The 20-Minute Genealogist: A Context-Preservation Metaphor for Assisted Family History Research

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Abstract

What can you possibly do to be productive as a family history researcher in 20 minutes per week? Our studies suggest that currently the answer is, "Nothing." In 20 minutes a would-be researcher can't even remember what happened last week, let alone what they were planning to do next. The 20-Minute Genealogist is a powerful metaphor within which software solutions must consider context preservation as the fundamental domain of the system, thus freeing the researcher to do research while the software manages the tasks that computers do best. Two survey-based studies were conducted that indicate a significant disconnect between the values espoused by would-be researchers and the actual level of time spent by those same individuals. Our preliminary results suggest that the overhead involved in context preservation is the predominant inhibitor of family history research productivity among those who claim that such work is very important, yet fail in their efforts.

1. Introduction

Ask a family history expert what you can reasonably do in an hour or less per week, and the common response (after the momentary blank stare) is about how there are times and seasons for family history work, and maybe this just isn't the time or the season for you. One of the limiting factors in family history productivity is that the largest segment of computer-literate, motivated genealogists are in the thick of life with college, children, profession, and church responsibilities. Consequently, the population segment with the most technology experience has the least time, and those with the most time – retirees – are often the least comfortable with technology.

To address this problem, senior Software Engineering students in the Department of Computer Science at Brigham Young University have conceptualized, architected and begun construction of "The 20-Minute Genealogist," an intelligent software system that assists time-constrained family history researchers and raises the technology comfort of researchers with less technical experience. The focus of The 20-Minute Genealogist project is a powerful but simple metaphor: Help users to be productive in locating and retrieving information about their ancestors in as little as 20 minutes per week. Can this be done? We believe the answer is "Yes," but only with the application of the right innovative technologies.

The 20-Minute Genealogist is driven and developed entirely by students at Brigham Young University within the context of an on-going senior Software Engineering course in the Computer Science Department taught by Prof. Charles Knutson. The course is organized into a company (Family History Helper) that functions as a FamilySearch affiliate and development partner. As such, the company has access to all of the development tools and resources provided by FamilySearch to third-party developers.

Individuals from FamilySearch have provided oversight to the project, regularly visiting campus to receive reports from students on the company's progress. The project places Computer Science seniors into a 16-week window of a multi-year project environment with the task of developing a professional-quality software system that must support a wide demographic of potential users, as well as integrate with the enterprise systems of FamilySearch. As a result, the students' engineering experiences during a given semester are particularly poignant and real.

All management and organizational functions are carried out by students who accept full ownership for the project during the semester in which they work on it, and who hold the responsibility to effectively transfer the project to the next generation of students. Additionally, having realized the potential impact of the project beyond its educational value, some students have continued to participate on the project even after completing the course and graduating from BYU.

We believe that the metaphor embodied in the 20-Minute

Genealogist has the potential to usher in a radically improved level of research productivity in the most significantly untapped population segment of potential genealogy researchers – individuals between the ages of 20 and 60 years – as well as to enable all would-be researchers with limited technical experience to be significantly more productive genealogists.

In this paper we present the fundamental motivation for a paradigm shift in assisted family history research. In Section 2 we discuss research that reveals some of the fundamental motivations (and demotivations) of would-be researchers, including empirical data that we have gathered through surveys. In Section 3 we discuss the current state of unfulfilled potential in family history research and suggest ways in which our lost opportunity might be reclaimed. In Section 4 we introduce and discuss the 20-Minute Genealogist metaphor in greater detail.

2 Who Cares About Family History and Who's Doing It?

During the first semester in which this project was conceptualized (Fall 2007) students discovered the tremendous difficulty of determining requirements for an as-yet undefined project with an only vaguely defined base of users. By the conclusion of that first semester, the 20-Minute Genealogist metaphor had emerged and was perceived as potentially compelling. But despite our intuition that the metaphor was significant and powerful, we lacked objective data to validate our beliefs.

During the second semester of the project (Winter 2008) a small team of marketers joined the course from the BYU Master of Business Administration (MBA) program and began to try and understand the user base at a more objective level. Consequently two separate studies were undertaken, both of which shed significant light on the needs of our target audience. We describe these two studies in the following sections.

2.1 Hierarchical View Map

Our marketing team visited with marketing and management personnel at FamilySearch in Salt Lake City during the Winter 2008 semester and were granted access to their marketing data. The team then supplemented the FamilySearch data with additional survey and interview data gathered from family history researchers. While the resultant collection of data from these sources is predominantly anecdotal, clustering analysis reveals a consistent and hierarchical view (see Figure 1) of the struggles shared by those who desire to do family history research.

The predominant emotion expressed by study participants was the desire for a family history solution that is both convenient and simple. Respondents further expressed concerns about the time required to do family history research and the complexity of managing both research tasks and available software systems. Their concerns fall into three categories; we discuss each of them in turn.

2.1.1 Discouragement Comes from Lack of Success

In this category are respondents that expressed a general sense of frustration with the results of their past efforts in family history research. In particular two sub-classes emerge:

- I tried, but couldn't find anything.
- I tried, but it was too confusing.

Both of these sub-classes reflect the sense that an individual desires to do family history research, but upon making the attempt finds the process discouraging, thus putting to rest their sense of urgency and desire (at least for a season).

2.1.2 I Know I Should But I Just Don't

In this category are individuals who feel some internal or external impetus to engage in family history research, yet for various reasons fail to begin. Three sub-classes emerge:

- Family history takes too much time.
- Family history is just too inconvenient.
- Family history is for older people.

In practice these respondents also share a common rationale which can be summarized by the union of the three sub-classes: "Family history is inconvenient and takes too much time. There's no way I'll get anything done until I'm retired and have the time to wade through it."

2.1.3 Tools and Processes Need to meet my needs

In this category are those individuals who articulated the idea that effective tools and processes help them (or would help them) to be successful. Two sub-classes emerge:

- Organized programs help.
- All can benefit by sharing.

These individuals either feel encouraged by the software systems they currently employ, or – more commonly – feel that if better software systems existed to help them organize their work then they would be more productive. This category also reflects the idea that better collaboration with other family history researchers would facilitate success.

