LIBR202: Assignment 2: Part B

Descriptive Metadata

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Team 02

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Introduction

Review of Team Process

Team 02 addressed this project through a collaborative approach, sharing task responsibility to a degree but allowing individual members to focus on areas in which they had experience. The author was the project manager, report scribe and editor, and database editor. Another member of the team was the database designer as he had pervious experience with DBTextWorks. The third and final member of the team was responsible for the creation of the PowerPoint collection file and for compiling the information document for the beta testers. All team members contributed by posting suggestions or comments on other team member's suggestions for user groups, attributes, data structure, indexing rules, and the conclusion to the group discussion board. During weekly group meetings, suggestions were discussed and final decisions made. The team communicated effectively using Google+ as there were some technical difficulties with Collaborate. Additional conversations were had via email and the Desire2Learn discussion board. While the author had created a detailed schedule for the project, the team was flexible with most deadlines as necessitated by team member workload.

At the beginning of the project, Team 02 lost one of the original four team members, as she decided to drop the class. This personnel change did not significantly or adversely affect the group, and other three team members were able to complete the project without issue.

Review of Team Goals

The goal of Assignment 2 was to create a simple, descriptive metadata database. Team 02 achieved this goal by making a database from a common kitchen appliance collection that contained information helpful to future anthropologists who would be interested in learning about early 21st century American kitchens. Kitchen appliances presented a good mix of clear, verifiable attributes (e.g., Brand, Power Source) and complex, intricate ones that would require more indexer discretion (e.g., Interface). Team 02 understood that "index terms are valued for their discriminatory power (Warner, 2007, p. 920) and attempted to enable the development of a range of helpful terms to aid in drawing distinctions between and among the appliances. Specific descriptive attributes (i.e., metadata) were selected based on their ability to communicate relevant and accurate information to future anthropologists who would use the results to categorize appliances based on similarities and differences. This lumping and splitting (Weinberger, 2007, chapter 4) would enable the anthropologists to make inferences about the behavior of the people who used these appliances.

In creating the database, Team 02 had to determine how best to organize, capture, and present the metadata of the kitchen appliances. Finding a balance between fields that displayed binary options, multiple options, and open text entry was key. The team

needed to strike the right balance between a controlled vocabulary that it established through field values and validations lists (e.g., Device type and Primary color) and the creation of a natural vocabulary that it encouraged through open text fields (e.g., Interface). All decisions about database design were made with the end user in mind (Rowley & Hartley, 2008, p. 110). Will this field present relevant, accurate, and complete information that the future anthropologist can use in his/her research? Will the data the anthropologist needs be accessible through the database? The team also considered the indexers in the database design, preparing rules that would aid and direct their scanning of collection items (Farrow, 1991). As will be discussed in a later section of this paper, while the work of creating a user interface was beyond the scope of this project, Team 02 recognized the need to bridge the gap between the indexers' knowledge of specific descriptive vocabulary and the users ignorance (at least initially) of that vocabulary (Bates, 1996, pp. 1186-1190). Indexing rules were written to explain how to correctly examine the collection items and to alleviate confusion about what constituted an appropriate field value. Examples were provided as an additional layer of instruction and clarification.

Finally, Team 02 verified that the database could indeed gather the information it was intended to hold by entering test records. Fields and field values that required adjustment were discovered and updated accordingly. The results of beta testing have provided Team 02 with additional, objective information about how the database, indexing rules, and field values perform. This feedback is integral to improving the database and ensuring that it is a vital and accessible storehouse of information for future anthropologists.

Summary of Beta Tester Survey Responses

Beta tester survey responses are summarized in Table 1 and Figure 1 below. Overall, the beta testers found Team 02's database to be successful in meeting its goals.

Questions	Rating 1 strongly disagree	2 disagree	3 neither agree or	4 agree	5 strongly agree	Rating Average
Is the Statement of Purpose clearly defined?		25.0% (1)		25.0% (1)	50.0% (2)	4
Are the attributes included in the structure useful/consistent with the statement of purpose?			25.0% (1)	50.0% (2)	25.0% (1)	4
Are the indexing rules clear/understandable?			50.0% (2)	25.0% (1)	25.0% (1)	3.75
Are the indexing rules consistent?			25.0% (1)	50.0% (2)	25.0% (1)	4
Is the audience of this database clearly defined?				25.0% (1)	75.0% (3)	4.75
Does this database meet the user need of the audience?				75.0% (3)	25.0% (1)	4.25

Table 1: Summary of beta tester survey responses

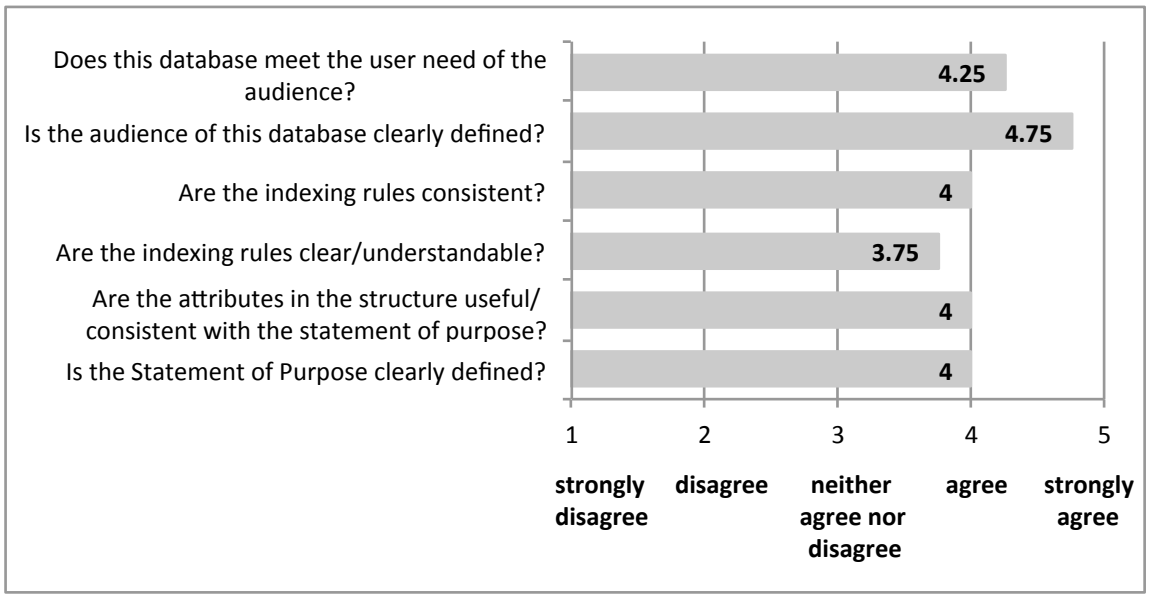

Figure 1: Graphical illustration of average ratings from survey responses

Evaluation of Statement of Purpose

The Statement of Purpose will be evaluated alongside the Audience and User Needs as described in part A of Team 02's report and as provided to the beta test team; this co-evaluation will help explain why the Statement of Purpose was written as it appears in part A.

The Statement of Purpose was deliberately written to be as brief and concise as possible. The author considered and reconsidered the brevity of the statement during review of the report. The ultimate decision to maintain this brevity was made due to the fact that the Statement of Purpose, under the auspices of the project, would never appear independently of the Audience and User Needs descriptions that help to elucidate it. In fact, trying to add more detail to the Statement of Purpose tended to result in restatements and repetition of the Audience and User Needs sections, a tautology that would detract from the straightforward clarity of the report introduction. The Audience and User Needs sections do illuminate the ways in which the database will be used by future anthropologists. For additional clarity, sample searches were also provided as concrete examples of how the attributes would relay useful information. (One might also argue that, while this particular database was built for a specific audience, its existence was independent of that audience, as such it might be used by a different audience at some future point and in some unintended manner. The brevity of the Statement of Purpose would enable this appropriation.)

Three of four beta testers appreciated this succinctness, and one of these three pointed to the Audience section as providing further clarification of the Statement of Purpose. The fourth beta tester felt that the statement lacked a 'why'. As described above, the 'why' was seen as particular to the user and included in the Audience and User Needs sections. (See Appendix A: Beta Test Survey Responses for additional detail.)

A way to improve the Statement of Purpose without needlessly repeating information in the introduction would be to simply to add a clarifying sentence: "See Audience and User Needs sections for additional information about this database."

As detailed in table 2, the average rating for the statement of purpose was a 4, meaning the beta testers felt it was clearly defined. Audience and User Need rank even higher with average ratings of 4.75 and 4.25, respectively. The beta testers felt that the audience definition was understandable and that the database would meet its needs.

Figure 2 clearly illustrates the overall success of the Statement of Purpose, Audience, and User Need.

