

Understanding Collective Content: Purposes, Characteristics and Collaborative Practices

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ABSTRACT

User-created media content is being increasingly shared with the communities people belong to. The content has a role of a motivator in social interaction within the communities. In fact, the content creation and management can be often seen as a collective effort where group members participate to create common memories and maintain relationships. We studied how four communities interact with content that is collectively created and used, i.e. *collective content*. The aim was to explore communities' collaborative interaction activities and the purposes of the content to be able to specify what collective content actually is. We report users' motivations for creating the collective content and its role in community interaction. We determine the factors and characteristics by which collectivity (i.e. the extent to which something is collective) of the content can be described: the *community's contribution*, the *relevance of the content* and the *level of sharing*. Based on the results, we present a new dimension of *collectivity* for categorizing media content and thus being able to better illustrate the community aspects in content interaction.

Categories and Subject Descriptors

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms

Human Factors, Theory.

Keywords

Collective content, content interaction, co-creation, communities, collaboration, ethnography, information quality of communities.

1. INTRODUCTION

Content is data or combinations of it targeted at human access, meaningful to the person dealing with it, and voluntarily possessed and controlled [1]. User-created media content (e.g. photos, videos, multimedia stories) is actively used and enjoyed for various purposes, managed, enriched, edited, and exchanged with other people. With content sharing services, social networking services, blogs and web galleries, such as Flickr, MySpace, Facebook, sharing user-created content has become one of the most significant characteristics of modern Internet usage [13]. Recently, plenty of research has been conducted on personal media content and its usage, see e.g. [10,20,21]. For example, the studies have explored the usage patterns in creating mobile and

snapshot photos, and sharing diverse kinds of content, see e.g. [11,20,21]. Overall, the individuals' interaction with content seems rather much studied in the research area of human-computer interaction (HCI).

Recent studies have shown that the interaction with content is highly *collective*, ranging from collective creation and managing to enjoying and enriching the content together in groups (see e.g. [2,10,11,17,18]). Traditionally in HCI the user of content has been *an individual* user instead of *a group* of users. This is a limiting perspective considering that a significant portion of content is created in common events of various communities and consumed in online forums. For people, creating relevant experiences together with their families and friends – remote and co-present – is an important and creative process. The usage can be jointly enjoying the content, enriching it with tags and description to add semantic meanings, as well as managing it jointly [16]. Moreover, content is created and used by various types of communities: from close-knit groups of friends to ad hoc groups and online communities with no previous relationships.

Still, relatively little is known about the ways in which communities collaboratively interact with media content. In addition, the implications of content being regarded as *collective* have not been studied. A proper definition of *collective content* does not exist, nor are the purposes and motivations for creating or using it understood. This paper addresses these lacks by reporting a study of four communities about their interaction with collective content. We explored what kind of collectively created and used content exist in the diverse set of communities that we studied. Our goal was to understand the motivations in creating content for collective purposes and determining characteristics of collectivity (i.e. the extent to which something is collective) of the content. Based on related research and our hypotheses, we initially defined collective content as “digital media content that is regarded as *commonly owned* as well as *jointly created and used*.” Also, this tentative concept was to be clarified during the study.

The paper is organized as follows. First, the related work of collaboration in content interaction and community theories is presented. Next, the methodology of our community study is presented. Finally, the results about motivations and factors of collective content are introduced, followed with lessons learned and discussion about the impact of the results.

2. RELATED WORK

In the following we introduce existing literature related to communities and content interaction in groups.

2.1 Community as a User

Communities are usually based on common interests, norms and goals [14]. Brint [7] delineates communities as: “*aggregates of people who share common activities and / or beliefs and who are bound together principally by relations of affect, loyalty, common values, and / or personal concern*”. Hence, also the content within the community could be focused around common topics, and be used in similar manners. The motivation for capturing media content and purposes of using it might be uniform within the community – or at least influenced by the community culture.

Sense of community is an important factor when considering community interaction (see e.g. [6,15]). The descriptive framework by McMillan and Chavis [14] about sense of community has four dimensions: 1) *Feelings of membership*, 2) *Feelings of influence*, 3) *Integration and fulfillment of needs* and 4) *Shared emotional connection*. In this paper, the dimensions serve as factors in analyzing the sense of collectivity of the studied communities and help us understand the role and impact of collectively created and used content.

Lately, with new kinds of online communities and content types (e.g. mash-up content or co-created content) the ownership and liability issues have become blurred [19]. Thus, content is increasingly being created and consumed collectively: it is co-created, co-edited, co-enriched, co-managed and consumed in a collective manner. However, the reasons for and implications of such collaborative activities have not been discussed properly in the literature of human-computer interaction.

2.2 Collaborative Content Interaction

Some previous studies, e.g. [8,21], have consolidated the motivations for sharing personal content with a five-level classification: content is shared for constructing personal and group memory, creating and maintaining relationships, self-expression, self-presentation, and for functional purposes. These motivations can be seen as both individual and social (community related). In addition, several previous studies, see e.g. [5,17,18], have highlighted the significance of social motivation in what content people capture and how, and what people share with each other. In the following, we present studies where content has been created or used collaboratively.