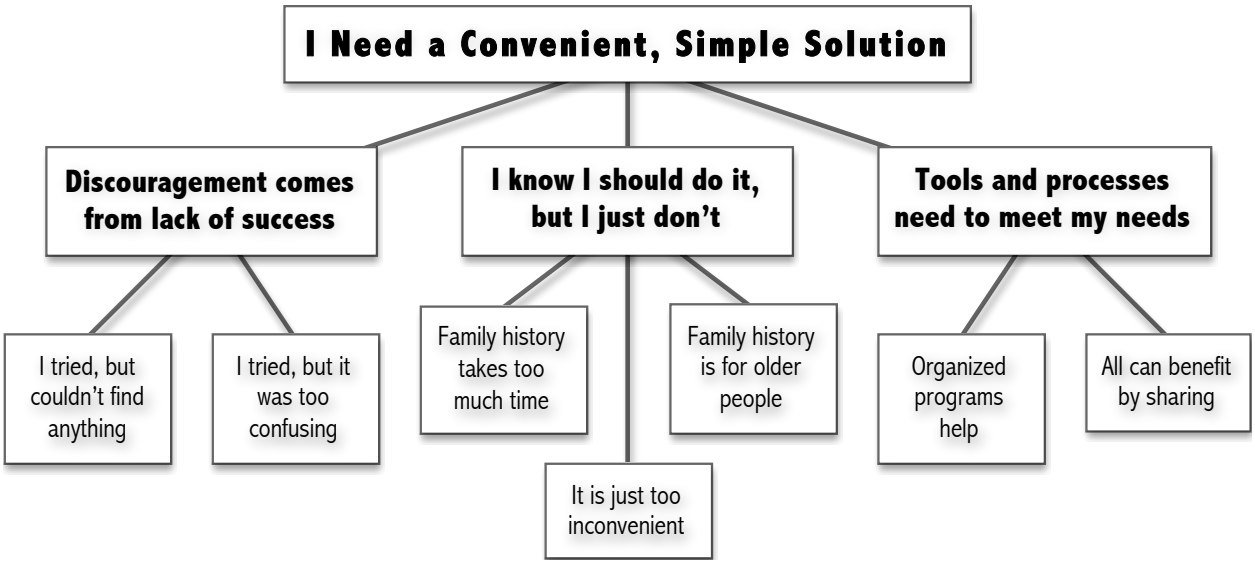


Figure 1. Hierarchical view map of family history research motivators and demotivators.

The anecdotal evidence that emerges from this clustering exercise lends insight into the types of frustrations commonly experienced by family history researchers (or would-be researchers). However, it offers no sense of the relative distribution of individuals with respect to their active participation in family history and their perceptions concerning their own motivations (or demotivations).

2.2 Motivational Survey

During the same semester in which the hierarchical view map was generated, the marketing group initiated a survey that attempted to capture more detailed empirical information concerning family history researchers. The target population for this survey was members of the Church of Jesus Christ of Latter-day Saints, ages 14 and older. This group was targeted primarily due to an anticipated sense of shared commitment to at least the *idea* of family history research if not the practice. We anticipated that sampling from a broader population would result in a fairly low rate of respondents who held substantial interest in family history research, and that the respondents from the general population who *did* have interest would exhibit similar motivation and demotivation patterns to Latter-day Saints in terms of the success and failure patterns they experience when doing family history research. The results were enlightening.

Ultimately 584 individuals responded to the survey with all age groups represented. (Additional survey work will be required to provide a finer grained view of the age distribution of respondents.)

The survey asked six multiple choice questions and required approximately 1-2 minutes for each respondent to complete:

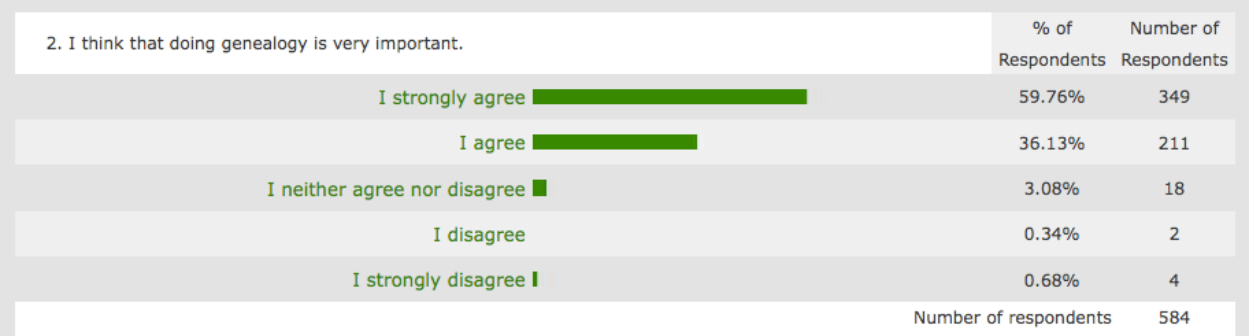
1. My age is ...
2. I think that doing genealogy is very important.
3. I know how to do genealogy research.
4. I don't do more genealogy because ...
5. I would do more genealogy if ...
6. How much time do you currently spend each month doing genealogy research?

In the following sections we discuss the insights that emerged from the survey results.

2.2.1 It's Important But I Don't Do It

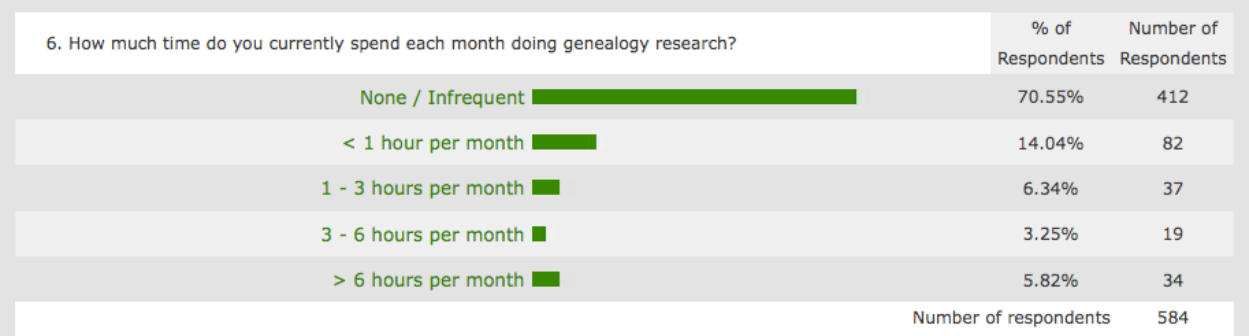
Questions 2 and 6 combined to validate our general belief that LDS Church members as a body feel that family history research is important, but on the whole do little or nothing about it (Figures 2 and 3).