Questions	1 strongly disagree	2 disagree	Rating 3 neither agree or	4 agree	5 strongly agree	Rating Average
Is the Statement of Purpose clearly defined?		25.0% (1)		25.0% (1)	50.0% (2)	4
Is the audience of this database clearly defined?				25.0% (1)	75.0% (3)	4.75
Does this database meet the user need of the audience?				75.0% (3)	25.0% (1)	4.25

Table 2: Beta testers' responses to questions about the Statement of Purpose, Audience, and User Need

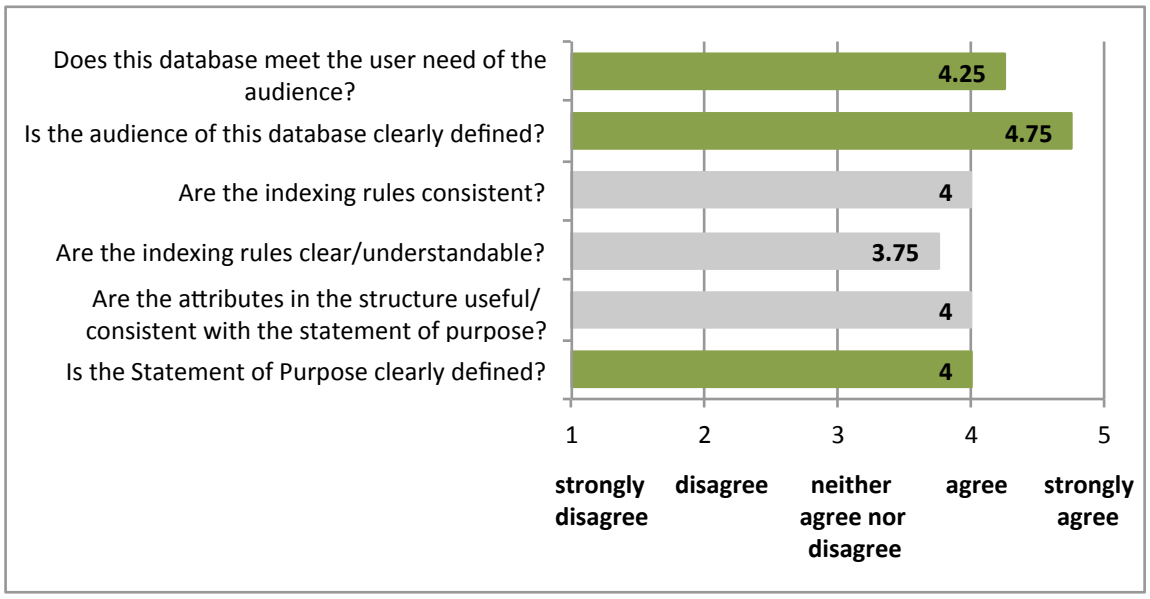

Figure 2: Beta testers' average ratings for Statement of Purpose, Audience, and User Need are represented by the green bars

Evaluation of Database Structure

Understanding that "information allows us to communicate across space and time" (Morville, 2005, p. 47) and having considered the user group sufficiently to develop some basic level of "empathy for the user" (Morville, 2005, p. 31), Team 02 generated attributes that provided useful data for future anthropologists within the strictures of the project requirements. The appliance attributes covered a range of physical characteristics as well as attributes that were intended to assess functional or behavioral characteristics (i.e., how Americans of the early 21st century interacted with their appliances). The Reasons for Inclusion detailed in part A provide additional information as to how *each* attribute would be helpful to future anthropologists. All

decisions about database design were made with the end user in mind (Rowley & Hartley, 2008, p. 110). (See Appendix C: Reasons for Inclusion for additional detail.)

Two of the four beta testers agreed that the attributes were useful and consistent with the Statement of Purpose, with beta tester 2 very clearly understanding how those attributes would relay relevant information to future anthropologists.

While the third beta tester agreed that the attributes were useful he/she did note that some might not be relevant, specifically Method of Acquisition and Length of Ownership. Team 02 felt that anthropologists *would* be interested in Method of Acquisition and Length of Ownership. The Method of Acquisition would tell the anthropologists something about the desires of the appliance owner. If they actually purchased the appliance, it shows that they chose it for some reason, whereas if they inherited the appliance, they may simply be using it out of necessity. This is clearly illustrated in the very heavily used, inherited stove. Equally, the anthropologists could draw inferences about ability of individuals to purchase new appliances. Again, the stove may be an example of an expensive appliance, one that will be replaced when it actually stops working, not just because it's old and in poor condition. Team 02 felt that Length of Ownership would help the anthropologist understand overall patterns about how long devices were kept and draw conclusions about what the differences mean. Beta tester 3 recommended that Age of Appliance/Year of Manufacture might be a better attribute, and indeed this attribute was initially considered. However, the only way to clearly show it was to include this information in the PowerPoint file, and the team felt that doing so would not really be a test of the indexing rules, as the indexers would simply copy/paste the information provided. A slightly more complex attribute was developed, Length of Ownership, which had other issues as discussed in Evaluation of Rules below. In his/her general comments, beta tester 3 also mentioned that how often appliances were used would be helpful to future anthropologists. Team 02 agrees and had initially included a Frequency of Use attribute. However, as the indexers weren't indexing their own appliances, this attribute would be difficult for them to determine unless Team 02 told them explicitly. To Team 02, it seemed like telling the beta testers explicitly was more a test of their ability to copy and paste rather than a test of the effectiveness of the indexing rules, so this attribute was ultimately removed.

Consistent with his/her feedback regarding the Statement of Purpose, beta tester 4 explained it was difficult to evaluate the attributes in light of the Statement of Purpose as no 'why' was included with the Statement of Purpose. However, as explained above, the Audience and User Need were intended to augment the Statement of Purpose thus explaining the 'why' of the database. This beta tester did concede that the attributes would be helpful in determining similarities and differences amongst the collection items. (See Appendix A: Beta Test Survey Responses for additional detail.)

Though overall, the beta testers felt that Team 02's attributes were useful, the beta testers would have been better informed had they been provided with the Reasons for Inclusion as part of their initial information packet. Such additional information would have improved the ability of the indexers to perform their duties (Farrow, 1991).

As detailed in table 3 and illustrated in figure 3, the average rating for attributes was a 4 meaning the beta testers agreed that they were useful and consistent with the Statement of Purpose.

Questions	Rating 1 strongly disagree	2 disagree	3 neither agree or	4 agree	5 strongly agree	Rating Average
Are the attributes included in the structure useful/consistent with the statement of purpose?			25.0% (1)	50.0% (2)	25.0% (1)	4

Table 3: Beta testers' responses to question about database attributes

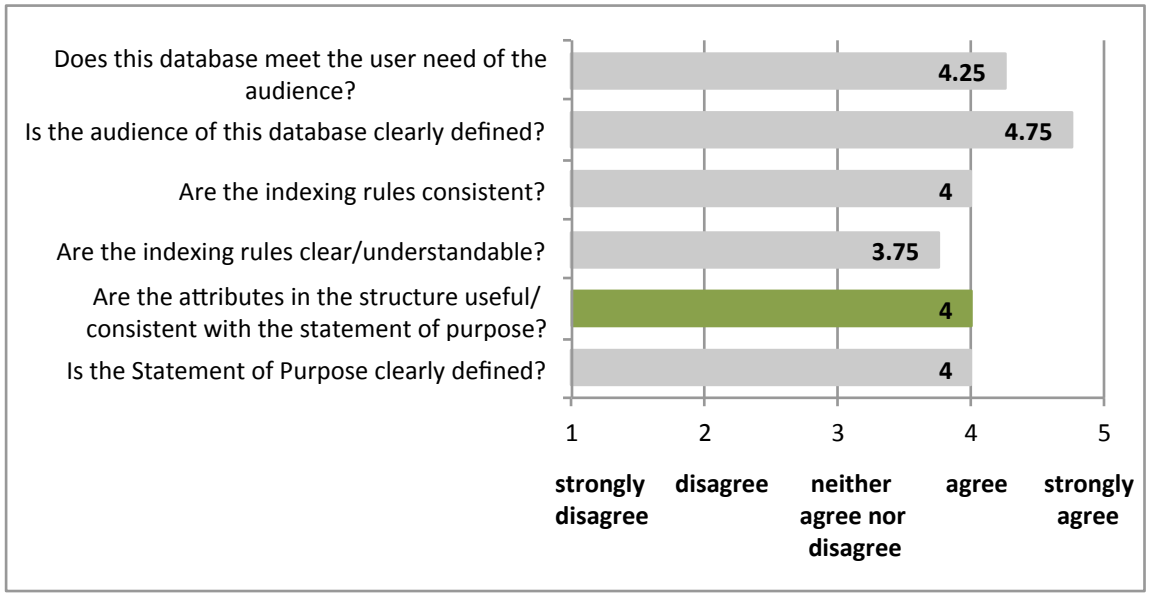

Figure 3: Beta testers' average rating for database attributes is represented by the green bar

Evaluation of Rules

The team considered the indexers in the database design, preparing rules that would aid and direct their scanning of collection items (Farrow, 1991). Indexing rules were intended to explain how to correctly examine the collection items and to alleviate confusion about what constituted an appropriate field value. Examples were provided as an additional layer of instruction and clarification.