Related to the constructing of a group memory, Agostini et al. [1] have studied preservation of community memories. Community memories of traditional communities, such as families and neighborhoods, were found to be traditionally preserved and shared in form of collective stories. Frohlich et al. [10] reported a study of eleven families about their use of conventional and digital photos. In co-present sharing, *storytelling* and *reminiscing* were found very common. A typical feature of reminiscing talk was that it involved jointly ‘finding’ the memory together. This kind of *collective remembering* demonstrated social cohesion.

Salovaara et al. [18] conducted a field trial of “mGroup”, a messaging application for camera phones with the idea of collectively created albums. The study with two small groups disclosed collective and participative practices that occurred in the creation and sense-making of multi-media messages. A conclusion was that mGroup messages were often the result of a collaborative process rather than merely an individual effort. Created stories were not seen as the products of individuals but as achievements of a group. Media creation was a collective event, where group

members participated in varying ways. The created messages played roles in *coordinating* activities of the group, achieving *awareness* through chains of messages as well as in constructing small, humorous and highly *context-related events and memories*. Considering collaboration, the mGroup was used 1) individually, 2) in asymmetric participation (e.g. collocated viewing, grabbing the device), and 3) in participative use (e.g. taking portraits of the group, recording recurrent topics, such as yearly traditions and proverbs, creating remarkable events and making sense of messages together. Salovaara et al. state that collective use is rewarding both because it provides new forms of interpersonal and inter-group communication, and because it provides ways to re-enact and reuse a group’s conventions and shared memories in novel, inspiring ways.

Van House [20] brought out that social communication and grooming are central elements and motivators in capturing and sharing memories. Consolidative results have been presented in [17]. Moreover, Jacucci et al. [11] pointed out that in large public events spectators gather in groups to co-experience something extraordinary. Collective behavior in using and especially in creating content was central in all these studies. Collective usage of content was regarded as intriguing because of its new interpersonal and inter-group ways of communicating. The social element was usually present in the capturing situations but also novel opportunities for using and exploiting the collectively created content were identified. These facts highlight people’s motivations to create common content collections from various life events.

2.3 Content as Social Experience

Earlier research papers have discussed social interaction where user-created content acts as a motivator of interaction, and represents an artifact that involves and conveys parts of the message (see e.g. [2,12]). For example, collocated interaction can be staging pictures, competing over who take the best shots, storytelling, joking and communicating presence [12]. Fono and Counts [9] have studied “Sandboxes” – a prototype mobile application that offers a form of collaborative multimedia composition. The prototype evaluation studies reported activities such as sharing experiences, creative content expression, self-invented games with the content, and humorous activities (constructing humour from existing media by leaving funny comments or rearranging the media in an amusing manner). Such collaborative media content usage raises the sense of community and the content itself might become considered as collective.

Partially related also to collective experience in content interaction, Battarbee [4,5] introduces the concept of *co-experience*. Co-experience takes place as experiences are created together or shared with others in social interaction. Co-experience is the seamless blend of user experience of products and social interaction [4]. Battarbee further defines co-experience as “a process where participants together contribute to the shared experience in a reciprocal fashion, creating interpretations and meaning from their life context and allowing themes and social practices to evolve” [4]. For co-experience to occur, digital media content can facilitate this by providing users incentives for social interaction, such as reminiscing about common memories [17], getting to know each other through shared content and building community identity. Co-experience can also be described as 1) Social: it relies on communication, in which the dialogue (e.g.

initiative, responses and feedback) acts as an incentive to, again, respond and continue the communication; 2) Multi-modal: “the richness of face-to-face communication and the setting it takes place in can be augmented with various communication technologies”; 3) Creative: as the ways in which people make things meaningful to others and the way in which they use the tools to create the experiences; 4) For fun: something done for pleasure and strengthening social ties [4,5]. For the work presented in this paper, the concept of co-experience is highly relevant. Co-experience is something that might evoke from the collective content when interacted with. On the other hand, from the process of co-experience, collective content might come into existence.

The presented related work has indicated that there is an emerging need to create and consume content together in small communities. The content plays a significant role in the community interaction as so much collective activities occur around it. Nevertheless, the community aspects in content interaction have been discussed fairly superficially. The collectively created and used content has not been studied as a theoretical starting point.

3. OUR APPROACH AND METHODOLOGY

The aforementioned related studies have shown that there is a true need to create and consume content together in close communities – both in online and real-life context. This can be seen, for example, as needs for uniting the community’s photos of an event, creating common memories or in needs for achieving awareness of the community members and organizing the common activities. These activities are based on users’ repetitive sharing behavior, where the groups remain mostly the same because of the solid binds of communities the users belongs to, see e.g. [17]. Hence, there have been indications of the existence of content that is regarded as *collective*.

The *concept of collective* content has not been previously defined or studied as such, which is the very essence we address in this paper. The main objective of the study was to understand and specify the concept of collective content. We aimed at identifying needs, motivations and practices in creation, management and usage of collective content.