When asked to rate the statement "I think that doing genealogy is very important," 95.9% responded either "agree" or "strongly agree" with 59.8% of respondents indicating that they "strongly agree." Needless to say, that's a compelling result in its own right, and would seem an impressive statistic if not for the juxtaposition of Question 6 which asks, "How much time do you currently spend each month doing genealogy research?" 70.6% responded "None / Infrequent" with another 14.0% responding "$<$ 1 hour per month." Indeed, only 15.4% reported spending more than one hour *per month*. These results indicate that 84.6% of



2. I think that doing genealogy is very important.	% of Respondents	Number of Respondents
I strongly agree	59.76%	349
I agree	36.13%	211
I neither agree nor disagree	3.08%	18
I disagree	0.34%	2
I strongly disagree	0.68%	4
Number of respondents		584

Figure 2. Survey question 2.



6. How much time do you currently spend each month doing genealogy research?	% of Respondents	Number of Respondents
None / Infrequent	70.55%	412
< 1 hour per month	14.04%	82
1 - 3 hours per month	6.34%	37
3 - 6 hours per month	3.25%	19
> 6 hours per month	5.82%	34
Number of respondents		584

Figure 3. Survey question 6.

respondents do effectively no family history work, while almost 96% of the same population believe that such work is "important."

If we normalize the data to disregard the 4.1% of the respondents who do not believe family history work is important, trusting that these same individuals are among those doing effectively no family history work in a given month, we find that for the subset of respondents, 100% of whom feel that doing genealogy is very important, 83.9% do nothing about it – that is, only 16.1% spend more than one hour per month.

Only 5.8% of respondents indicated that they spend more than 6 hours per month on genealogy (an average of approximately 1.4 hours per week, or an average of 12 minutes per day).[1] We believe that this value positively correlates with age, but the granularity of the age groupings in the survey was insufficient to derive that result.[2]

As mentioned in section 2.2 we targeted the LDS population due to a sense that they represented a filtered target population of individuals who at least desired to do family history research, independent of relative success. However, we suspect that a survey of the general population might reveal a higher rate of family history success among non-LDS subjects principally due to the idea that in the general population individuals without the time and resources to succeed in family history research generally don't aspire to it or claim to believe that it's very important. The LDS population, on the other hand, receives a regular dose of family history emphasis at every level of ecclesiastical leadership, independent of any individual natural drive to do that sort of research. (Further research on this question needs to be pursued.)

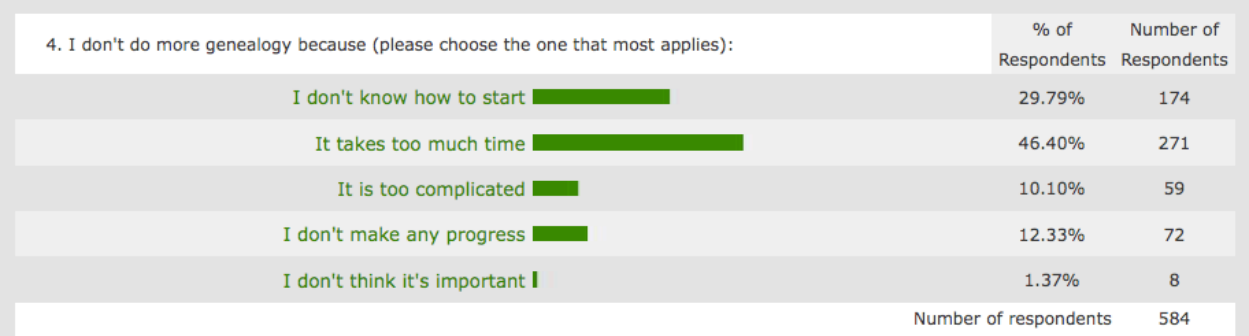
2.2.2 Why I Do or Don't Do More

Questions 4 and 5 attempted to derive some sense of why respondents might be held back from doing genealogy research (Figures 4 and 5). Question 4 deals with demotivators while Question 5 deals with motivators.

Beginning with the demotivators in Question 4, we find that almost half (46.4%) of respondents suggested that genealogy "takes too much time." In section 3 we discuss plausible explanations for a time crunch in the life of the average respondent.

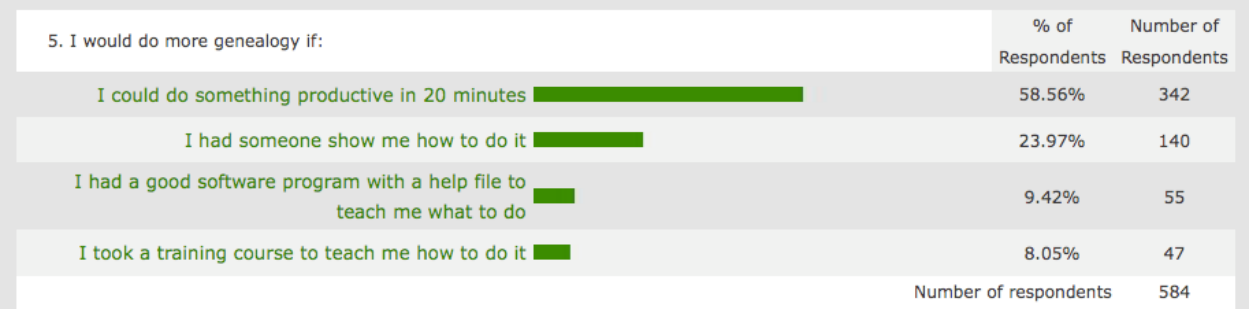
[1] Since some distributions of the survey request carried the author's personal email address, some unsolicited anecdotal feeback was received. One elderly family history researcher inquired as to why the maximum value for Question 6 was so low, gently accusing us of assuming that people are doing little or no family history work.

