

Giftng Technologies

Kevin McGee and Jörgen Skågeby

Department of Computer and Information Science, Linköping University.
581 83 Linköping, Sweden
{kevmc, jorsk}@ida.liu.se

Abstract. File-sharing has become very popular in recent years, but for many this has become synonymous with *file-acquisition*. However, there is strong evidence that people have strong *giving* (or *giftng*) desires. This suggests an opportunity for the development of *giftng technologies* – and it also suggests an important research challenge: *what needs and concerns do gifters have and what technologies can be developed to help them?* In this paper, relevant literature and phenomena are reviewed and an initial study of an online sharing community is described which revealed a number of important giftng desires, dimensions, and design possibilities for giftng technologies. The paper concludes by suggesting some ways these results can inform future research into giftng desires – as well as the design of specific giftng technologies.

1 Introduction

“...Some people distribute several thousand movies and I don’t understand what their driving force is.” – Henrik Pontén, lawyer

Could the ability to *give* be one of the central features that determines the popularity and success of computer-mediated “sharing” activities, communities, applications, and services?

The popular combination of pervasive computing and digital media has recently contributed to a worldwide *sharing* phenomenon. Systems such as Napster, Gnutella, and Kazaa make it easy for people to share music, software, and other digital media. This has generated quite a bit of controversy and concern around issues of law, economics, and political freedom; it has also resulted in a great deal of innovative technical development, both on the part of those who want “sharing to remain free” and on the part of profit-oriented companies. However, much of the discussion and development activity seems based on an assumption that *file-acquisition* is the main or only motivation of “sharing” participants. Thus, the commercial, “non-sharing” alternatives being developed all center on various ways to make it easy, reliable, and economically viable for consumers to legally *acquire* quality items.

However, there is another dimension to the sharing phenomenon that is not as widely discussed – and which suggests an unexplored opportunity for developers, providers, and consumers of digital media: the strong human desire to *give*, whether it is advice/assistance (newsgroups), digital goods (music, literature, software), or other

resources (storage, processing cycles). Much sharing is almost certainly motivated by reciprocity in one form or another; many times people clearly do “give in order to receive.” But there are significant indications that some acts of sharing are difficult to explain easily in terms of reciprocity: for some people, it seems that non-reciprocal giving is not only enjoyable, but important.

In order to discuss a variety of gift-giving behaviors, and to distinguish gift-giving from other aspects of “sharing”, the term *gifting* will be used throughout the rest of this paper. Stated in its simplest terms, gifting involves individuals or groups giving in ways that may not directly, immediately, or obviously benefit the giver. This intuitively straightforward definition of gifting is actually difficult to make precise. Indeed, much debate in the literature on gift-giving (see [1] for an overview) centers on the question of whether such gifting does in fact exist – and if so, the characteristics that distinguish it. The purpose of the research reported here is not to contribute to those discussions; rather, the focus here is pragmatic, so it is sufficient if there are examples of gift-giving activities where it is not easy to determine when, how, what, or whether someone “wants or expects something in return.” If such gifting desires and behaviors exist, it suggests certain opportunities to improve or invent *gifting technologies*: mechanisms, applications, and services that help people gift in easy, effective, and meaningful ways.

There are of course obvious examples of technology-use where gifting seems to be a central characteristic. However, the question here is whether gifting is a more widely-occurring phenomenon; whether there are other, less obvious gifting desires that may as yet be unmet (or only partially met) by existing technologies and services; and how to begin contributing to the development of gifting technologies to meet those needs. Briefly then, the goal is to begin highlighting some of *the research and implementation issues and concerns that need to be addressed when designers look at the world from the perspective of gifting individuals*.

In order to do this, the literature on gifting is being examined; various forms of online gifting are being studied; initial designs based on this research are being developed; and the implementation of prototype gifting technologies is being prepared. In the space of this brief paper, certain aspects of the research to date are summarized.

2 Related Work: Developing Gifting Technologies

A review of research literature reveals very little that is directly related to the design and development of technologies that specifically support gifting desires.

To be sure, the importance of gift-giving is widely accepted and documented. In addition to the vast literature on the subject, people devote a surprising amount of time, energy, and other resources to gift-giving and gift-exchange; consumer expenditure surveys (of Europe and USA) indicate that 3-4.3% of all consumer spending is devoted to gifts [2]. Of the little research devoted specifically to the design of gifting technologies, among the most relevant is the work of Taylor and his colleagues [3] in which they concentrate on a model of gifting-giving that emphasizes exchange and reciprocity in the context of teenagers “messaging” each other on their

mobile phones. This work nicely illustrates how studies of gift-giving among technology-users can be used as the basis for developing designs for technology that can further support gift-giving (broadly defined).