We focused on studying communities that are based on real-life relationships, but still having both co-located and online activities. Moreover, *communities* (by definition, see e.g. [7,14]) were considered to have enough cohesion and “common spirit”, whereas *groups*, such as ad hoc groups or purely online groups, could be too loose and not fruitful with regard to the study goals. By these selections we expected to obtain results on the most usual type of community, such as families, close groups of friends or hobby groups, associations and schoolmates. We required the studied communities to have a common interest based on which they were formed. To be considered as communities, we also required them to have elements of mutual trust, common norms, somewhat established roles, as well as real-life events where content, such as photos and stories, is often created. We saw that such communities would be fruitful for existence of collectively created and used content. Another predetermined limitation was that we only studied digital content, not for example printed photos, physical mementoes or common equipment. All in all, the aim was to study as diverse as possible a set of communities

within the above-mentioned limitations (e.g. regarding the type of community, relation of online vs. real-life interaction and level of activity with content).

3.1 Descriptions of the Communities

The study was carried out in May-August 2007 with four communities: 1) a close-knit group of middle-aged sport fanatics: *Athletes*, 2) active IRC-chatters: *IRC-chatters*, 3) a student scouting association: *Scouts*, and 4) a young fishing association: *Fishers*. The communities were recruited partly by advertizing and partly by searching for suitable communities, which guaranteed that the communities met our above-mentioned requirements. Moreover, these were regarded as *communities* – not merely groups – as they met the common definitions of a community, see [7,14]. By the initial insight of these particular communities, they were considered to complement each other nicely with regard to the level of closeness and community activities. Table 1 presents further description of the communities’ background information.

Table 1. Backgrounds and description of the communities

	Athletes	IRC	Scouts	Fishers
<i># of rep. users / community size</i>	4 / 7	7 / ~40	4 / ~30	5 / ~60
<i>Ages</i>	30-40	25-35	20-30	20-30
<i>Sexes of the participants</i>	All male	M: 3 F: 4	M: 2 F: 2	M: 4 F: 1
<i>Activity with content</i>	Very active	Very active	Rather active	Rather low
<i>% of real-life / online interaction</i>	50 / 50	20 / 80	70 / 30	80 / 20
<i>Examples of applications and content</i>	IRC, website, training diaries	Galleries, blogs, Second Life, IRC	Travel stories, photos, website	Personal photos galleries, website

All the above-mentioned facts were inquired in group interviews. Besides topics of interest and above-mentioned demographics, the communities differed from each other in terms of closeness of one-to-one relationships, roles, age of the community as well as activity with content and used applications. In case of the Athletes and IRC-chatters, the members of the community had been mostly the same since the beginning. As the Scouts and Fishers were student associations, the members had changed approximately every 5 years. The representative users who participated in the study were among the most active members of the communities (e.g. in the association committee or otherwise focal members). This was due to practical recruiting challenges: naturally the most active members were the ones who were willing to participate. All the representative members were Finnish.

3.1.1 The Athletes

With regard to community purpose and interaction, this community was the most focused and built around their common interest in sports. All of the members were IT-oriented (having an occupation in IT) and active sports fanatics. The community provided a motivation for exercising but social interaction was also very salient in all activities and communication. Generally, the sense of community was high with all the participants. This could be observed in members’ feelings of membership, the

communication and content interaction activities as well as in the shared emotional connection.

3.1.2 The IRC-chatters

This IRC community was originally formed by students who were enthusiastic about role-playing. Almost everyone in the community had high IT skills but otherwise this community was much more heterogeneous than the Athletes. The community provided its members a chance to interact with likeminded people and share their enthusiasm on certain topics. However, within the community there were numerous sub-groups with varying interests, such as photographers, gamers and historical enthusiasts. Thus, the interaction was divided between the main IRC-channel and the sub-channels. The sense of community also varied between the participants, largely depending on one-to-one relationships. The sense of community was observed to be slightly lower than the Athletes', assumedly because of the extent and heterogeneity of the community, and also the fact that this was not the sole primary community for many of the members.

3.1.3 The Scouts

A common interest in scouting bound this rather heterogeneous community together. Approximately 15 members were currently actively participating in the community's mostly face-to-face activities. Some roles and distribution of work could be seen, partly because of the agreed roles in the committee of the association and partly because of members' natural interests (e.g. in photography). Among this set of four communities, the sense of community was average. On one hand, members shared an emotional connection and had a feeling to have the possibility to influence in the community matters. On the other hand, the level of integration – at least with regard to content interaction – was low.

3.1.4 The Fishers

This heterogeneous association was established among fishing-oriented university students as a group where to discuss their common interest. Of the sixty members, only about 15 were active in the association, and thus part of them formed the committee. Occasional fishing trips and sauna parties were organized but content interaction mostly remained on individual level. The sense of community was rather low, partly due to the regularly changing members but probably mostly due to the low amount of both offline and online interaction.

3.2 Data Gathering and Analysis Methods

A study lasting 2-3 months was carried out by using various methods. To gather user data, group interviews, contextual inquiries and contextual observations took place during this period of time. Each community was interviewed twice as a group: at the beginning and at the end of the study period. Both interviews were thematic and semi-structured. The aim of the first interview was to gain an overview of the members' activity with content, community dynamics and other descriptive background information. The latter group interview then focused on confirming the usage patterns identified and on exploring meanings and emotions related to certain content objects created or used during the study period. Here, the perceptions of collectivity of various content items were also reinvestigated. Thus we gained more insight into what content was regarded as

collective and to what extent, what made it collective and how did it differ from content that was not regarded as collective.