Overall the team's rules were effective as illustrated by the percentage of consistency between the Team 02 records and the beta test records shown in figures 4 and 5. Figure 4 shows that 75% of the attributes were indexed consistently. This figure was derived by including the Interface field differences as inconsistencies in order to provide

a technically accurate and complete overview of indexing success/failure. However, in figure 5, the Interface differences are removed from the calculation, as this field would never be indexed consistently due its nature as an open text field. Indexers were encouraged to answer a series of questions to create a relatively text-heavy field from which a robust inverted file and searchable index of key words could be derived. This field would allow anthropologists to understand the way in which people physically interacted with their appliances and, more specifically, how they controlled the devices. The attribute helps elucidate behavior of appliance users, a very key research goal for anthropologists. As Bates explains, the work of the indexer for this attribute is significant (and tricky given the time lapse between the 21st century indexer and the future anthropologist):

> The user's task is to describe something that, by definition, he or she does not know . . . . the challenge for the indexer is to try to anticipate what terms people with information gaps of various descriptions might search for in those cases where the record in hand would, in fact, go part way in satisfying the user's information need. (1996, p. 1187).

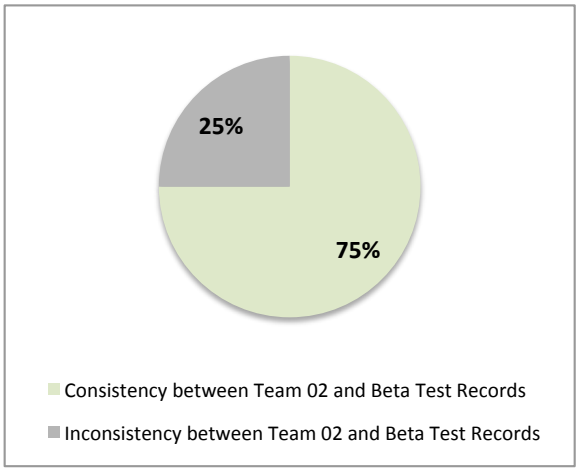

Figure 4: High rate of consistency is illustrated. Inconsistencies **include** the Interface attribute and do not include typos/misspellings of the indexers.

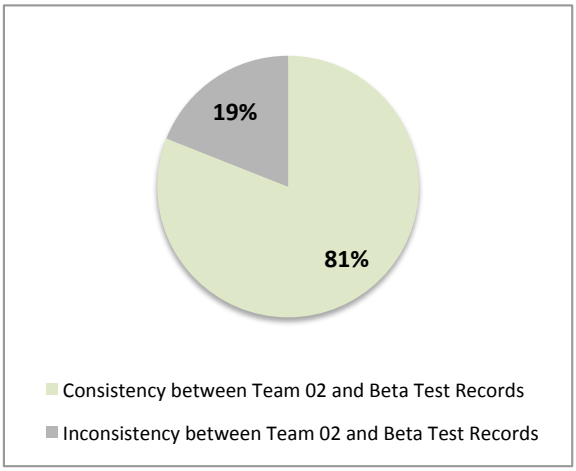

Figure 5: Higher rate of consistency once Interface attribute is removed from calculation. Inconsistencies **do not include** the Interface attribute or typos/misspellings of the indexers.

Despite concern over some of the rules (as described below), the beta testers were able to index over 80% of the attributes exactly as Team 02 had in its test records. Issues noted in beta tester feedback and from the comparison of beta test records to Team 02 test records are summarized below. (See Appendix A: Beta Test Survey Responses, Appendix B: Beta Test Records, and Appendix D: Indexing Rules for additional detail.)

Record Number

- Record number is an automatically generated field; no changes are required.

Device Type

- There was a tiny bit of confusion over the Immersion Blender; one beta tester called it a hand mixer instead, which is completely understandable.
- Beta tester 2 noted that the types of devices were not listed in the PowerPoint collection file, and, again, this was purposeful in order to test the indexing rules.
- To improve indexing, Team 02 should have included definitions or hallmarks in the rules for each type of appliance listed in the validation list.
- (The team also expected that the indexers, interested in doing a thorough job of indexing, might do some external investigation if required. In this case, a simple Google image search would have been enough to determine if their choice for an appliance was correct. Cross-referencing the Williams-Sonoma website category listing for Electrics would have proved helpful as well. Of course, it's entirely possible that Team 02 misunderstood the role of the indexer regarding extra efforts.)

Size

- There were no issues with the Size attribute in the records or in the beta tester feedback.

Primary Purpose

- There were no issues with the Primary Purpose attribute in the records or in the beta tester feedback.

Power Source

- Confusion over how to index the Power Source was mostly a result of incomplete photos in the PowerPoint collection file. Many photos of handheld or countertop appliances did not show the plug as evidence of electricity as the power source. For the freestanding appliances, it was impossible to show the plug in the photos, hence the beta testers had to rely on their own experience with similar devices (i.e., they had to use their culturally defined prototypes of those appliances, Wright, 2007, Chapter 2, Prototype Theory; Weinberger, 2007,182-189).
- Beta tester 3 also described his/her confusion about Power Source and how it related to Heat Source. Ultimately, he/she and his/her son were correct in how they interpreted the field and in how they indexed records for this field.
- Team 02 should update the rules for Power Source to explain what to do in situations where the power source is not obvious, and also to encourage the indexers to draw from their own personal experience of similar appliances.

Heat Source

- There were three instances of discrepancy between the beta test and Team 02 records for this attribute.
- As described above, beta tester 3 was initially confused by how Heat Source differed from Power Source, but ultimately indexed this field correctly.
- To improve Heat Source, Team 02 needs to update the rules to specifically describe the difference between Heat Source and Power Source, explaining that

the one is how the device gets electric power, while the other is how the device creates heat.

Storage

- There were no issues with the Storage attribute in the records or in the beta tester feedback.

Blades

- The pasta maker caused some inconsistency in the Blade field. Though it is difficult to tell in the photograph it does contain blades; they just aren't sharp like knives. This caveat is included in the indexing rules, however there was still confusion.
- The indexing rule needs to be updated to be more specific about what constitutes a blade, not just that they may be sharp or dull. A few examples of the range of options would have been beneficial (e.g., the blades on the immersion blender vs. the blades in the coffee grinder vs. the blades in the pasta maker).

Interface

- As expected, Interface was the most troublesome category, but it is also a category that has the most potential for communicating information about behaviors of 21st century kitchen appliance owners (as beta tester 4 agreed).
- All records for this field were different, again as expected. This was an open text field and the goal was to have indexers describe the interfaces of the appliances in order to generate vocabulary from which an inverted file could be created.
- As all beta testers pointed out, additional information was required in the rule for this attribute. The rule should have stipulated that all the questions in it must be answered during indexing. A thorough example should also have been provided, as it would have gone far in directing the indexers. The author has no one to blame but herself for this oversight.

Brand/Manufacturer

- There are a few instances of inconsistency between the beta test and Team 02 records for Brand/Manufacturer. It appears that most of the issues are related to common knowledge of the brand's logo or abbreviation. For example, while the dishwasher photo only showed GE as the brand, the beta tester indexed it as General Electric. This may cause issues for the future anthropologists, as they may not know that General Electric and GE are the same brand. Black and Decker vs. Black & Decker is another example of a slight difference that might cause confusion for future anthropologists.
- Team 02 should update the rule to state that the indexer should copy the brand/manufacturer name exactly as it appears on the appliance.

Primary Color

- Though there was one instance of a discrepancy with Primary Color, no changes are required to this rule. The stove is almost half black, half white; the differences in field values chosen reflect this lack of an overwhelming primary color.

- Some legitimate differences in indexing are expected to occur, and this is one of them.

Secondary Color

- Secondary Color was a bit more problematic and the team saw quite a few differences in how this field was indexed between Team 02 and the beta testers.
- Team 02 should update the rules to be more specific about what constitutes a secondary color (e.g., explain that colored text or buttons count as secondary colors when no other obvious secondary color is present).

Condition

- There were several instances where Condition was indexed differently by the beta testers as compared to Team 02. This was due to the subjectivity of the field values.
- Team 02 should have included parameters for judging condition, that is, explained what was meant by new vs. like-new vs. used vs. heavily used.
- Alternately, Team 02 could simply reduce the number of field value options so that the appliance would obviously fall into one category, for example, reduce the validation list to the binary values of new and old.

Method of Acquisition

- Though there were questions as to this attribute's relevance for the users (described above), this field was indexed correctly in all beta test records.

Length of Ownership

- This was also a problematic field in part due to Team 02's last minute changes to the field as described in the Evaluation of Database Structure section.
- First, Team 02 should have explained how to calculate the value in the indexing rules, specifically stating that the year acquired was to be counted as the first full year of ownership. Beta test 4 highlighted this concern in his/her feedback.
- However, as beta tester 2 adroitly pointed out, a Length of Ownership that is calculated on the year acquired and the current year will change annually, meaning the information the database contains will be inaccurate. The team should update the rule per this beta tester's recommendation, namely, asking simply for the year acquired instead of Length of Ownership. Year acquired would provide future anthropologists with a different data point. No longer does it hint at relative expensive of appliances or longevity of appliances, instead it situates the appliance securely in a particular year of the 21st century.