The remaining sections below summarize relevant insights from other sources: the larger literature on gift-giving – as well as a brief summary of online “sharing” phenomena.

2.1 Literature on Gifting

The majority of the literature on gifting is framed relative to economic models of exchange and reciprocity.

In classic economic terms, everything – even an “altruistic act” – is conceived in terms of return or expected return. But although this model works well for many aspects of economics, gift-giving cannot easily be explained entirely in terms of traditional economic concepts such as transaction, profit, utility, or even barter.

How does one, for example, explain the “exchange of holiday gifts” in terms of market efficiency or utility? Similarly, how does one calculate or quantify the “increased positive reputation” as a *return* on “the donation of time to a good cause”? Finally, how does one measure reciprocity for non-profit organizations that “work to make the world a better place”? Research on gift economies [4] raises and highlights certain aspects of gift-giving and reciprocity that are not yet well-understood. For example, in exchange-based economies, individuals and institutions act in order to increase *their own* return, whereas in gift economies, individuals and institutions may act to increase the “return” of existing goods, services, or finances – but *for (specific) others or for the community at large*. As Garreau argues, “A gift economy is indeed an economy – you can rationally expect that if you tender a gift, sooner or later you will receive some kind of return. But the return is indirect” [5].

Thus, proponents of alternative models [6] argue that certain gift-giving phenomena require a revision or replacement of standard economic explanations. This issue will not be pursued in any further detail here, except to note that different gift-giving phenomena suggest the need for new distinctions and concepts in addition to traditional concepts such as self-interest and personal gain. Below is a summary of different models of gift-giving; no attempt is made to be comprehensive, merely to indicate some of the major models of gift-gifting.

Pseudo-Gifting. For the purposes of this paper, gift-giving that can be easily assimilated to economic models of transfer, exchange, or return is termed *pseudo-gifting*. This includes such gift-giving as the giving of business gifts, the distribution of free product-samples, donations to charity for the tax benefit, or even giving things away in order to meet people and make friends. There is a vast literature on this topic (see [7] for a summary), and some recent work to explain different internet gift-giving phenomena in these terms. Thus, some researchers [8] claim that it is direct personal gain that motivates the use of file-sharing applications, while other researchers [9] explain what they consider “apparent altruism” in terms of the ease with which it is possible to transfer, replicate, and distribute digital goods.

Social Gifting. One of the main alternatives to economic explanations of gift-giving comes from the social sciences. By this view, the gift has a social rather than

clearly economic function. This social function is usually explained either in terms of social pressure to maintain certain social conventions or the expression of social bonds and relationships [10]. The classic research here is the work of Maus on cases of extreme gift-giving [11], such as the Native American *potlatch* which is a feast given for the entire tribe by a single, successful member. Maus argued that such examples of large-scale generosity are enforced by social custom and further claimed that many gift-giving phenomena in traditional societies can be explain in terms of social obligations to reciprocate. Arguing along similar lines, some researchers suggest that the gifting of software development in the open source movement happens mainly because the community is relatively small and there is social pressure to contribute [12]. The previously-mentioned work of Taylor on teenage “text-messaging” is also within this tradition, based as it is on a claim that online “social practices ... closely resemble forms of ritualized gift-giving.” Recent researchers have elaborated this model [13] or extended the social analysis in other ways [14]. Douglas, for example, argues that there are social conventions that arise not so much from social pressure as from conventional expectations about “appropriateness.” Thus, “...in our society the line between cash and gift is ... carefully drawn. It is all right to send flowers to your aunt in the hospital, but never right to send the cash they are worth” [15].

Ideological Gifting. There are situations where neither self-interest nor social pressure adequately explain certain aspects of online gifting; rather, the gifting seems best explained by reference to ideology, in the sense that the gifting is intended to “make the world a better place.” The ongoing, politically-motivated debate about digital sharing, freedom of speech, the extent of copyright, and the relationship between ownership and the public good [16] highlights many of the issues relevant to this form of gifting. One example that is often at the center of these debates is the “free software” movement initiated by Richard Stallman, which is as much based on political ideology as anything else: “I consider that the golden rule requires that if I like a program I must share it with other people who like it” [17]. Similar motivations seem to be at work in cases such as the Gutenberg Project, an attempt to make literature that is no longer under copyright freely-available over the Internet.