Personal needs, motivations and interaction with collective content were studied with contextual inquiries. The inquiries focused on individual users' actions, habits and interaction. Two contextual inquiries were conducted with each community – with certain members who were active enough in content interaction activities. The focus was two-fold: 1) sharing and using photos, and 2) creating blogs, travel reports and other textual content. With the inquiries, we could more thoroughly investigate personal level interaction with content that was previously found to be collective by nature. In addition, participants reported all their content-related actions.

The results from interviews and inquiries were confirmed by contextual observations. Two communities were observed in a real-life event (as illustrated in Figure 1) and two in the communities' IRC-channels. The rationale was to understand the motivations of instant content sharing as well as the first phases of the collective content life cycle. In order to observe the usage patterns of certain content objects over time, we asked the users to keep diaries for two weeks about their usage of content related to that particular community. After one week of reporting a one-to-one diary review session was conducted with each individual user. The aim was to see the progression of the diary and to guide the user if necessary.

The qualitative user data related to user needs, attitudes and motivations was interpreted and formulated as individual notes, and finally consolidated as an affinity diagram. In addition, sequence and interaction models were drawn to model and abstract the interaction with collective content.

Overall, extensive method triangulation was used in the user studies. This was rationalized by the fact that the concept of *collective content* was vague to start with – and even more abstract and theoretical for the users. Thus, proof of its existence and the interaction with it had to be studied with diverse approaches. This paper describes only part of the findings, focusing on the very essence of *collective content*, purposes of it and collaboration around it. Figure 1 illustrates a few photos from observing situations.



Figure 1. Left: researchers observing Athletes at a sports event; Right: researcher observing Scouts on a boat trip.

4. RESULTS

First, exemplifications of collective content in the studied communities, and the purposes of and motivations for creating collective content are described. This is followed by observed collaboration practices with collective content in the communities. Finally, the factors in determining the level of collectivity of content are discussed.

4.1 Examples of Collective Content

Here, we describe examples of content that was regarded as collective. Naturally, also content with more personal nature was used and exchanged within the communities but, due to space limitations, examples of such content are excluded from this paper.

Sharing content with other community members was highly appreciated in all the communities. Shared content included media content created by the community members (e.g. photos and videos), community's prior communication content (e.g. IRC-quotes and e-mails), as well as 3rd party content, such as public web pages, blogs and other user-created public media content created by outsiders. The types of shared content varied highly between the communities. In each of the four communities there was content that users regarded as *collective* – content that was collaboratively created, managed and enjoyed. Examples of content that was regarded as most collective were community's website, travel reports and photos from common events. Hence, the content that was considered collective did not limit only to media content, such as photos and videos.

4.1.1 Collective Content amongst the Athletes

The Athletes, as the most close-knit community, had established practices in collaboratively maintaining their website. The site included general information about the community, but also photos and videos from events and their competition calendar.

The intranet of their website included, for example, each member's training diaries and their common calendar. A few members also had their own public photo galleries that, however, were used and commented by all the community members. The Athletes considered them as somewhat collective because of the subject of the content (i.e. what the photos were about), but the legal rights of the photos were seen to be held by the capturer. In fact, the entire community website was considered as collective rather than any member's individual property or input. Furthermore, IRC chatting was perpetual. Forthcoming and recent events dominated in the conversation as well as content usage. Links to own and 3rd party public content were shared in IRC, and much discussed and commented.

An interesting example of asynchronous collaboration was writing news-worthy web bulletins about recent events and happenings. Even though written by individual members, the bulletins were considered as very collective content in the group interviews and contextual inquiries. This was due to the fact that they were shared on the community website, but also because the process was collaborative in a sense that the turns for writing a bulleting were decided up front. We interpreted them as continuous builders of community identity as well as status updates to maintain their own and the readers' awareness of the community state. The following nicely summarizes the ideology of the community.

“It does not matter who took the photos as long as they exist.”

“Every group member is encouraged to make new content”

– The Athletes in a group interview

4.1.2 Collective Content amongst the IRC-Chatters

The community's IRC-channel was in a central role in maintaining social connections, coordinating common activities of the entire community and its subgroups, and simply passing time. Large amounts of various types of content were shared both publicly in web and among smaller groups inside the community. The IRC-channel served as a forum to inform about and advertize the fresh content: links to personal blogs, photo galleries, Flickr and Jaiku sites. Although the participation was mostly online, also various face-to-face meetings were organized. The community had one major meeting once a year and numerous smaller meetings, such as lunch dates or house warming parties, with fewer members.

Interestingly, IRC-chatting was considered as their most collective content (although it might be argued if it is content at all). The members saw that it is the type of content they create most collaboratively as a community and contribute most reciprocally to. At the same time, it was seen to be most natural and obvious for something that is fundamentally mere discussion. However, the IRC discussion was stored in both public and internal logs, and rather often referred to in future discussions. All other user-created media content was regarded as personal content as it was mostly stored and shared in personal repositories.