[2] We have since learned that one hazard of working with student researchers is that they tend toward a belief that all people over the age of 32 are part of a single equivalence class – "the aged."



4. I don't do more genealogy because (please choose the one that most applies):	% of Respondents	Number of Respondents
I don't know how to start	29.79%	174
It takes too much time	46.40%	271
It is too complicated	10.10%	59
I don't make any progress	12.33%	72
I don't think it's important	1.37%	8
Number of respondents		584

Figure 4. Survey question 4.



5. I would do more genealogy if:	% of Respondents	Number of Respondents
I could do something productive in 20 minutes	58.56%	342
I had someone show me how to do it	23.97%	140
I had a good software program with a help file to teach me what to do	9.42%	55
I took a training course to teach me how to do it	8.05%	47
Number of respondents		584

Figure 5. Survey question 5.

The next most significant response (29.8%) was, "don't know how to start," which suggests a lack of knowledge.

The other two most significant responses reflect individuals who try, but encounter resistance, either because they fail to make progress (12.3%) or because they find the process too complicated (10.1%).

Examining the motivators in Question 5, we found overwhelming support for the notion that respondents would do more genealogy if they "could do something productive in 20 minutes." 58.6% of respondents selected the 20 minute response, making it the most significant response in the entire survey (with the exception of the insight that everyone wants to do more, but almost no one does anything). It is interesting to note that the idea of doing something productive in 20 minutes appealed to almost twice as many respondents as the other choices combined (which focused on the need for training and assistance). We revisit this powerful 20-minute metaphor in greater detail in Section 4.

We received a small number of emails suggesting that the motivation or demotivation of the respondent was not adequately conveyed within the five choices in each question. We acknowledge that a choice of "Other" with an accompanying text entry box would have permitted a finer grained analysis of the data. However, based on the clustering results described in the hierarchical view map (see Section 2), we have confidence that motivations and demotivations of a significant majority of the respondents are accurately reflected in Questions 4 and 5.

2.2.3 I Sort Of Know How To Do It

One of the surprising results of the survey was the response to Question 3 (Figure 6) which states, "I know how to do genealogy research." Given the lack of active involvement in research as revealed by Question 6, and the prevalence of knowledge-based rationales for non-participation suggested by Questions 4 and 5, one might anticipate that one of the causes of the non-participation reported in Question 6 was a lack of knowledge. However, the responses to Question 3 roughly fit a normal distribution, which stands in stark contrast to the strongly skewed distributions of both the relative sense of the importance of genealogy (Question 2) and the actual amount of genealogical research realized (Question 6). We cannot, therefore, simply conclude that the lack of family history research is due to a general lack of knowledge among the target population – especially in light of Question 4, in which far more respondents (almost twice as many) indicated a need for increased productivity rather than a need for training.

3. I know how to do genealogy research.	% of Respondents	Number of Respondents
I strongly agree	8.56%	50
I agree	31.85%	186
I neither agree nor disagree	25.68%	150
I disagree	27.05%	158
I strongly disagree	6.85%	40
	Number of respondents	584

Figure 6. Survey question 3.

3 Reclaiming a Lost Opportunity

To try and make these results more intuitive and understandable, we have encapsulated the empirical and anecdotal evidence we've obtained into a story board form. Using the backdrop of this graph-based story board, we will show a lost opportunity in family history research and suggest ways in which that lost potential can be reclaimed.

In all cases, the graphs displayed are approximations of reality, rather than precise reflections of data. We have taken this approach for two reasons: First, obtaining detailed empirical data concerning all aspects of this story board falls beyond the scope of this preliminary effort. Second, precision in reflecting this data is not critical to our attempt to tell a story using these graphs. Future research will allow us to refine these graphs with greater precision.

In all of the graphs that follow, the X-axis reflects age, while the Y-axis reflects the target population. Thus, a given point on the graph represents the proportion of the target population at a given age with respect to the various represented phenomena.

3.1 Population

Figure 7 lays out a very rough approximation of the target population for the survey described in Section 2 (teen and adult members of the LDS Church). This population curve is based on U.S. Census information, and the graph reflects an assumption that LDS Church population roughly follows general population trends.

3.2 Desire

Figure 8 reflects the level of desire among the general population of the LDS Church. The almost universally positive response by survey participants is normalized against approximate LDS Church activity rates as well as preliminary evidence suggesting an upward shift in motivation toward genealogy as a function of age.

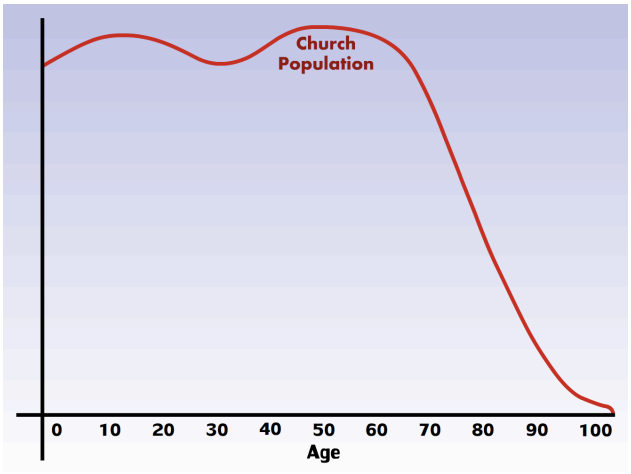


Figure 7. Approximate LDS Church Population.

The declining desire curve during retirement is bounded by the population curve and therefore reflects a proportionate population, rather than an absolute measure of desire. One can see that there is a potentially higher level of desire toward genealogy research at older ages, when the curve is viewed as a percentage of population.

3.3 Available Time

Figure 9 reflects the notion that available time shifts as a function of age. Children are born with nothing but time on their hands, which changes as they enter school, and continues to drop as they begin to work, date, and drive cars in their later teen years. Then comes college, young adulthood, marriage, child-bearing, professional life, and the subsequent management of children juxtaposed against other increased professional commitments as well as responsibilities in church and community.