Altruistic Gifting. Finally, there are cases of gifting that are difficult to explain in the other terms – where people seem to simply, generously gift “with no strings attached.” As one example of such gifting, consider Comfort Stand, a Web site that simply makes little-known music freely and legally available for download: “Having no business model or profit motive we strive to bring you recordings that we find interesting, compelling and downright enjoyable.” There is less theory about what motivates altruistic gifting, but Andreoni [18], for example, proposes a “warm glow” model of gifting where he suggests that the very act of giving is what provides the gain for the giver, and not so much the results of the gift.

2.2 Examples of Internet Gifting Phenomena

There are a number of online gifting phenomena and activities that give some indication of the reasons, ways, and things that people find important to gift.

Most of the traditional examples of gifting (mentoring, *pro bono* work, charitable donations, and the like) all have their counter-parts on the Internet, and there are many online communities and activities in which gifting is a central characteristic: newsgroups, Web logging (“blogging”), file-sharing, and the donation of digital and computational resources. In fact, the Internet was initially characterized by a great deal of volunteer effort and “community spirit”: participants shared advice, technical support, and the like. One could even argue that since there was so little to *get* in the early days of the Web, much of its initial development was driven by people who wanted, for various reasons, to *gift*.

The categories of *what* people gift online can also be very revealing.

Expertise. Perhaps the most common example of online gifting is in the form of expertise, broadly defined. This has been the subject of discussion since the earliest days of the Internet. This form of gifting is made even more significant by the fact that posting (or contributing) something to online forums is not always trivial; there are often many social *and* technical conventions, requirements, and restrictions. Even more, people who volunteer to moderate discussions often do so in the face of great hostility, constant criticism, and very little gratitude. In addition to expertise that is directly responsive to individual requests, there are a great number of web sites with free medical advice, consumer reports, technical support, travel updates, and the like.

Artifacts. The current file-sharing phenomenon centers largely on digital artifacts, such as music, books, movies, and software. Although this is the focus of current controversy, it is important to remember that the exchange of many digital goods does not violate any existing copyright law; many goods are no longer under copyright – or were created (or subsequently released from traditional copyright restrictions) specifically with the intent that they be freely-available. Since “unlimited digital copying” is one of the key focal-points, the recent appearance of services that facilitate the gifting of physical artifacts – that is, the *transfer of possession* (rather than distribution of copies) – is of interest. Book Crossing, for example, is a free online service that combines the Web and messaging to allow participants to notify other participants that they have finished reading a good book and left it in a specific public location – and providing information about the nature and location of the book.

Storage and Bandwidth. There are a number of projects based on users donating unused resources from their networked machines. To mention just two examples of projects that make use of “spare bandwidth or cpu cycles”, the SETI@Home project provides a screen-saver that allows the host computer to devote processing cycles to the analysis of data – similarly, Radio Free Virgin is a streaming music service that allows participants to redistribute (re-stream) the music-stream they receive to other computers connected to the Internet. As an example of gifting storage, many universities, foundations, and individuals donate space on their computers to make publicly and freely available different resources.

3 Research Problem

The initial survey of the literature and online gifting phenomena suggests that gifting is indeed a significant phenomenon. However, although there is some research

on the particular gifting motivations and behaviors that exist in online communities, most of this work seems to have been done with the intention of either supporting an existing explanation of gift-giving – or of calling into question the adequacy of such explanations. As valuable as this work is, it is often difficult to apply it to the design of gifting technologies. The research problem, then, is to identify and analyze gifting in ways that highlight issues relevant to the design of gifting technologies. In particular, the goal here is to see whether there is evidence of strong gifting desires in existing online communities – and, if so, what those gifting desires might be, how participants satisfy those gifting desires with current technologies, and what issues exist that have the potential to inform the design of gifting technologies.

4 Study

In order to begin researching the interaction between gifting-related motivations, goals, behaviors, and uses of technology, a qualitative study of a file-sharing community was conducted. Qualitative research was chosen because online gifting behaviors and motivations do not seem yet to be well enough understood to conduct a rewarding quantitative study. More quantitative studies are obviously needed, but no quantitative analysis is included in this report, either as regards particular social phenomena or as regards correlations between gifting motivations and feature-use. Furthermore, there are two types of gifting not explored in the work reported here: *pseudo-gifting* and *ideological gifting* with the specific motive to undermine the current legal or economic framework (or reasonable and viable alternatives). It is difficult to imagine the development of many kinds of viable commercial or non-profit gifting-oriented communities or services if the main motivation of the participants is to “make things available” in violation of current (or plausible) law and various rights of ownership and redistribution.

