be asked, nevertheless this massive project has advanced our understanding considerably.

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