Other comments

- Team 02 accommodated exceptions through the use of field values such as Not Applicable, Other, and Unknown. These values functioned as intended.
- There were a few minor typos or misspellings made by the beta testers (e.g., Cuisiart instead of Cuisinart and Frigidare instead of Frigidaire). This is normal and expected for human indexers. When the database is next updated, the errors can be corrected.

- On occasion, the beta testers did a better job of indexing than Team 02 (e.g., Heat Source for the crockpot and Interface for the waffle maker).
- Beta tester 1 noted that even though he/she tried to follow the indexing rules, some of the fields notified him that his entries did not match the validation list. Unfortunately, this beta tester did not say in which fields this occurred, hence the author is unable to effectively respond to the feedback.
- The author believes there was some confusion over the fact that indexers would be of the 21st century, not the future. This should have been explicitly stated in the indexing rules, as it would have given the indexers the confidence to work from their own knowledge of these types of appliances. It also would have been best if Team 02 had defined what it meant by future, that is, near future (50-100 years) or far future (1000+ years). This additional information would have allowed the indexers to understand how explicit they needed to be in their descriptions, especially for the Interface attribute. With far future anthropologists the indexers could assume very little familiarity with some of the appliances, whereas, with near future anthropologists, the indexers could assume more familiarity with the appliances and their functions.

Based on the combination of beta tester feedback and beta test records analysis, the low average rating for indexing rule clarity is expected. A 3.75 was the average, the lowest rating of all other feedback topics. Consistency of indexing rules is, however, rated similarly to other topics discussed above—a strong 4. Table 4 provides details of beta tester survey responses. Figure 6 illustrates the average rating for indexing rules.

	Rating					
Questions	**1 strongly disagree**	**2 disagree**	**3 neither agree or**	**4 agree**	**5 strongly agree**	**Rating Average**
Are the indexing rules clear/understandable?			50.0% (2)	25.0% (1)	25.0% (1)	3.75
Are the indexing rules consistent?			25.0% (1)	50.0% (2)	25.0% (1)	4

Table 4: Beta testers' responses to questions about the indexing rules

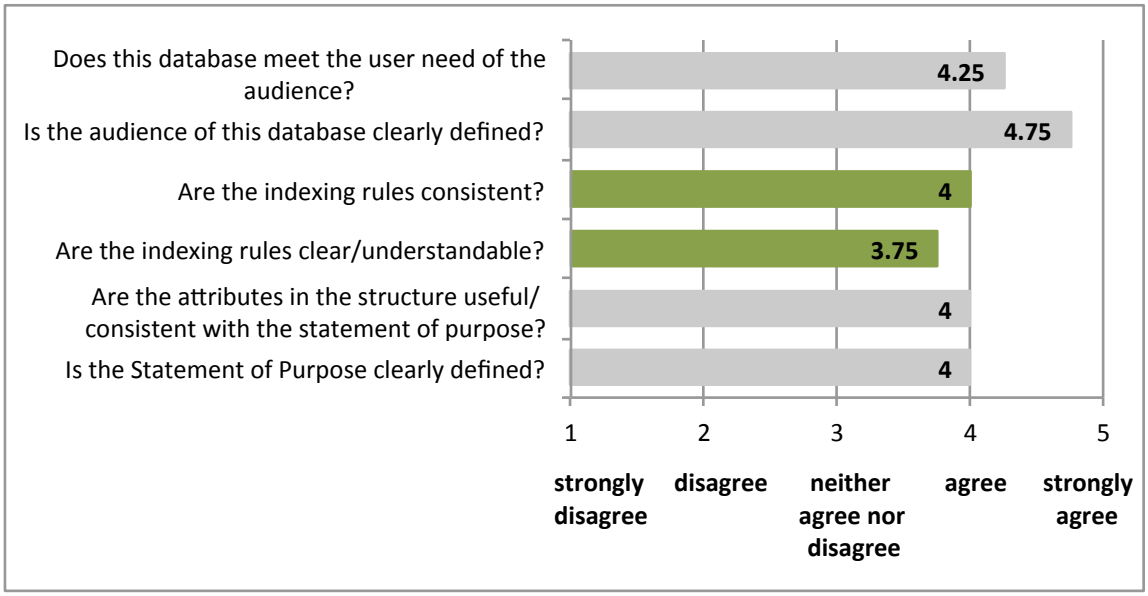

Figure 6: Beta testers' average ratings for indexing rules are represented by the green bars

Conclusions from Evaluations

Overall, Team 02 accomplished what it set out to accomplish with the common kitchen appliance database. The consistency of beta test records and the best testers' positive comments speak to this achievement. Additionally, the beta testers provided keen insights into how the database, Statement of Purpose, and particularly the indexing rules can be improved. Team 02 has an actionable list of changes to make as detailed below.

Recommendations Based on Conclusions

Based on beta tester feedback and evaluation of the beta test records, Team 02 has a clear list of adjustments to make to the Statement of Purpose, database, and indexing rules. These changes include:

- Adding a clarifying sentence to the Statement of Purpose referencing the Audience and User Needs sections for additional information. This is an easy addition and will prevent the repetition of the information between the Statement of Purpose and the Audience and User Needs sections.
- Providing the indexers with the reasons why each attribute was included, as this additional information would help to shape their indexing work to what was required for the database user needs. Additional search examples were detailed in these reasons and would have contributed another layer of understanding to the indexers.

- Adding definitions or hallmarks in the Device Type rules for each type of appliance listed in the validation list. This would help alleviate confusion over some atypical appliance types.
- Updating the rules for Power Source to explain what to do in situations where the power source is not obvious and also to encourage the indexers to draw from their own experience of similar appliances.
- Updating the Heat Source rules to specifically describe the difference between Heat Source and Power Source, explaining that the first is how the device creates heat, while the second is how the device gets electric power.
- Revising the rules for Blades to be more specific about what constitutes a blade, not just that blades may be sharp or dull. A few examples of the range of options would be beneficial (e.g., the blades on the immersion blender vs. the blades in the coffee grinder vs. the blades in the pasta maker).
- Updating the Interface rule to stipulate that all the questions in it must be answered during indexing. A thorough example should also be provided, as it would go far in directing the indexers.
- Revising the Brand/Manufacturer rule to state that the indexer should copy the brand/manufacturer name exactly as it appears on the appliance.
- Updating the Secondary Color rule to be more specific about what constitutes a secondary color (e.g., explain that colored text or buttons count as secondary colors when no other obvious secondary color is present).
- Including parameters for judging condition in the Condition rule, that is, explain what is meant by new vs. like-new. Alternately, Team 02 could simply reduce the number of field value options so that the appliance would obviously fall into one category (i.e., reduce the validation list to a binary option of new and old).
- Changing Length of Ownership to Year Acquired and update the reason for inclusion and the indexing rule accordingly.
- Explaining that the indexers were of the 21st century in the general indexing rules, as it would given the indexers the confidence to work from their own knowledge of these types of appliances.
- Defining what was meant by future anthropologists, that is, whether they were from the near future (50-100 years) or from the far future (1000+ years). This additional information would allow the indexers to understand how explicit they need to be in their descriptions, especially for the Interface attribute.

Discussion of IR Issues/Concepts in Project

The Meaning of Information Retrieval

Information retrieval is about organizing data, information, and knowledge and making it accessible to those who need to find and use it. “Resources of all kinds, irrespective of their source, need organizing so that their contents can be retrieved when required” (Rowley & Hartley, 2008, p. 4). As Morville explains, “information is about communication” (2005, p. 46), and, as the world generates more and more information,

the need to make this information easily accessible and effectively retrievable is vital to one's ability to share ideas and grow (however that is defined) as a global community. How one applies the concepts of information retrieval changes over time and with technological innovations; these innovations in turn engender changes in the way one is able to organize and access information. Today, "we invent new principles of organization that make sense in a world of knowledge freed from physical constraints" (Weinberger, 2007, p. 7). Recognizing that the need for a way to organize the world—thereby making knowledge accessible—is fundamental to humans, and, moreover, that there is an evolutionarily engrained need for this organization and dissemination enables those tasked with building information retrieval systems to 'get them right' (Wright, 2007). "We are all born with a deep-seated need to understand the world in terms of categories and to share that understanding with each other" (Wright, 2007, Chapter 2, Prototype Theory, para. 14).

Database Development and Considerations

The goal of this project was to build a simple, descriptive metadata database—one part of a fully functional information retrieval system. The complex operation of developing a user interface and the use of that interface was not covered specifically by the project, though several aspects of user interfaces and use of the data by future anthropologists are considered in the discussion that follows.

The first step in building a database is to understand the user and consider how his/her information needs must be reflected in the database structure, that is, a particular set of attributes and the terms used to describe those attributes. As Oppenheim and Stenson (2003) point out, information isn't seen as significant by the user unless it can be shown to fit usefully into his/her greater purpose (p. 431). Team 02's collection was defined as common kitchen appliances. Its user group was defined as future anthropologists. The decisions about which attributes to include, what controlled vocabulary should be used to describe these attributes, and when to gather natural vocabulary were made with the end user in mind. (See Appendix C: Reasons for Inclusion and Appendix D: Indexing Rules for more detail on attributes and validation lists.) The team selected a blend of controlled vocabulary (e.g., Primary Purpose attribute) and natural vocabulary (e.g., Interface attribute) to try to encourage robust and relevant descriptions. Vocabulary decisions were vital because "*terms* [emphasis in the original] from natural language or controlled vocabularies are relevant to information seekers, if they succeed, or potentially could succeed, in retrieving relevant records or documents" (Harter & Cheng, 1996, p. 311).