“The boundaries and ownerships between various users' content are not always clear”

“Some content, e.g. photos from a common meeting, is regarded as collective if the content becomes annotated and commented”

– IRC-chatters in a group interview

4.1.3 Collective Content amongst the Scouts

The Scouting community had a long history of rather low activity in content creation and sharing. This was partly due to the nature of the community: being a student association meant that the members change regularly. Most content was captured or created to fulfill personal needs and to serve as personal mementos. Only part of the content was shared with other community members. One of the rare examples of collective content was travel stories of the common scouting trips. These textual stories were enriched with photos and published on the community's website. These were regarded as very collective as they represented the very essence in the community purpose and were often created in a collaborative manner.

“We are ready to share all our photos and videos related to this group with all the group members.”

– The Scouts in a group interview

The stories were directed mostly to the community members but also to public audience – considering that potential new members could be attracted by reporting interesting common experiences. Peculiar to this community was, however, the need for having collective compilations of common events and being able to collectively create content that serves the entire community's needs. Lack of proper services as well as computer skills were seen as the biggest obstacles in fulfilling the needs. Figure 2 illustrates a few examples of photo content that was regarded collective.



Figure 2 Examples of collective photo content. Left: Scouts; Center: Fishers; Right: Athletes

4.1.4 Collective Content amongst the Fishers

The Fishers' fairly inactive, public website included basic information about the community and its activities. A "catch diary" was jointly maintained for playful competing and keeping notes about each one's catches. Rather similar travel stories were created as by the Scouts. Personal photos were shared elsewhere and thus were not much commented nor were members aware of their existence. E-mail lists for the members were the main forum for informing and online communication. Overall, the interaction with content (collective or personal) was low. Yet again, clear needs for creating collective stories and memories, and improving the community identity were expressed.

"As collective content we think the documents done together and the material in our www-site"

"The travel reports are considered as collective content, but the writers have a veto-right"

– The Fishers in a group interview

To sum up, the amount and extent of existing collective content varied largely between the communities. In the less active communities of the Scouts and Fishers the interaction with the scarce collective content was still rather low. Nevertheless, in these communities there still was a remarkable need for creating and sharing collective content for both internal and public purposes. The communities shared the need for collectively creating and enriching media content in the common events and experiences, as well as creating collectively managed entities from initially personal content. This came up most often as a need for having commonly maintained repository of all the content that is relevant and emotionally important for the community. Collectively created content would serve as a representation and consolidator of both the internal and public identity of the community.

4.2 The Purpose and Motivation Factors of Collective Content

The motivating factors in creating content for the entire community's usage purposes were found to be diverse. The most noticeable motivating factor was the intrinsic need for creating common memories and documenting the experiences. This was observed to act as glue for nurturing the social cohesion in the community. Such collective content containing memory and experience elements was highly valued in all the communities. Also real-time knowledge sharing and coordinating community activities was salient with regard to the role of the content. This was emphasized with communicative content, such as IRC-

chatting and e-mails. Although having a different purpose, this kind of information was also considered as content if it was stored and returned to (e.g. reminiscing by an IRC-log).

The collective content was observed to be in a central role in the social interaction and construction of the sense of community. As the content was much discussed and interacted with, the content acted as facilitator of mundane maintaining of social relationships. Also, for example with Fishers and Athletes, who both had clear common interests, content acted as motivator to follow the community goals and purposes. Related to this, sharing individual perspectives on common matters and interests was the main motivator in discussing and enriching the content. To regard the content as truly collective, people felt the need to contribute to it somehow. Individual perspectives could be shown, for example, by sharing a comment or giving encouraging feedback to the creators, and by sharing additional information or insights.

Supporting the community and its purposes was often the initial motivation for creating content individually. In fact, users created content taking into account its usefulness, interestingness and relevance for the community. It was pointed out that originally personal content as part of the collective entity was more used and appreciated than personal content created solely for personal repositories. Overall, this revealed needs for participating in the community activities and feeling togetherness.

Another motivation for creating and sharing collective content, especially for the Athletes and Scouts, was positive publicity and gaining attractiveness. Most collective content was also shared publicly to serve as a public representation of the community, and thus give an image of the community identity. Moreover, it was expected to attract new active members or fans. The IRC-chatters wanted officially to stay hidden, but still they enjoyed being popular in certain underground societies. All in all, the underlying motivation was attracting and serving people similar to oneself.

4.3 Collaborative Behavior with Content

The collaboration activities varied notably in all the phases from creating the content to enriching and managing it. The Scouts had a habit of writing the travel stories together collocated on a PC or by completing others' writings asynchronously. Similar travel stories were also created by the Fishers but the creation process was not as collaborative: stories were mostly created by one individual and merely from her point of view. In the IRC-chatters' community, most of the members participated in gathering public 3rd party content (e.g. links to funny websites). The most relevant content was then shared with the IRC-channel. However, self-created content, such as photos and blogs, was mostly created and maintained by individual members. As explained earlier, the Athletes had a habit of collecting and giving verbal comments after common events to find out the common feelings about the event, and to publish them in their bulletins. Also the preparation and speculation of an upcoming event created anticipation for the content created during the event.