Somewhere between the ages of 50 and 70, individuals

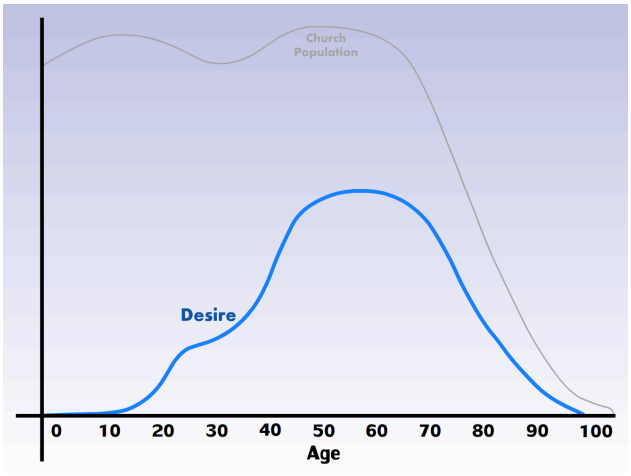


Figure 8. Desire of survey respondents toward genealogy research.

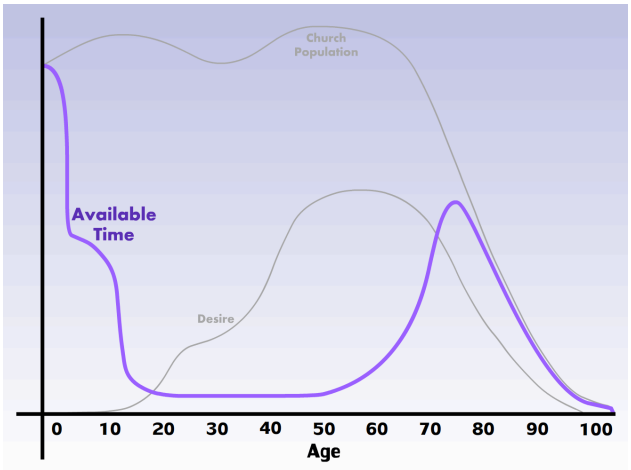


Figure 9. Available time for genealogy.

begin to reach the empty nest and retirement phases of life, at which point we see a subsequent spike in available time for things like family history research. This reality is reflected in Figure 1 under categories such as, "Family history takes too much time" and "Family history is for older people."

Note that the downward trend between ages 75 and 100 does not reflect a decrease in available time per individual, but reflects the fact that available time is bounded by the population curve.

3.4 Technology Comfort

Figure 10 reflects the fact that the current population of teens, young adults, and young professionals have a statistically higher comfort level with technology than older professional and retired populations. This factor turns out to be critical when you juxtapose the population that is comfortable with technology against the population that has both the desire and the available time to do genealogy.

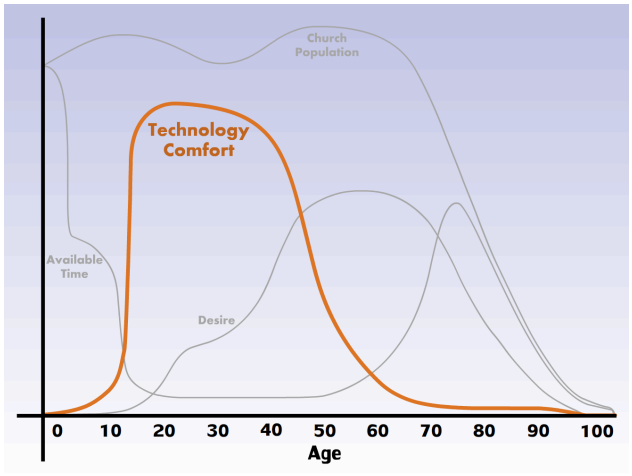


Figure 10. Comfort with technology.

3.5 Current Productivity

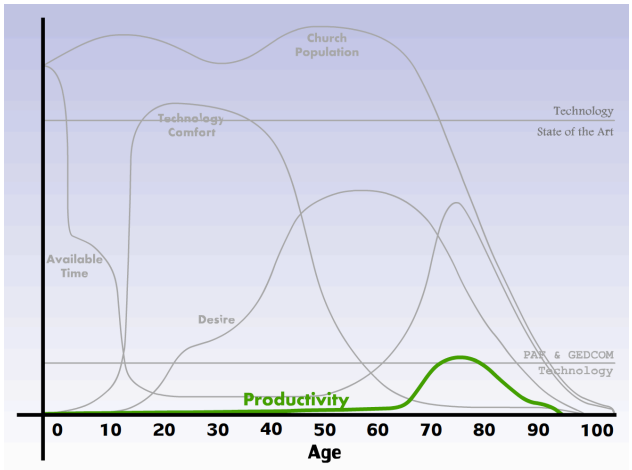


Figure 11. Genealogy productivity.

Figure 11 introduces two horizontal lines (in grey): 1) The top line reflects the current state of the art in software and hardware solutions across the high technology industry (independent of family history applications). With respect to family history research, the state of the art we are concerned with most is the ability of genealogy software solutions to assist users in finding their ancestors and managing their work (see Section 4). 2) The lower line reflects

the *perception* among the target population of the value (or confusion) that current family research technology brings them.[3]

Informal surveys reveal that most genealogy software products provide a repository for researchers to store their results. The least helpful software packages provide almost nothing more than a pedigree chart, while the most sophisticated solutions may provide pointers to potential information sources, or even fine-grained pointers to potential ancestors.

The resultant productivity curve shown in Figure 11 reflects the reality that most family history research in the LDS Church is performed by retired individuals whose relationship with technology ranges from modestly helpful to somewhat confusing.

3.6 Influences on Productivity

As shown in Figures 12-15, productivity is affected by several forces that interact with the population age curve.

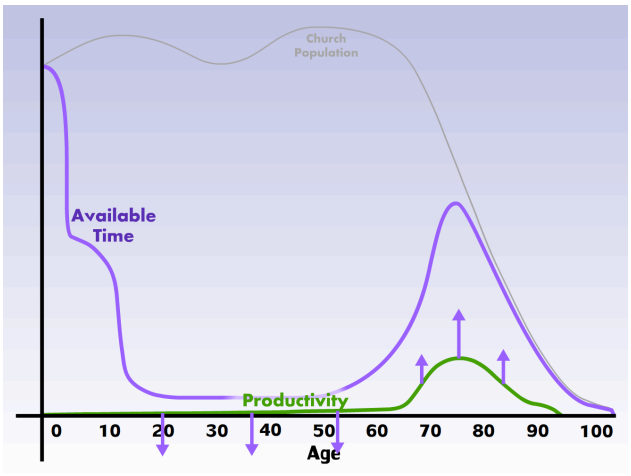


Figure 12. Productivity vs. available time.