In Team 02's case, the situation of relevance is exacerbated by the fact that its users would be interacting with the database in the future; hence assumptions as to what they would need had to be made in the relative vacuum of the present. "The user has in mind the sense of a term that interests him or her, not the other senses that the indexer is aware of. Only upon retrieving false drops will the user realize there is even any problem" with his/her search term (Bates, 1996, p. 1187). The future anthropologists will need to do significant work with the database to learn how to craft their search terms. Further, any development of the database or adjustments to metadata based on

searcher input would have to occur in that same future. This is perhaps a failing of Team 02's audience choice. Shankaranarayanan & Even encapsulate the harsh reality: "Metadata requirements are complex and difficult to capture, implementation is demanding, the end result is rarely satisfactory, and enhancements or corrections require significant effort, as metadata layers are deeply embedded in systems" (2006, p. 88). Yet, one might consider the future aspect as simply another unique characteristic of the user group that needed to be addressed in the development of the database. To this end, the team created validation lists or thesauri "to lead the information seeker to potentially relevant search terms, and from these, to relevant documents" or in Team 02's case, relevant appliances (Harter & Cheng, 1996, p. 312). The thesauri are built by both the database designers and the collection indexers. Their work is integral to creating a usable, accessible, and relevant database, and their decisions and effort must be focused on the needs of the end user. It is the balance, as described by Warner (2007), between the labor required for description and the labor required for searching that an information retrieval system must facilitate. Labor involved in description (i.e., performed by the indexer) alleviates labor required for searching (i.e., performed by the user).

Features and Outcomes of User Interaction

There is an obvious interrelation between the database designers, indexers, and users. "Index terms can offer discriminations and links between related subjects, but selection power is still seen as a characteristic of human consciousness, derivable from, but not inhering in, semiotic products" (Warner, 2007, p. 918). This idea of selection power, as illuminated by Warner, is the "human ability to make informed choices between objects or representations of objects" (2007, p. 917). Further, Warner endorses selection power "as the primary design and evaluation principle for information systems" (2007, pp. 920-921). The Team 02 database is a very simple attempt to lay a foundation for the selection power of future anthropologists.

"Imagine that an information seeker is preparing a search for an information problem, and has identified two principal ideas. Consulting a thesaurus, he finds a descriptor to represent each concept" (Harter & Cheng, 1996, pp. 312-313). Now he knows what he's searching for in the language of the database. Harter and Cheng (1996) go on to explain how subsequent searches can be linked to prior search descriptors thus increasing precision. In this way, the searches of future anthropologists can be used to develop colinked thesauri in the database thus increasing the speed, efficiency, and relevance of searches. "Colinked descriptors do appear to be more effective search terms than descriptors that are linked to one, but not both, of two input terms" (Harter & Cheng, 1996, p. 324) Further, Harter & Cheng recommend incorporating these colinked descriptors into the "search system interface . . . to aid searchers in finding useful search terms" (Harter & Cheng, 1996, p. 324). Again, as described above, these improvements can only be made when the actual users of the database are interacting with it. Alternately, if the future anthropologists' queries to the database are tracked those search terms can be used to re-create the mental models the future anthropologists associate with 21st century kitchen appliances. These models can then

be fed back into the database as improved search terms that draw on the concepts and statements present in the mental models (Carley & Palmquist, 1992).

User interaction with the database has other important features and outcomes. Information seeking behavior for the future anthropologists will initially be one of scanning, "inspecting items and their contents, or browsing among item descriptors, [with] the goal of learning about the relevant issues" (Belkin, Marchetti, & Cool, 1993, p. 325). They would seek to learn about the items rather than select an individual item—at least initially. Later searches would be more specific with the intention of seeking an individual item or group of items based on a similar attribute.

It may be that future anthropologists, after analyzing information from the database in the faceted manner which it enables, will then recognize a pattern from which they can build an enumerative classification scheme, a scheme "to organize [their] knowledge of the world in such a way as to be useful in communicating and using this knowledge" (Kwasnik, 1992, p. 63). Further, according to Kwasnik, this classification scheme may actually communicate a *theory* about the data, that is, it goes beyond merely reflecting knowledge; the classification scheme itself helps to generate new knowledge, new theories of explanation. In essence, this is *exactly* how future anthropologists would seek to use the data. They would build a hierarchy or other enumerative classification scheme based on the human need to organize information or objects into groups, as illustrated in the repeated development of very similar folk taxonomies across the globe and through time (Wright, 2007, Chapter 2, para. 2; Bates, 1996, pp. 1190-1193).

Alternately, the future anthropologists may want to create an analytico-synthetic or faceted classification scheme. Such a "scheme allows for the choice of alternative options at various points. The result is that the classifier can produce a tailor-made scheme designed to suit the nature of his or her own particular collection" (Perkins, 2011, p. 18).

Integration with Other Databases

A final consideration for this database that was not covered directly under the auspices of this project is how it becomes integrated with other relevant databases. Linking this particular database to other sources of 21st century data for the future anthropologists may require a rework of the data structure such that the metadata mimics acceptable standards like MARC or EAD or Dublin Core or whatever other standard is preferred in the future. Using standards enables data sharing and aggregation between previously disparate databases (Elings & Waibel, 2007).

Summary

Team Data Base Design Process

As part of the design team, the author learned how complex it is to truly design for the end user and the vital importance of beta testers. As described above, especially with Team 02's audience begin *future* anthropologists, the database design was challenging. The team had to project a mental state that future anthropologists might have had and, from this base, make decisions about attributes and the information attribute descriptions would convey. Were user needs met? Will the controlled vocabulary and the natural vocabulary even be understandable to these future folk? It's difficult to know until users actually use the database. The author is certain that there are issues with the database that are simply covered up by the team's 21st century perspective. However, the beta testers' more objective view of the database, attributes, and indexing rules did provide the design team with clear and specific refinements as well as necessary corrections to the database. Overall, the author feels that Team 02 produced a useful first draft database for capturing and conveying information about 21st century American home kitchen appliances to future anthropologists.

Lessons Learned from Beta Testing

As a beta tester, the author became aware of the power of indexers, both to create excellent records and to create less than stellar ones. Indexers must be willing and interested in creating sound, thorough records and expending extra investigatory effort when required. Beta testing itself provided a means to help the other team improve their output, though it was not always easy to list required changes when that list seemed to grow with every record indexed. Beta testing in general is of the utmost importance for testing and validating information retrieval systems, both from a technical viewpoint (i.e., does the database software work as it should) and from a content viewpoint (i.e., do the descriptive attributes contain relevant and useful information for the end user). From a market perception perspective, launching an information retrieval system without beta testing is akin to walking into busy traffic and hoping to step into the spaces between the cars. Risk of failure is significant, and for many companies or institutions there is no way to correct the soiled image that exists in the minds of consumers once it's established.

References

Bates, M. J. (1996). Indexing and access for digital libraries and the internet: Human, database, and domain factors. *Journal of the American Society for Information Science, 49*(13), 1185-1205. Retrieved from http://www.asistdl.org/view/0/index.html

Belkin, N. J., Marchetti, P.G., & Cool, C. (1993). BRAQUE: Design of an interface to support user interaction in information retrieval. *Information Processing & Management, 29*(3), 325-344. Retrieved from http://www.journals.elsevier.com/information-processing-and-management/

Carley, K., & Palmquist, M. (1992). Extracting, representing and analyzing mental models. *Social Forces, 70*(3), 601-636. Retrieved from http://sf.oxfordjournals.org/

Elings, M. W., & Waibel, G. (2007). Metadata for all: Descriptive standards and metadata sharing across libraries, archives, and museums. *First Monday, 12*(3). Retrieved from http://firstmonday.org/issues/issue12_3/elings/index.html

Farrow, J. F. (1991). A cognitive process model of document indexing. *Journal of Documentation*, 47(2), 149-166. Retrieved from http://www.emeraldinsight.com/products/journals/journals.htm?id=jd

Harter, S. P., & Cheng, Y. (1996). Colinked descriptors: Improving vocabulary selection for end-user searching. *Journal of American Society for Information Science*, *47*(4), 311-325. Retrieved from http://www.asistdl.org/view/0/index.html

Kwasnik, B. H. (1992, October). *The role of classification structures in reflecting and theory building.* Presented at the 3rd ASIS SIG/CR Classification Research Workshop, Pittsburg, PA. Retrieved from https://slisweb.sjsu.edu/courses/restricted/202kwasnikA.pdf

Morville, P. (2005). *Ambient findability.* Sebastopol, CA: O'Reilly.

Oppenheim, C. & Stenson, J. (2003). Studies on information as an asset II: Repertory grid. *Journal of Information Science, 29*(5), 419-432. Retrieved from http://jis.sagepub.com/

Perkins, A. (2011). Classifying art with Bliss. *Art Libraries Journal*, 36(4), 18-21. Retrieved from http://www.arlis.org.uk

Rowley, J., & Hartley, R. (2008). *Organizing knowledge: An introduction to managing access to information*. Burlington, VT: Ashgate.