Also the activity level between the members varied a lot. Among Fishers and Scouts, only few members were very active in creating content, as well as in initiating social interaction, whereas most members did not contribute to creating content. In the case of the Athletes, reciprocity and turn-taking in creating collective content was highly appreciated and worked well. With regard to member roles, we observed an interesting role of an "advertiser", especially

within the IRC-chatters. Certain members contributed to the collective content only by ensuring that the new content became seen and thus would receive comments. They actively advertised the content in the communication channels and often returned to certain content objects in their conversations.

Collaboration and other collective behavior were more prominent after the content had been created. Sharing of the content was most often initiated by the capturer. Yet, a collaborative aspect was present as in all communities the others used to ask for certain content to be shared – expressing a wish and showing that shared content is welcome. Commenting the content often occurred in a conversational and iterative manner either online or face-to-face. The Athletes regarded comments as valuable with regard to their descriptive and detailed information. They expressed a need to attach every written or plural comment from various media to the content object. IRC-chatters mentioned that they often return to content they have commented. Thus, the commented content became more intensively and widely used in the community. In contrast to the collaboratively created content, individually created content received little comments and attention.

Using collective content was observed to be more joint activity than using personal content. The Athletes and Scouts used to go through their collective efforts in content creation in various informal face-to-face meetings. The content was used in reminiscence of past events and positive memories. The content was also browsed and enjoyed while being alone, but even then it could act as an initiator of communication.

The interaction with collective content was largely based on real-life events. This was most salient with Fishers and Scouts (being the least active communities) but also with Athletes. Content was created during or quickly after common events, such as fishing trips or sporting events. In the cases of the Scouts and the Fishers, the created content was shared with the entire community or at least with those who were present at the event. The content was commented and enjoyed during the event or soon after it. Also, returning to content often occurred during, just before or quickly after, similar events in the future.

Overall, we saw the various contributing activities as ways to show empathy and resemblance in nature, to build trust amongst the community, and to manage one's role and identity in the community. Especially in the case of new members, the activity with content was appreciated by the others and thus a way for them to become recognized as a truly contributing member in the community. As the social interaction often occurred through content (especially with IRC-chatters), interaction with and through the content was also observed to affect the identity of a member. In time, the community had influenced its members in a homogenizing way. The activity with collective content becomes uniform as the members' activity affect each other (e.g. when, how and why content is used). Hence, for example the photographer's role was told to be slightly different when acting as part of a community and when acting as an individual.

4.4 Collectivity of Content is Defined by Participation and Relevance

The preceding sections described various factors by which each community regarded the collectivity of content. By analyzing the results further, we interpreted the most dominant factors of

collectivity as follows: 1) the *community's contribution*, 2) the *relevance of the content*, 3) the *level of sharing*.

First, the amount of collaboration and members' contribution in creating and managing the content was observed to raise the sense of collectivity. If the content was clearly created together it was very collective. For example, a community creating collective visual stories by combining a set of content from various members' recordings and writings. The contribution of other members could also be commenting, post-processing or otherwise enriching the content. Hence, a commented content object was considered more collective than one without comments. Commenting also consolidates the idea that the sense of collectiveness of content can be elevated with collaborative activities, not only while creating it, but also after its creation – when enjoying it and socially interacting through it. Overall, the more members contributing to creation, maintaining or using the collective entity of content, the more collective it was considered.

“Content becomes obsolete when you don't have any emotional bond to it”

– The IRC-chatters in the final group interview

Secondly, the subject of the content item not only defined what content is appropriate or relevant enough to be shared with others, but also the level of collectivity. The content of the objects might involve aspects, meanings and values that are significant for the community, and thus highly relevant. For example, a group photo or a website about a common interest was considered more collective than captured media of single persons or landscapes that had no special meanings for the community as such. The relevance factor served as an automatic filter in determining what content the members will capture for the community in the first place. This was due to the fact that the behavior of committed community members was affected by the community culture, norms and rules. Moreover, it is a factor also in determining what content is not acceptable to be shared within the community (e.g. content created outside the community). For example, in the IRC-chatters' community, the IRC-channel was regarded as a filter that collects information relevant to the community and automatically leaves out the irrelevant. In other words, the defining factor was broadly how much the subject of the content item touched, influenced and related to the other community members.

“We think the content stored on our community server more collective than that on individual members own galleries”

– The Athletes in a group interview

Thirdly, the extent of sharing also defined how collective the content was seen. If content was shared only within the community, users often considered it as more collective than content that was shared also in other forums. Also, initially personal content could become collective when it was shared within the community and involved also the other factors. Totally public online sharing of content was usually abundant: the recipient groups easily became large. Such content did not relate to most recipients. Thus, few people regarded the publicly shared content as collective. Here, a defining factor was observed to be the forum of sharing. If the forum was jointly created and maintained (e.g. a community website), the content was also regarded as co-managed and thus more collective. On the other hand, all content shared within the community or publicly was not always regarded as collective (e.g. in case of sharing one's training history or keeping a personal blog). Naturally, if the

content was not shared at all, it was not collective even if it had other characteristics of collectivity. To sum up, the extent of audience was the third factor affecting the sense of collectivity.