Figure 12 reflects the somewhat obvious result that lack of time is a bounding function on genealogy productivity. Less available time is a damping influence, and more available time is a strengthening influence.

Figure 13 reveals that for the subset of the population comfortable with technology, the available technology provides a boost to productivity. However, for the older, less technically savvy generation, technology may actually provide a damping influence because of the cognitive burden

[3]When a LDS Ward Family History Consultant says something like, "First you have to GEDCOM it," or "Remember always to backup and restore instead of saving or you'll lose everything!" you begin to gain a sense that the technology might just be adding a layer of confusion for the average genealogist.

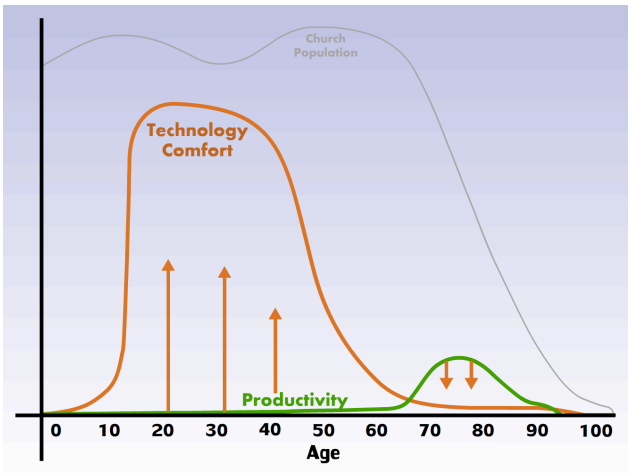


Figure 13. Productivity vs. technology comfort.

it often imposes on the user. The relatively high productivity of the older population reflects, more than anything, a triumph of time over technology.

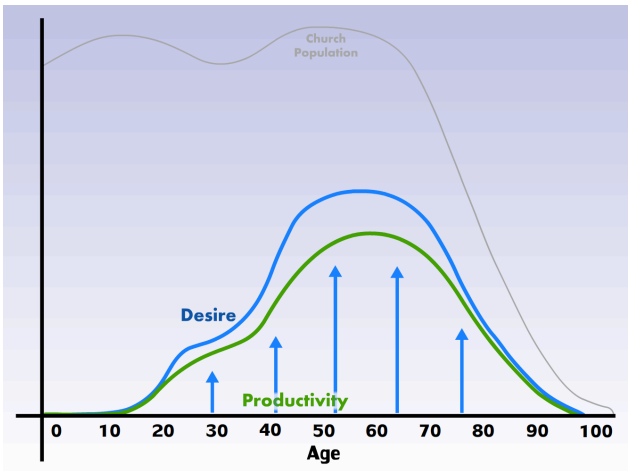


Figure 14. Productivity vs. desire.

Figure 14 depicts the rather straightforward result that desire to do genealogy research has a positive effect on productivity.

Figure 15 suggests that when research technology is cumbersome or imposes an excessive cognitive burden on users, it can actually create a downward pressure that works against desire. This result is mirrored in Figure 1 with categories such as, "I tried, but it was too confusing."

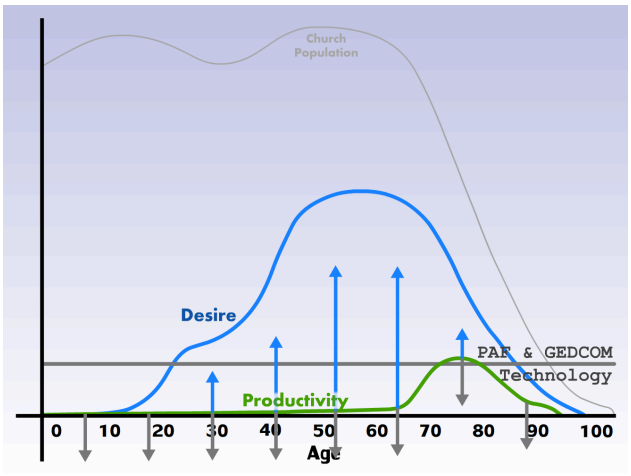


Figure 15. Productivity vs. existing technology.

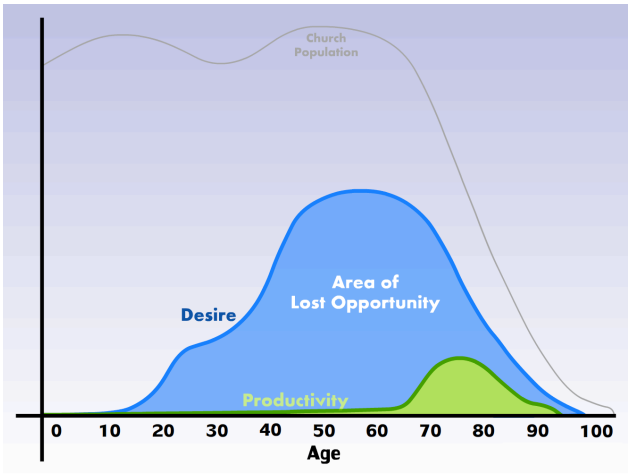


Figure 16. Area of lost opportunity.

3.7 Area of Lost Opportunity

Figure 16 reflects our collective lost opportunity, portrayed as the difference between the area under the "Desire" curve and the area under the "Productivity" curve. This area is lost in the sense that many individuals would be doing more family history research and enjoying that experience, but fail for a variety of reasons, as we have just discussed.

3.8 Stretching the Technology Comfort Zone

Recall from Figure 13 that a lack of comfort with existing technology exerts a productivity damping effect on the currently most productive cross-section of the population – the older generations. Figure 17 reflects the idea that by introducing innovative software solutions that raise the comfort level of users, the net effect would be a boost in the productivity among the most active segment of the population. In practice this means providing innovations where the most technically naive users have the greatest potential gain.