Shankaranarayanan, G., & Even, A. (2006). The metadata enigma. *Communications of the ACM, 49*(2), 88-94. Retrieved from http://cacm.acm.org/

Warner, J. (2007). Selection power and selection labor for information retrieval. *Journal of the American Society for Information Science and Technology, 58*(7), 915-923. Retrieved from http://onlinelibrary.wiley.com/journal/10.1002/%28ISSN%291532-2890

Weinberger, D. (2007). *Everything is miscellaneous: The power of the new digital disorder.* New York, NY: Holt Paperbacks.

Wright, A. (2007). *Glut: Mastering information through the ages* [Amazon Kindle version]. Retrieved from http://www.amazon.com

Appendix A: Beta Test Survey Responses

Beta Tester		Response
Is the Statement of Purpose clearly defined?		
1	agree	1. In Group 2's provided information doc, they listed a specific Statement of Purpose that was clearly defined and easily understandable. 2. There were no unnecessary variables that could distract potential indexers from the group's intended purpose.
2	strongly agree	It states the purpose for the kitchen appliance collection. It is very specific for the type of collection that they are aiming (beginning part of 21st century). My third reason is that it is short sweet and to the point. It is not too long and drawn out.
3	strongly agree	The statement was straight forward specifying that the database was of kitchen appliances used in typical American homes at the beginning of the 21st Century. In the Audience section, Team 2 stated that this information would be relevant to future anthropologists.
4	disagree	I believe that team 2 provided a "what" in their statement of purpose, but not a "why". Their statement would have been stronger if they had identified why the appliance database would be important or useful, etc.
Are the attributes included in the structure useful/consistent with the statement of purpose?		
1	agree	1. The attributes included in the data structure are consistent with the group's statement of purpose. 2. The attribute fields are easy to understand, and the connections between the indexable data and the data structure are coherent.
2	strongly agree	The attributes provided a wide array of various indexing contexts. They allowed for easy physical descriptions but also provided a broader idea of how the person acquired the object to help the intended audience of future anthropologist have an idea of how people interacted with each other and acquired possessions in this time period.
3	agree	I found that a couple of the attributes were fun but not necessarily relevant. For example, I am not sure why anthropologists would be interested in the method of acquisition (purchased, gift, or inherited) or the length of ownership so far. For example, one item was an old beat up stove that the person acquired a year ago as an inheritance. I would think an anthropologist might be more interested in the total age of the appliance or the year of manufacturing.

4	neither agree or disagree	Because the statement of purpose lacked a "why" it was difficult to know if the attributes were consistent with their statement. I did feel that the attributes were useful in identifying key similarities and differences between the appliances however. Future users of this database would easily be able to find specific appliances based on function and form.

Are the indexing rules clear/understandable?		
1	agree	1. The Indexing Rules were mostly easy to follow and understand. 2. The "Interface" data field presented a lot of variables to the indexer, which could lead to confusion for indexing certain items.
2	strongly agree	I felt that the indexing rules were very clear and useful. They were detailed and descriptive providing easy indexing. They allowed for the indexer to quickly and concisely enter the required data consequently creating the record.
3	neither agree or disagree	The indexer would have to be familiar with kitchen equipment in order to said what each item was as the slides did not indicate what the item was. For example, I may not know what a panini press looks like and might call the item a waffle maker instead. I was confused with the rules for "power source" and "heat source". I had to ask my son what he thought the difference was. He explained that he thought "heat source" would be used if the appliance generated or produced heat or the primary purpose of the appliance would be to heat or cook. Also, regarding the "power source" for the stove, I saw that the stove was gas. But gas was not a choice. So, I guess the power source is electricity, but the stove cooks with gas. For "interface", the category was too broad. I was not sure how much detail I should use. I thought the stove had knobs and even push in knobs. But, knobs was not one of the examples given. It seemed like some of the items should have been separate attributes. For example, "does it include a timer?" should have been a yes or no question. For the waffle maker, I did not know if it turned on and off as the front panel was not displayed. For manufacturer/brand, I was not sure if I should put Montogomery Ward or Tappan or both because that is what I saw in the picture. For condition, I did not know the difference between "new" and "like new". I was not sure how to rate the refrigerator as usually it is the inside of the refrigerator that you can tell if it is like new, used, or heavily used. There was not a photo of the inside of the refrigerator.

4	neither agree or disagree	The indexing rules were somewhat surface for me. I could have used a few more guidelines on some of the attributes to make sure that I was indexing correctly. 1. The interface attribute was particularly difficult to index because I was not sure how much text to provide and/or how much detail to go into. The rules could have used an example of what this field should have looked like upon completion. 2. The length of ownership was a little confusing for me as well. If someone acquired an appliance in 2012 should that be indexed as 1 year or 0 years of ownership? The explanation that was provided was a little vague and I could have used an example or perhaps provide the dates that correspond to each of the validation numbers. For example: 1 year - 2012, 0 years - 2013, etc.

Are the indexing rules consistent?		
1	neither agree or disagree	1. There were a couple instances where I entered data into a field, according to the group's described indexing rules, and I received prompts for invalid entries. 2. For most of the fields, the indexing rules were consistent with the data structures.
2	strongly agree	Yes, the indexing rules were consistent. There was no duplication or anomalies in the data. They allowed for ease of indexing.
3	agree	For length of ownership, instead of putting in a date such as 2012, the instruction was to put in the number of years since the device was acquired. If this was an ongoing database in which data was put in over multiple years, the data would be misleading. For example, currently, I indicate that an appliance is one year old if it was aquired in 2012 and it is 2013. Next year, someone will put an appliance was 1 year old if it was acquired in 2013 as it will be 2014.
4	agree	I felt that the indexing rules were consistent because many of them used validation lists. Additionally, the rules and guidelines put a lot of the indexing decisions on the indexer. Many of the rules associated with attributes mentioned "Select the most appropriate option". I felt that this left a lot of room for variance in indexing, but it also allowed the indexer to not feel trapped by specific validation options.

Is the audience of this database clearly defined?		
1	agree	
2	strongly agree	
3	strongly agree	
4	strongly agree	

Does this database meet the user need of the audience?	
1	agree
2	strongly agree
3	agree
4	agree

Include any "other" observations related to this database in the box below.	
1	The group did a good job of describing the audience for their database, and the data structure reflects the needs of this audience.
2	Nicely done. I would have never considered the database to be geared for future anthropologists. You may want to also change your audience for people that are intrigued by appliances living today. I know of several people that would find and use this database that are alive today. Great job overall :)!
3	The anthropologists may be interested in knowing how often the appliance was used-once a day, twice a day, three times a day. I guess the catagory "storage" (always out vs. stowed away) would give them some information but not as detailed. The specific year the appliance was built and how long it lasted or expected to last would probably be of interest to anthropologists rather than the year acquired.
4	Overall I felt that the database definitely had a clearly defined user group. I am a person that enjoys rules and guidelines and I feel that the "margin-of-error" would be greatly decreased by having better defined rules and guidelines. Also by addressing the amount of detail that should be put into the "interface" field, this attribute could become extremely useful to the user group that Team 2 identified for this database.

Appendix B: Beta Test Records

	Values represented by different terms

	Team 02	Beta Tester 1	Beta Tester 2	Beta Tester 3	Beta Tester 4
Item	*A*	*A*	*Not indexed*	*Not indexed*	*Not indexed*
Record number	4	5			
Device type	Pasta Maker	Pasta Maker			
Size	Counter-Top	Counter-top			
Primary purpose	Prepare	Prepare			
Power source	Other	Other			
Heat source	Not Applicable	Not Applicable			
Storage	Stowed Away	Stowed Away			
Blades	Yes	No			
Interface	This is a simple manually powered appliance. The only interface as such is the crank handle on the side. The blades can also be switch out to allow the user to cut different shapes of pasta.	Hand Crank			
Brand/Manufacturer	Imperia	Imperia			
Primary color	Red	Red			
Secondary color	Uncoated (Metal)	Uncoated (Metal)			
Condition	Like New	Like New			

	Team 02	Beta Tester 1	Beta Tester 2	Beta Tester 3	Beta Tester 4
Method acquired	Gift	Gift			
Length of ownership	3 Years	2 Years			
Item	*B*	*Not indexed*	*B*	*Not indexed*	*Not indexed*
Record number	3		6		
Device type	Dishwasher		Dishwasher		
Size	Freestanding		Freestanding		
Primary purpose	Clean		Clean		
Power source	Electric		Electric		
Heat source	Not Applicable		Not Applicable		
Storage	Always Out		Always Out		
Blades	No		No		
Interface	The interface has several buttons. One turns the crockpot on and off. Four buttons control cooking temperature, one for High, one for Low, one for Simmer, and one for Warm. The final two buttons control the timer function; there is a + button to add minutes, and a - button to reduce minutes. Yes a timer is included		Buttons Cycle Selection Timer Heat Control Can be turned off,		