Against the expectations, the type of content (i.e. its media format) had little effect on the sense of collectivity of content. For example photos were not regarded more (or less) collective than common calendars or websites. This is partly explained by the fact that the differences in level of collectivity between content types can more or less be explained by the aforementioned factors. Nevertheless, it was interesting that the sense modality of the content (e.g. merely visual vs. multimodal) did not seem to have an effect. Online communication (e.g. IRC, e-mails) was also an example of content that was created collectively, and thus regarded as collective in all communities, although it was not always stored like media content. This indicated that content could still become collective later during its lifecycle.

All in all, the collectivity of content was not seen as a matter of ownership but as a sense of collectivity, i.e. how much the content touches, benefits and stimulates the community members. All four communities agreed that the legal ownership of the content belonged to its creator, diminishing the meaning of ownership in the definition of collective content. Although identified as a fundamental aspect, the ownership was not considered important as the content was used for the community's internal purposes and motivations – not for commercial or legal purposes, where the ownership would gain more importance.

5. DISCUSSION AND FUTURE WORK

Based on a study of only four communities, it is impossible to rank the aforementioned factors of collective content in an order of importance. We see that the total level of collectivity of a content object is a combination of the three factors. For example, the content captured or created in common events was considered collective because events provide a fruitful context for creating relevant content for common experiences and memories collaboratively, and they affect the extent of sharing.

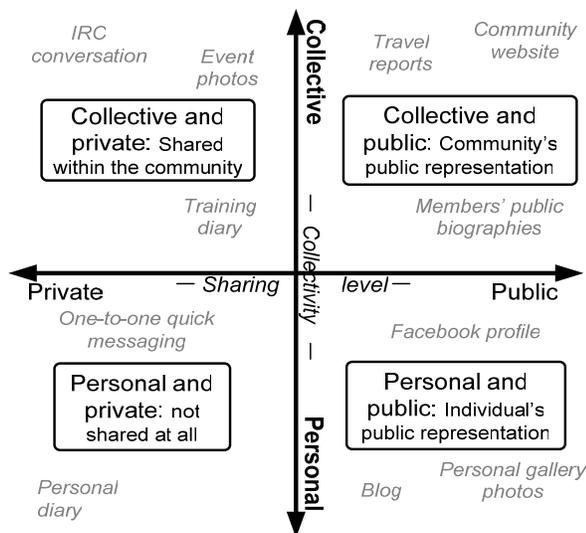


Figure 3. Introducing the new axis (Y-axis) of collectivity of content to supplement the conventional axis of sharing level.

5.1 Revising Content Classification

Personal content has traditionally been classified in an axis of public – private (see e.g. [13]), describing its extent of sharing. The results, however, indicate that another dimension (level of collectivity) should be introduced in order to better describe the role of the content and how it is used and regarded by others. Figure 3 illustrates the new axis to complement the traditional classification, hence describing four categories in the two-dimensional field. Figure 3 illustrates the categories and gives examples of content observed in this study. Most of the example content types are from the study, completed with certain well-known content types that well concretize each area in the fourfold table.

Now after introducing the new axis, the private category can be seen both as private for one person and private for a group or community. The *personal* describes such content that is regarded as an individual's own content, and varies from totally private (not shared) to public (publicly shared personal content). Communities' *private & collective* content satisfies the communities' social interaction needs and common goals, while *public & collective* satisfies the need of social recognition and group identity in public.

5.2 Discussing the Nature of Collective Content

Considering the framework of sense of community by McMillan and Chavis [14], the identified factors of collectivity of content well fit in and support the framework. The factor of community's contribution corresponds to the *feelings of influence*, and the factor of relevance relates to the *integration and fulfillment of needs* as well as the *shared emotional connection*. However, the factor of level of sharing is not explained with this framework. Moreover, considering Battarbee's concept of co-experience, collective content partly consolidates the characteristics of co-experience. Collective content is 1) *social*: it relies on reciprocal communication; 2) *emotional*: one motivation for creating it is to share experiences and emotions, and thus strengthen the social ties; and 3) *creative*: it is used for creating and sharing experiences.

Determining what content is collective (and what not) is not a straightforward task for an outsider of the community. The determinants by which collectivity was defined above are not easily measurable, nor is the total level of collectivity. In addition, the sense of collectivity most probably varies between the community members, e.g. depending on how much the particular member has been involved with the particular content. Therefore, discrete and quantified measurements of the level of collectivity are challenging to conduct.

Based on the variation of sense of community in the studied communities, it seems that general closeness between the community members is a strengthening element in all the factors of collectivity. This could be observed in both the amount and extent of types of collective content. The closest communities (especially the Athletes) had more common activities, and thus also more content-related activity. Thus, the amount and variety of types of collective content were also greater in closer communities. In the less active communities the practices in creating and enriching content collectively had not yet evolved. Challenges and incompetence in using technology were found to be one reason behind the lack of practices but also the sense of community can be seen to have had an effect.