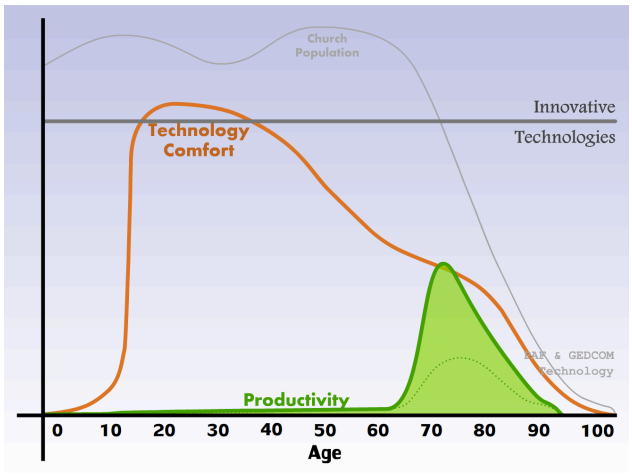


Figure 17. Stretching the technology comfort zone.

Figure 18 illustrates the idea that innovations in usability result in a maximal utilization of available time, even when the chunks of research time are relatively small. As we discuss in Section 4 context preservation plays a significant role in this productivity boost.

3.9 Positive Feedback Loop

As our research studies revealed, lack of productivity appears to be the most significant angst-inducing factor for genealogists who try and fail (see Section 2). Figure 19 illustrates the positive spiral that results from truly innovative technology that meets the most naive user where they most need assistance. The immediate outcome for users is a successful experience without pain and confusion. This immediate boost in productivity raises the desire of the user to do more.[4] Their desire to replicate this enjoyable productivity experience leads to a greater allocation of available time. Within the increasingly available time, more productive experiences are had, further feeding desire, available time, and another round of increased productivity. This cycle continues until it reaches the *actual* available time (in other words, the time available for activities that are satis-

[4]Desire is not to be confused with the survey result that individuals *value* family history research already – value and desire are clearly not synonymous.

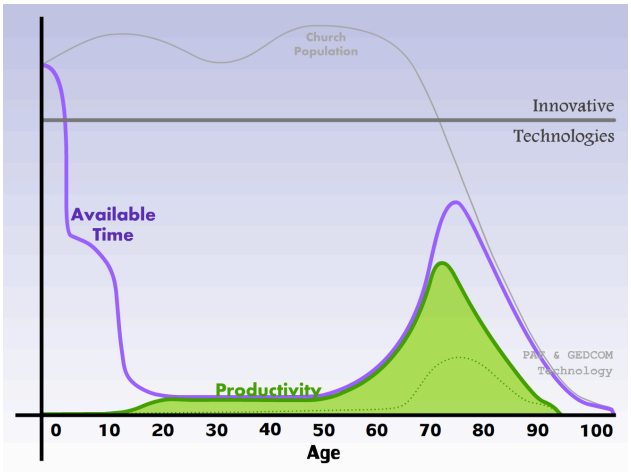


Figure 18. More productivity within the available time.

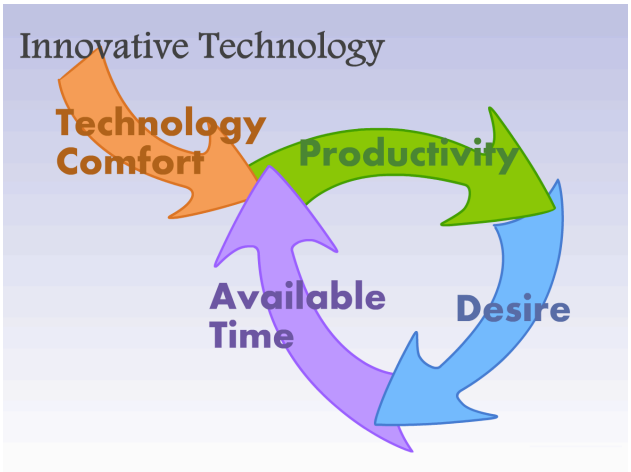


Figure 19. The positive productivity feedback loop.

fying and enjoyable).

Figure 20 places this positive feedback loop back into the context of our age-based graph where desire has risen, as well as available time.

3.10 Net Productivity Gain – Reclaiming the Lost Opportunity

Figure 21 demonstrates the ultimate goal of this discussion – the realization of a significant gain in productivity via the application of the right set of enabling technologies. Figure 22 places this improved productivity against the original productivity curve introduced in Figure 11. It's impossible to assert empirically at this point what the actual curves will look like, but we are confident that a dramatic increase in the effectiveness of family history research is possible when the right enabling technologies are brought to bear in the researcher's behalf.

4 The 20-Minute Genealogist

When you boil down the anecdotal data, the empirical survey data, and the analysis of forces on productivity, a powerful insight emerges:

> It is true that managing data is a fundamental requirement of genealogical software – including storage, display, and sharing – but data management is *not* the killer application for researchers.
>
> *The single greatest limiting factor on the productivity of individuals who believe genealogy work is important is the overhead required to preserve one's own context from week to week.*

There are really two aspects to this problem: 1) Setting up a research process or context within which an individual can track their own genealogy research; 2) Maintaining this context over time.

By "research process" we mean some set of notes, documents, or tools that an individual may utilize to keep track of their research goals and subsequent progress. To give one example, you will sometimes hear an active genealogist say something like, "I'm working on my maternal grandmother's line." Part of genealogy research, therefore, involves management of graph traversal both up and down a family tree. With respect to movement up the tree, the complexity grows exponentially by 2^n, where n is the number of hops up the tree from a starting point. The effect of this relationship is that the number of ancestors at any given level is double that of the level below it.

Traversing a family tree downward from some ancestor grows even more rapidly by m^n where n is the number of hops down the tree from a starting point, and m is the average number of children in each family. Where average family size is greater than two, which is historically typical, the growth going down the tree is much greater than the growth going up the tree. Managing the traversal of a bi-directional exponentially expanding tree is not a natural (or easy) task for most family history researchers. And yet it is essential to making definitive progress in family history research. In this case, graph theory (from mathematics and computer science) is already flush with methods and ideas which a context-preserving genealogical software system could leverage.