	Team 02	Beta Tester 1	Beta Tester 2	Beta Tester 3	Beta Tester 4
	on the appliance.				
Brand/Manufacturer	GE		General Electric		
Primary color	Uncoated (Metal)		Uncoated (Metal)		
Secondary color	Black		Not applicable		
Condition	Used		Used		
Method acquired	Inherited		Inherited		
Length of ownership	5+ Years		4 Years		
Item	*C*	*Not indexed*	*Not indexed*	*C*	*Not indexed*
Record number	2			7	
Device type	Crockpot			Crockpot	
Size	Counter-Top			Counter-Top	
Primary purpose	Heat/Cook			Heat/Cook	
Power source	Electric			Electric	
Heat source	Not Applicable			Electric	
Storage	Stowed Away			Stowed Away	
Blades	No			No	
Interface	The interface has several buttons. One turns the crockpot on and off. Four buttons control cooking temperature, one for High, one for Low, one for Simmer, and one for Warm. The final two buttons control the timer function; there is			Can be turned off Timer Temperature Control	

	Team 02	Beta Tester 1	Beta Tester 2	Beta Tester 3	Beta Tester 4
	a + button to add minutes, and a - button to reduce minutes. Yes a timer is included on the appliance.				
Brand/Manufacturer	Cuisinart			Cuisinart	
Primary color	Uncoated (Metal)			Uncoated (Metal)	
Secondary color	Black			Black	
Condition	Like New			Like New	
Method acquired	Gift			Gift	
Length of ownership	1 Year			1 Year	
Item	*D*	*D*	*Not indexed*	*Not indexed*	*D*
Record number	1	5			8
Device type	Coffee Grinder	Coffee Grinder			Coffee Grinder
Size	Counter-Top	Counter-Top			Counter-Top
Primary purpose	Prepare	Prepare			Prepare
Power source	Electric	Electric			Electric
Heat source	Not Applicable	Not Applicable			Not Applicable
Storage	Always Out	Always Out			Always Out
Blades	Yes	Yes			Yes
Interface	Interface includes one button and a sliding switch. The button turns the grinder on and off. The slider switch controls the texture of the grind, that is,	This appliance contains an on/off button with a manual vertical switch for speed adjustment of coffee grinding cycle. No timer included on this			Can be turned off Courseness Setting Preperation Type

	Team 02	Beta Tester 1	Beta Tester 2	Beta Tester 3	Beta Tester 4
	coarse, medium, or fine. Each gradation of grind texture also corresponds to a coffee preparation method: coarse grind is for a percolator; medium grind is for an autodrip; fine grind is for and espresso machine. No timer is included.	appliance.			
Brand/Manufacturer	GE	General Electric (GE)			General Electric
Primary color	Black	Black			Black
Secondary color	Gray	Gray			Not Applicable
Condition	Heavily Used	Used			Heavily Used
Method acquired	Gift	Gift			Gift
Length of ownership	5+ Years	5+ Years			5+ Years
Item	*E*	*Not indexed*	*E*	*Not indexed*	*Not indexed*
Record number	7		6		
Device type	Electric Water Kettle		Electric Water Kettle		
Size	Counter-Top		Counter-Top		
Primary purpose	Heat/Cook		Heat/Cook		
Power source	Electric		Electric		
Heat source	Electric		Electric		

	Team 02	Beta Tester 1	Beta Tester 2	Beta Tester 3	Beta Tester 4
Storage	Always Out		Always Out		
Blades	No		No		
Interface	On/Off Switch - Automatically flips to 'Off' position once water is finished heating.		This appliance does not contain an interface or temperature control. It does contain a measuring system telling how many cups of water are currently in the pot.		
Brand/Manufacturer	Flama		Flama		
Primary color	Uncoated (Metal)		Uncoated (Metal)		
Secondary color	Black		Black		
Condition	Heavily Used		Like New		
Method acquired	Inherited		Inherited		
Length of ownership	1 Year		1 Year		
Item	*F*	*Not indexed*	*Not indexed*	*F*	*Not indexed*
Record number	6			7	
Device type	Microwave			Microwave	
Size	Counter-Top			Freestanding	
Primary purpose	Heat/Cook			Heat/Cook	
Power source	Electric			Electric	
Heat source	Electric			Electric	
Storage	Always Out			Always Out	
Blades	No			No	
Interface	Screen displaying			This interface is	

	Team 02	Beta Tester 1	Beta Tester 2	Beta Tester 3	Beta Tester 4
	time of cooking/time of day, buttons to select mode of operation, cooking time, start/stop cooking, and to set the time.			digital that includes many numeric buttons. The buttons control temperature adjustment, cycle selection, speed adjustment. The buttons allow the machine to be turned on and off and includes a timer.	
Brand/Manufacturer	General Electric			General Electric (GE)	
Primary color	Black			Black	
Secondary color	Not Applicable			Uncoated (Metal)	
Condition	Used			Like New	
Method acquired	Purchased			Purchased	
Length of ownership	1 Year			1 Year	
Item	*G*	*G*	*Not indexed*	*Not indexed*	*G*
Record number	5	5			8
Device type	Immersion Blender	Immersion Blender			Hand mixer
Size	Handheld	Handheld			Handheld
Primary purpose	Prepare	Prepare			Prepare
Power source	Electric	Electric			Electric
Heat source	Not Applicable	Not applicable			Unknown
Storage	Always Out	Always Out			Always Out

	Team 02	Beta Tester 1	Beta Tester 2	Beta Tester 3	Beta Tester 4
Blades	Yes	Yes			Yes
Interface	On/Off Button	On and off switch			A single gray button that turns appliance on and off. It does not have a timer.
Brand/Manufacturer	Cuisinart	Cuisinart			Cuisiart
Primary color	Yellow	Yellow			Yellow
Secondary color	Uncoated (Metal)	Uncoated (Metal)			Uncoated (Metal)
Condition	Like New	Like New			Like New
Method acquired	Gift	Gift			Gift
Length of ownership	1 Year	1 Year			1 Year
Item	*H*	*Not indexed*	*H*	*Not indexed*	*Not indexed*
Record number	8		6		
Device type	Food Processor		Food Processor		
Size	Counter-Top		Counter-Top		
Primary purpose	Prepare		Prepare		
Power source	Electric		Unknown		
Heat source	Not Applicable		Not Applicable		
Storage	Stowed Away		Stowed Away		
Blades	Yes		Yes		
Interface	Buttons - Two buttons which activate one of the two modes of operation (Chop or Grind) when held down, but are in a default		one button for chop, one button for grind		

	Team 02	Beta Tester 1	Beta Tester 2	Beta Tester 3	Beta Tester 4
	'Off' position otherwise.				
Brand/Manufacturer	Cuisinart		Cuisinart		
Primary color	White		White		
Secondary color	Not Applicable		Not Applicable		
Condition	Like New		Like New		
Method acquired	Gift		Gift		
Length of ownership	2 Years		2 Years		
Item	*I*	*I*	*Not indexed*	*I*	*Not indexed*
Record number	10	5		7	
Device type	Toaster	Toaster		Toaster	
Size	Counter-Top	Counter-top		Counter-Top	
Primary purpose	Heat/Cook	Heat/Cook		Heat/Cook	
Power source	Electric	Electric		Electric	
Heat source	Electric	Electric		Electric	
Storage	Always Out	Always Out		Always Out	
Blades	No	No		No	
Interface	Buttons, temperature adjustment	buttons, lever, temperature adjustment		botton 2 slices, button bagel, button defrost, button reheat, button lighter, button darker, button cancel reset, browning control gage with incremental lights	
Brand/Manufacturer	Cuisinart	Cuisinart		Cuisinart	
Primary color	Black	Black		Black	

	Team 02	Beta Tester 1	Beta Tester 2	Beta Tester 3	Beta Tester 4
Secondary color	White	Not Applicable		Not Applicable	
Condition	Used	Used		Used	
Method acquired	Inherited	Inherited		Inherited	
Length of ownership	1 Year	1 Year		1 Year	
Item	*J*	*Not indexed*	*J*	*Not indexed*	*J*
Record number	12		6		8
Device type	Stove		Stove		Stove
Size	Freestanding		Freestanding		Freestanding
Primary purpose	Heat/Cook		Heat/Cook		Heat/Cook
Power source	Electric		Unknown		Other
Heat source	Gas		Gas		Gas
Storage	Always Out		Always Out		Always Out
Blades	No		No		No
Interface	Dials, temperature adjustment		knobs to turn on , push in knob, temperature adjustment, clock, timer		4 dials for burners, 1 dial for oven and broiler
Brand/Manufacturer	Montgomery Ward by Tappan		Tappan		Montgomery Ward by Tappan
Primary color	White		White		Black
Secondary color	Black		Black		Other
Condition	Heavily Used		Heavily Used		Heavily Used
Method acquired	Inherited		Inherited		Inherited
Length of ownership	0 Years		1 Year		1 Year
Item	*K*	*Not indexed*	*Not indexed*	*K*	*Not indexed*
Record number	9			7	