4.1 Method

For this study, the data was collected from a web discussion group devoted to a specific file-sharing tool. The discussion group was selected on the premises that it showed a lot of activity, many different users (usernames) participated in the discussions, and that the sharing tool itself had just incorporated certain features that enabled increased control over the act of giving (uploading). The main feature that was included was the buddy list and its sub-features, such as sharing with buddy list only and giving preferential gifting treatment to buddies. This one feature generated enormous debate, which revealed a number of gifting concerns, desires, and behaviors present in the community. The research method consisted of email exchanges; public discussions based on postings to online discussion forums for file-sharing communities, and an analysis of messages in an archive for one of the file-sharing forums. Initially, thirty users in a file-sharing community were sent questions about strategies and corresponding features they used when sharing. Twenty of these users responded, and in some cases follow-up questions were asked to clarify details of their comments. Additional questions were posted to a Web forum devoted to the

filesharing community; this generated another seventy-two responses. Finally, an archive of messages that had been posted to the forum over a five-month period (July to December 2003) was examined. The collection of answers and previous messages from the forum resulted in a total of 580 messages of various lengths. The responses, discussions, and archive materials were coded and analyzed with respect to gifting motivations, features, and usage – and an overall analysis was performed to correlate the responses, behaviors, and technology-use of participants. In addition, for this study the identity of individuals is protected by changing the name of the community studied (to “*FoosterShare*”), and, where necessary, the names of particular individuals.

4.2 Methodological Challenges

The very nature of many existing file-sharing communities poses serious methodological challenges for on-site data-gathering, discussion, and analysis. In particular, there are issues related to the current “underground” nature of much file sharing, the desire for anonymity, and the increasing prevalence of “unwanted gifts” (spam, viruses, and the like). Thus, it is not always easy to explore what gifting desires individuals *might* have (under other circumstances) – nor which gifting technologies *could* be interesting. This is why, to the extent possible, observation was combined with actual interviews and discussions with participants. Unfortunately, such interactions are often limited in various ways. For example, in many file-sharing communities, individuals prefer to remain anonymous, and are able to do so by either remaining in the background (“lurking”), by quietly *taking without giving* (“leeching”), or by frequently changing their online identities. One consequence is that many people simply do not participate in private or public discussions; and even if they do participate, follow-up questions and discussions are not always possible.

5 Discussion

As seen in the survey, studies of giving have identified a number of motivations. In the study reported here, there was evidence that gifting was present and important for at least some of the participants; indeed, there was evidence of all the categories of gifting motivations mentioned earlier – and two additional categories: *apparent pseudo-gifting* and *fear-based gifting*. There was also evidence of two dimensions that can inform the design of gifting technologies: *gifting openness* – and *gifting pro-activity*.

5.1 File-Gifting Motivations

Apparent Pseudo-Gifting. During the study there were indications of what could be called *apparent pseudo-gifting*. Gifting in this category is similar to *pseudo-gifting* in that *apparent pseudo-gifters* also calculate what to gift based on what other downloaders are gifting. But their reactions – if any – to an obvious imbalance are

based on less immediate considerations. In some cases, they take account of history – noting that new participants might not yet have much to share, or more seasoned users may temporarily or permanently be unable to share more (crashed diskdrive, virus). At the more benevolent extreme of this category were *apparent pseudo-gifters* who measured the exchange in very general terms – almost as an exchange between what they gift and “the general availability of goods in the community at large.” As one participant wrote, “Personally I share with everyone, that’s how I’ve made most of my collection, so I think it’s fair to give some back.” Thus, there were cases that initially seemed like straightforward *pseudo-gifting* behavior – cases where leeches were bumped or banned. On closer examination (and interaction), however, analysis sometimes revealed that the *pseudo-gifter* was actually an *apparent pseudo-gifter* who, after bumping leeches, would continue to allow other downloaders who were gifting to the community at large, even if they were not gifting to the *apparent pseudo-gifter*.

Social Gifting. During the study there were only a few cases of fear-based gifting that had to do with reputation and social pressure: “if I don’t gift – there might be reprisals.” (As other researchers [6] have noted, in many online communities anonymity is too common and there are simply too few means for enduring social reprisals of any consequence; thus, it seems unlikely that social pressure has the same significance that it does offline.) A number of people in this category gifted in order to maintain the overall well-being of the community. This should not be confused with the common occurrence of *socially-motivated pseudo-gifting*, in which participants share “in order to find or make friends.”