The establishment of one's own system or context for genealogy research is a difficult problem, and there are as many potential systems as there are genealogy researchers.

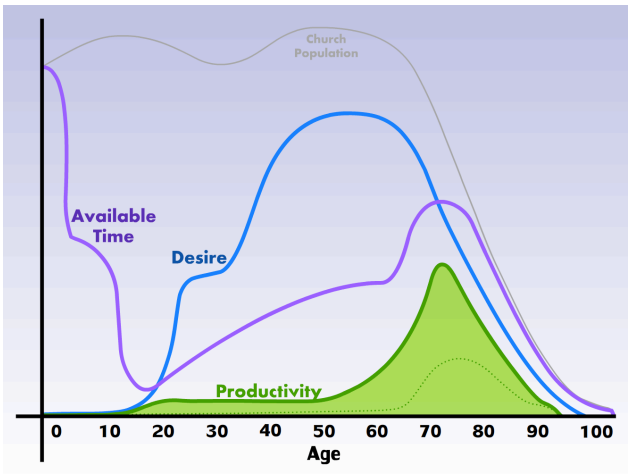


Figure 20. Increasing desire and more available time.

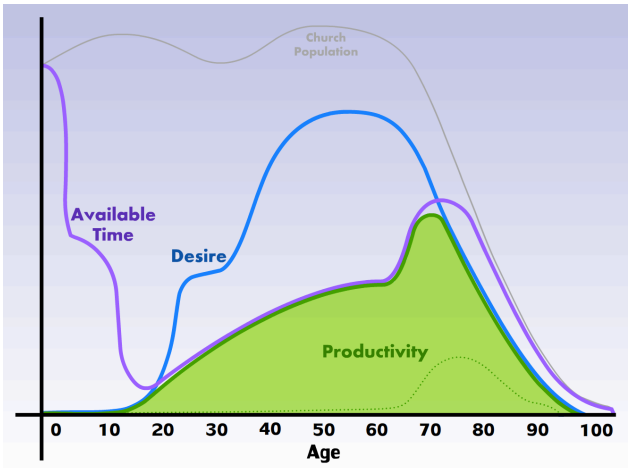


Figure 21. Significant productivity gain.

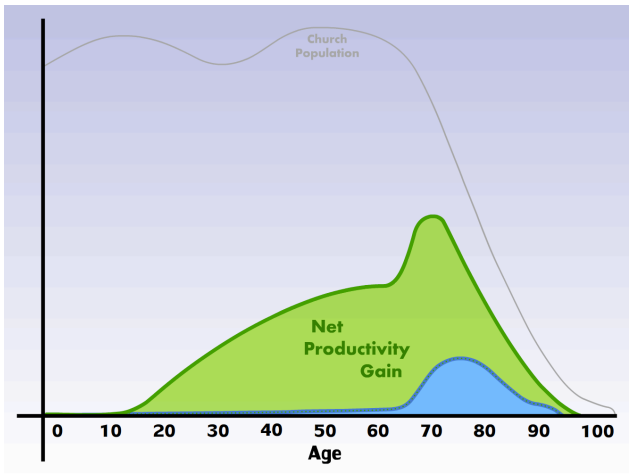


Figure 22. Net productivity gain.

The effectiveness of these disparate personal systems is distributed across a broad spectrum from highly effective to essentially worthless in practice. If we assume a normal distribution of the effectiveness of individual systems for context preservation, we can suggest that most active family history researchers fall below their potential due to the lack an effective process for managing their own research.

Independent of the establishment of individual systems of process management, our perception from anecdotal observations is that most individual systems rely in large measure on a sufficient immersion in on-going genealogical research from week to week in order to help preserve context and continuity. One post-retirement genealogical researcher we interviewed suggested that managing one's family history research wasn't that difficult, you just had to stay at it and be consistent. This individual also suggested that people tend to lose their focus when they stop for a week or two and then don't have the momentum when they resume – they sort of forget where they were and what they were doing. Other interviews with active genealogical researchers suggested a consensus that as much as an hour a week simply wasn't sufficient time to be productive. These observations reinforce the notion that genealogical research is the domain of the retired community or at least those with plenty of time on their hands on a regular basis.

The power of the 20-Minute Genealogist metaphor is the imposed reality that essentially *all* context maintenance is performed by the system, rather than by an individual researcher. In addition to managing the user's data, the system would have to manage the user's overarching goals, the degree and type of information desired per record, the preferred direction of the traversal of the family tree, and other value-based parameters.

In our ultimate scenario, the interaction plays out something like this:

User: (Logs in.)

System: "Last time you were here we were looking for information about your paternal great-grandfather's brother John. To complete the record for this ancestor, you need a death date and place. On the right are suggestions of possible matches for this individual. If none of those produce John's missing death information, you may try searching in the following places ..."

User: (Spends 10 minutes clicking through recommended links. Finds a very likely candidate for the individual in question.)

System: "We need to verify the relationship of this individual to your existing family tree."

User: (Spends another couple minutes looking for information to verify that this is indeed the individual he was

looking for. Cell phone rings. Needs to take this call. Logs out.)

One week later...

User: (Logs in.)

System: "Last time you were here we were verifying the death date and place for your paternal great-grandfather's brother John. We had worked through the top four mechanisms for verifying this information. I recommend that you continue with the remaining five recommended verification sources."

User: (Spends 15 minutes cross-checking verification sources, and becomes confident that he has the proper individual and the proper death date and place.)

System: "Your paternal great-grandfather has four more siblings. If you'd like to look for one of them next just click the individual and we'll see what we can do to help."

Thats the basic idea. However, to make this happen in practice, many operational details must be worked out. The students of CS 428 have made a dent in the fundamental challenges, but at this point, their key deliverable is the 20-minute metaphor. This metaphor forces software designers to ask the question: What are all the things that my software system must do to make an average genealogy researcher productive in 20 minutes a week? We believe that a comprehensive answer to that question must include context preservation tasks – the researcher should not have to develop an extensive documentation system, manage to do items, or figure out how to traverse a complex data structure.

Solving the context preservation problem will enable the largest (but busiest) population segment to be dramatically more productive. We will then witness a dramatic surge in genealogical research and begin to reclaim our lost opportunity.

5 Acknowledgements

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