	Team 02	Beta Tester 1	Beta Tester 2	Beta Tester 3	Beta Tester 4
Device type	Refrigerator			Refrigerator	
Size	Freestanding			Freestanding	
Primary purpose	Cool/Preserve			Cool/Preserve	
Power source	Electric			Electric	
Heat source	Not Applicable			Not Applicable	
Storage	Always Out			Always Out	
Blades	No			No	
Interface	Dials, temperature adjustment			handle to open door, temperature adjustment	
Brand/Manufacturer	Frigidaire			Frigidare	
Primary color	White			White	
Secondary color	Gray			Not applicable	
Condition	Used			Used	
Method acquired	Inherited			Inherited	
Length of ownership	0 Years			1 Year	
Item	*L*	*Not indexed*	*Not indexed*	*Not indexed*	*L*
Record number	11				8
Device type	Waffle Maker				Waffle Maker
Size	Counter-Top				Counter-Top
Primary purpose	Heat/Cook				Heat/Cook
Power source	Electric				Electric
Heat source	Electric				Electric
Storage	Stowed Away				Stowed Away
Blades	No				No
Interface	None				opens and closes, temperature adjustment
Brand/Manufacturer	Black and Decker				Black & Decker

	Team 02	Beta Tester 1	Beta Tester 2	Beta Tester 3	Beta Tester 4
Primary color	White				White
Secondary color	Black				Black
Condition	Like New				Like New
Method acquired	Inherited				Inherited
Length of ownership	5+ Years				5+ Years

Appendix C: Reasons for Inclusion

Attribute	Reason for Inclusion
Record number	A unique record locator is necessary to identify each record separately from the others.
Device type	Knowing the type of device will help anthropologists define categories of appliances. They can then aggregate multiple devices into one category and compare attributes between categories (e.g., how crockpots stored compared to how coffee makers were stored). They can also compare other attributes within a device type category (e.g., how many stoves are gas heated versus electrical). The breadth of device types will also provide an understanding of the activities that took place in kitchens of the day.
Size	Size will help the anthropologists to re-create a picture of what kitchen appliances looked in the early 21st century. Combined with other attributes, size will also help explain what kitchens looked like (e.g., size and storage attributes help anthropologists develop visual re-creations of model kitchens).
Primary purpose	Primary purpose enables the anthropologist to understand how the appliances were used and also extrapolate activities or behaviors that took place in the kitchen (e.g., cooking was the predominant activity and cleaning a secondary activity).
Power source	The power source helps anthropologists understand how early 21st century kitchens were operated. Linked with size, it will also provide some clues as to how homes were built. For example, a stove or refrigerator is not portable, so the power source had to be brought to it; the appliance couldn't be taken to the power source.
Heat source	The heat source will also help anthropologists understand how kitchens operated. Similar to power source, it allows anthropologists to understand something about the nature of how homes were constructed, that is, they needed gas lines and hook-ups in the kitchen.
Storage	How devices were stored provides clues about how often they were used as well as how integral they were to the daily activities taking place in the kitchen. Tied with size and frequency of use, it may provide additional insight into storage patterns (e.g., small devices may be more likely to be stowed away, regardless of how often they were used).

Attribute	Reason for Inclusion
Blades?	The presence or absence of blades will provide insight into how the device was used. Blades might also denote a particularly dangerous device, hence when tied with storage, anthropologists might see bladed devices being stowed away rather than always out.
Interface	The interface type or control mechanism will allow anthropologists to understand the way in which people physically interacted with their appliances, and more specifically how they controlled the devices. This attribute will help elucidate behavior (e.g., a timer's presence might allow the user to perform other activities while the appliance was in use).
Brand/Manufacturer	Brand or manufacturer gives insight into preferences. Anthropologists can determine popular brands and make assumptions about their quality, performance, or possibly price compared to less popular brands.
Primary color	The primary color allows anthropologists to note passing fads and more permanent trends in kitchen design and appearance. Combined with secondary color, size, and storage this attribute will help anthropologists to re-create a visual model of the early 21st century kitchen. It tells of the aesthetic preferences of the time.
Secondary color	Secondary color enhances the information provided by primary color and provides anthropologists with a clearer image of how an early 21st century kitchen appeared.
Condition	Condition can help the anthropologist think about the personality of its user as well as give clues to their behavior and use of their appliances (e.g., Does a dirty, well-used refrigerator mean the user is lazy, or busy, or simply oblivious? Perhaps a like-new device is one that is very infrequently used. Perhaps a dirty stove shows the user cooked at home frequently.)
Method acquired	The method of acquisition can tell the anthropologist about the desires of the user. If the user purchased the device, they chose it for some reason.
Length of ownership	Length of ownership can help the anthropologist understand overall patterns about how long devices were kept, and it can help the anthropologist draw conclusions about what the differences mean (e.g., if countertop appliances are younger than floor appliances, perhaps this speaks to differences in cost, quality, longevity, or even popularity of a certain device type or color).

Appendix D: Indexing Rules

1. All fields are mandatory.
2. Indexers should strive to select the most appropriate field value to the best of their knowledge. However, if an attribute is unknown or not applicable, indexers should always select unknown or not applicable as the field value. Do not guess or randomly select another field value.

Field	Rules
Record number	• Automatic number (do not modify field).
Device type	• Select the most appropriate option: stove, refrigerator, dishwasher, microwave, toaster, blender, coffee maker, immersion blender, hand mixer, crockpot, chopper, hand mixer, stand mixer, juicer, coffee grinder, toaster oven, freezer, pasta maker, electric water kettle, can opener, food processor, waffle maker, hot dog toaster, deep fryer, panini press, bread maker, soda maker, food dehydrator, kitchen scale, hot plate, griddle, rice cooker, other, unknown • Select other for appliances that don't appear in the list. • Select unknown if the appliance type is not readily recognizable.
Size	• Select the most appropriate option: handheld, countertop, freestanding, other, unknown • A handheld appliance will typically be the smallest in physical dimensions as compared to a countertop (medium-sized) or freestanding (large-sized, floor standing) appliance. • For example: an immersion blender is handheld; a coffee maker is countertop; a stove is freestanding.
Primary purpose	• Select the most appropriate option: clean, cool/preserve, heat/cook, prepare, other • For example: a dishwasher's primary purpose is to clean; a refrigerator's primary purpose is to cool/preserve; a microwave's primary purpose is to heat/cook; a mixer's primary purpose is to prepare.
Power source	• Select the most appropriate option: electric, battery powered, other, unknown • A device with a rechargeable battery is considered battery powered. • Make a selection to the best of your ability based on the collection images provided. • Other should be selected for a device with no power source, for example a hand-powered pasta maker.

Field	Rules
Heat source	• Select the most appropriate option: gas, electric, not applicable, unknown • For example a stove's heat source may be gas or electric whereas a microwave's heat source is typically electric. • Many appliances have no heat source, for example refrigerators and blenders. Not applicable should be selected in these cases.
Storage	• Select the most appropriate option: always out, stowed away • Always out means the appliance is stored on the countertop or other working surface in the kitchen. • Stowed away means the appliance must be retrieved to be used. It could be stowed in a cupboard, pantry, or on a shelf. • If an appliance may be out for a few days (e.g., during the holidays), but typically stowed away then it should be designated as stowed away. • Likewise, if an appliance is typically always out, but may be stowed away during an event (e.g., dinner party) then it should be designated as always out.
Blades	• Select the most appropriate option: yes, no • Any type of blade counts as a yes. It could be dull or sharp; it could be integral to the appliance or a separate attachment.
Interface	• Describe the interface or control mechanism by entering text. • Does it include buttons, switches, or dials? • Does it allow for temperature adjustment, cycle selection, speed adjustment, or does it control some other function? Please specify this other function. • Does it include a timer? • Does it allow the appliance to be turned on and off? • Data entered into this field will be used to create an inverted file for key word searching.
Manufacturer/Brand	• Enter the name of the manufacturer of the appliance. • If possible, indexers should enter the brand name that can be found on the appliance itself. • If no brand name is apparent on the product, and the indexer has no other way of determining this information, then unknown may be entered as the value for this field.

Field	Rules
Primary color	• Select the closest match from the following: Red, Green, Yellow, Blue, Black, White, Pink, Light Blue, Gray, Orange, Brown, Purple, Uncoated Metal, Uncoated Wood, Other. • Whichever of the listed values closest to the color that is most prominently featured on the item being indexed should be chosen.
Secondary color	• Select the closest match from the following: Red, Green, Yellow, Blue, Black, White, Pink, Light Blue, Gray, Orange, Brown, Purple, Uncoated Metal, Uncoated Wood, Other, N/A. • Whichever of the listed values closest to the color that is the second most prominent on the item being indexed should be chosen. • If there is no clear secondary color, this field may be omitted (or N/A can be selected as the value).
Condition	• Select the most appropriate option: new, like new, used, heavily used • Based on the collection images provided, select the option that seems to fit best.
Method of acquisition	• Select the most appropriate option: purchased, gift, inherited, unknown • Inherited means the appliance came from a family member, previous owner or tenant, landlord, etc.
Length of ownership	• Select the most appropriate option: 0 years, 1 year, 2 years, 3 years, 4 years, 5+ years, unknown. • Length of ownership is the number of years since the device was acquired.