Ideological Gifting. Although many ideological gifters were interested in challenging what they feel is an “unjust system” of content ownership, distribution, or artist remuneration, there were also many participants who stressed another aspect of the “information wants to be free” theme, namely that “the spirit of sharing” was an important aspect of society, and therefore the gifting of public-domain material is a way to foster this spirit.

Altruistic Gifting. Unlike the study of mp3 newsgroups conducted by Levine [6], there were a number of indications of *altruistic* gifting in several different forms. For example, a number of participants were active gifters even though they rarely sought or received any feedback about it – and in some cases, rarely downloaded anything themselves. In some cases, these gifters motivated their continued gifting by saying they felt it was important that exclusive, hard-to-find, or out-of-print items were made more widely-available to anyone interested. There were even examples of gifters who shared some commonly-available items so that other participants might discover and download other, less-known items; in other words, they used the popularity of certain gifts as a way to introduce community members to other gifts of potential interest.

Fear-based Gifting. Because the atmosphere of the current file-sharing culture is dominated by legal and economic issues and activities, it was no surprise that many behaviors were motivated by “fear of being caught.” Thus, if people felt that gifting some particular item put them at personal risk, they would often stop openly gifting the item. More surprising was the fact that the actions of a number of people were motivated *not* by fear of personal punishment, but rather by *fear that certain actions/materials would make it difficult or impossible for them to continue gifting*. For example, there were cases where gifters removed what they called “RIAA-owned

stuff” in order to be able to keep gifting other, public-domain material without being harassed.

5.2 Gifting Dimensions

The study revealed two dimensions of gifting that are potentially useful in the design of gifting technologies: *gifting openness* and *gifting pro-activeness*.

Gifting Openness. One distinction that was clearly evident among the file-sharing participants studied was the difference between those who were *open gifters* and those who were *restrictive gifters*.

Open gifters are people who do not use restrictive mechanisms – they maintain shared folders with unrestricted access and don’t pay much attention to the outgoing transfers (unless they are actively trying to facilitate some aspect of gifting).

In open gifting some users even put extra effort in to making sure downloaders get what they want as effectively as possible. As one user puts it: “...sometimes if I tell someone to get something and it doesn’t start right away I’ll twiddle with the settings for a min[ute] until their transfer starts.” Some users are even consistently pro-active in this sense: “Well, when I run across someone who shares musical taste in common with me, I often message them if I see they have a low-quality version of an album I’ve ripped myself ... so they can get my better version. I’ve also gone out of my way on numerous occasions to help someone complete an album outside of [FoosterShare], either through IM [instant messaging] or email or even sometimes uploading the tracks they missed to my web site. It’s a great feeling to help someone enjoy the music you love.”

Somewhat surprisingly, bandwidth concerns were sometimes used to justify open gifting: “if someone wants to download from me at 2-3k/s and take millennia, I don’t care.” Note that other open gifters responded to the same situations by *actively* helping downloaders who had slow connections; these open gifters reasoned that it was better for the individual *and* the community if that person was prioritized in the queue to speed the completion of that download. (See below for cases where other gifters responded to this kind of phenomenon by *restricting* their gifting.)

Restrictive gifters use different mechanisms to restrict or ban different classes of downloaders for different *gifting reasons*. Note that although there are many *pseudo-gifters* who restrict access to their files, restrictive gifters are still gifters: *their reasons for being restrictive are gifting-related*.

Restrictive gifters frequently use buddy lists and this is a controversial and much-debated issue in the file-sharing community at large. Some participants feel that the combination of personal communication and file-sharing will be “the end of file sharing as we know it.” Other participants, who use and like buddy lists, often motivate their use in terms of *improved gifting*. One variation on this involves participants who are conducting a campaign against what they consider “cold leeching ideology” by attempting to promote community-level “gifting” of social interaction; they do this by restricting their gifting of digital goods to people who contact them personally. (Naturally, there are also strong reactions by many participants against

being forced into interpersonal interaction: “I don’t think it’s very efficient to strike up a friendship with someone every time you want to download a file.”)

Although many restrictive gifters express aversion to banning options, they do make use of them. Counter-intuitive as it may seem, the act of banning or blocking an uploader is sometimes actually gifting-motivated. For example, some gifters will notice that particular downloaders have slow connection-speeds and ban them “for the greater good” – that is, so that *more people can benefit* from the gifted files. As one gifter put it, “no point in having a user take up one download slot forever, better to give to those who can get.” This is just one way people motivate “banning as gifting”, but there are actually a number of others; for example, the banned person may be suspected of trying to “collect incriminating evidence” – and the banner is trying to “protect the community and its ability to continue gifting.”

Switchers. A number of examples of *switching* were observed, where restrictive gifters switched to open gifting (and vice versa). One participant who switched to open gifting from restricted gifting explained the motivation this way: “Trading has its place on the Internet I suppose, but it’s a recipe for disaster on a P2P network. I had [FoosterShare] configured so that only those on my user list could d/l [download] from me ... Then I thought that’s not right! Having the ability to ban and put restrictions on who can access your files on a P2P file-sharing network is shite.”

Gifting Pro-activity. Another gifting dimension that became apparent was the degree to which participants were pro-active as gifters. Much computer-mediated gifting can occur “automatically,” so this dimension involves a number of subtleties.

Passive gifters simply “share their folders”; they do not pay attention to different requests that are posted to the community, they do not monitor access to their shared files, and they do not use mechanisms that would allow anyone to contact them directly.

Responsive gifters tend to make gifts available only in response to various kinds of requests, such as postings in public forums or private messages.

Pro-active gifters made frequent use of features such as personal messaging and matchmaking. For example, some pro-active gifters reported that they messaged other users who shared the same taste when they found/had something interesting for them: “...when I find something interesting for another user, I will send a message on the client”. These gifters were also pro-active in discovering if others had gifting needs they could meet; such gifters, for example, regularly read posted requests for material or scanned lists of “things I like (or want)” that individuals maintain and make public.

5.3 Designs for Gifting

The described gifting motivations and dimensions suggest a number of design possibilities for gifting technologies, some of which are briefly sketched here. There are obviously different technical, security, and social consequences that impact the viability of most technical development, so these ideas are not meant as proposals, only to indicate possibilities worth exploring.

Restrictive/open Gifting. The research suggests that although gifters may want to restrict their gifting in various ways (time, load, personal profile), the control-

mechanisms should take their gifting values into account (“grant access to downloaders who may not be sharing with me, but are sharing with the community at large”).

Passive/active Gifting. The most extreme *passive gifters* would like to be able “set automatic gifting once and forget it” – and there are indications that they want various kinds of control over these initial settings. *Pro-active gifters* could benefit from mechanisms that help them to advertise, to locate particular individuals or communities that want or need them, or to annotate material in various ways that make it easier for them to contribute to needy communities, archives, or projects.

6 Conclusions

This paper provides only a brief indication of a number of issues that are currently being studied in more detail. The research to date is encouraging and work is in progress to leverage design insights in various ways; there are three main areas of future work that seem to be particularly important to this effort.

Gifting-related Motivations. There may be a number of new or unnoticed gifting motivations or goals that exist in the context of using particular gifting technologies. One area of interest is to study other types of online gifting communities with an eye to identifying such desires. An additional area of interest is to conduct studies on the possibility of new gifting motivations that may arise in the development and use of innovative technologies and services.

Gifting-related Technology Analysis. It will be important to study technology use and features of communities that are more clearly gifting-oriented. This would include the study of gifting mechanisms and technologies used in education, non-profit and charity work, Web logs (“blogs”) – as well as technologies used in the dissemination of research and public-service information.

Designs for Gifting. Two aspects of future work on gifting design are important to highlight here. The first is to continue the process sketched in this paper: arriving at design insights and possibilities by looking at the motivations, social practice, and technical use of gifting communities. The other involves developing and testing prototype gifting-technologies – particularly for families, health-care and public service, education, and large organizations.

In conclusion, the research to date suggests that there are fundamentally different technology needs and design problems that appear when a designer looks at the world from the perspective of someone who wants to gift more easily, effectively, and meaningfully. To echo the beginning of this paper, it seems possible that even the creation of powerful, comprehensive, intuitive, and economically viable services for *acquiring* digital goods may not answer all the strong needs that find expression in sharing. In fact, it may be that when the current legal and economic controversies surrounding file-sharing have been resolved, powerful and intuitive mechanisms for gifting may be among the ways that successful online services and applications distinguish themselves. And the same could hold true for technology in general; perhaps gifting technologies can be for the benefit of all.

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