All in all, the concept of collective content describes that content is collective by nature, and thus has a different purpose and meaning than personal content in a community. When comparing to previous studies, collective content seems to differ from personal content, such as personal photos, blogs or websites. First, the motivations for creating collective content are slightly different (as shown earlier), and it is created for more social purposes. Second, it has an active role in community's social interaction and identity. Third, it is more relevant to the common interests and has semantically higher quality for the community.

5.3 Implications of Collectivity of Content

Collective content was observed to have a significant role in facilitating communication and social interaction in the studied communities. It was an ice-breaker of discussion in the less active communities, and a catalyst and evoker of social interaction and nurturer of the sense of community in the active communities. It acted as a motivator for reciprocal activities, such as creating or enriching content. Thus, it maintained or elevated the level of interaction with the content and among the community members.

When compared with personal content, the total contribution for the content was greater. The interaction with collective content seemed to be richer and performed by more people than with personal content. Also the overall access frequency of the content seemed to be greater. Hence, we interpreted that personal content is more disposable and semantically less valuable than collective content. The relevancy of collective content also seems to last longer. Nevertheless, collective content did not differ from personal content in practical human-content interaction activities. Expectedly, the tools, services and functionalities for creating, enriching, managing and sharing the content were the same.

Collective nature of a content object had impact on the characteristics of the content object itself. The ownership was regarded as community's own rather than anyone's personal own. The meanings that are attached to the content object are richer and relevant for a larger amount of people. This could be seen as, for example, greater amount of comments, descriptions and tags as well as the meanings attached to the content object, but even more as the community's interest and devotion to it. Consequently, also the contents of the content object and the context of creation seemed to be affected by collectivity as discussed before. Although we were not able to study the life-cycles of individual content items, the collectivity also seemed to lengthen them.

5.4 Hypotheses and Future Research

We have to bear in mind that this introductory study examined and discussed only four more or less close-knit communities. The presented results hardly represent the overall viewpoint to collective content of various kinds of communities. Moreover, people are most often involved in several communities that they regard important. Thus, the interplay between the communities can be assumed to affect the interaction with and sense of collective content. In this study we did not address how uniform the sense of collectivity of content was within the communities. Finally, we were able to gain insight only into the most active members of each community. We assume this to have an implication to the trustworthiness of the study setup as the participants might not have perfectly represented the community. All in all, we assume that we have not yet discovered all the aspects that the collective nature of content affects and by which elements the sense of collectivity it is determined.

This would require studying communities from various cultures as the cultural background highly affects the social behavior in communities.

The media type of the content object naturally has an influence on the concrete interaction activities – partly because of the software with which the content is accessed and used, partly because of the characteristics of the media type itself. As the collectivity was observed to have a remarkable impact on the interaction, it remains to be studied whether the collectivity affects the total interaction more than the media type. Also other types of content than media content, websites and communicative content could also be regarded as collective. For example, “commercial” content created by vendors or other 3rd parties (e.g. a news article) and enriched with comments could feel slightly collective for the online community of an online service.

It can be assumed that collective content interaction is affected by various layers of context. 1) The service context, e.g. by which service the content is maintained and accessed. We suspect that the service or tool used for sharing could influence the sense of collectivity. 2) Device & technology context: (e.g. personal mobile device vs. a PC vs. public devices) and the storage place of content. 3) Community context: the type and characteristics of the community. Aspects, such as the similarity and size of social capital of the members, level and depth of interaction (communication, co-managing & enriching) and roles in the community might have an influence in the sense of collectivity and the interaction with the content. However, these issues were not addressed in the study and remain as future research questions.

Our continuing research will next focus on exploring the life cycle of collective content and understanding further phenomena that are related to its usage and creation (e.g. reciprocity, community identity, privacy aspects). As the communities were rather young, we were not able to investigate the lifecycle of a very old content object. The concept of collective content will be further refined by studying further communities in various contexts. The issues of how do the value and sense of collectivity, as well as the role in evoking social interaction change in time also remain as future research questions. Moreover, to broaden the extent and provide more generalizable results, quantitative studies will be conducted to validate these and future results. Finally, we aim at creating guidelines for designing new content services for communities.

6. CONCLUSIONS

The main contribution of this study was the elaborated and clarified concept of *collective content*. Collective content is not primarily a matter of ownership. Instead, it is more a matter of *sense of collectivity and common contribution*. We identified various motivations for creating, managing and enjoying collective content, as well as the defining characteristics of it. In every community either there was already content regarded as *collective* or there were clear needs for creating collective content in a more extensive scale. The motivations to create and use collective content varied from *keeping up social relationships, knowledge sharing and sharing individual perspectives on common matters to creating group memories*. On the other hand, in public sharing the motivation was the community's *public recognition* and positive publicity, and thus possibly new members or fans. The fundamental motivation in creating content was found to be *supporting the community and its purposes*.

The concept of collective content describes content that has characteristics of collectivity – it is collective by nature. The collective nature can be illustrated in a four-fold table with an axis that defines the level of collectivity. As a psychological sensation, this level is hard to be defined precisely. Yet, it was observed to have been affected by the level of *community's contribution*, the *relevance of the content* to the community and the *level of sharing*. The level of collectivity, again, has implications on the role and purpose of the content. Both the interaction with the collective content and the value and meaning of it differ from personal content. For example, collective content, by nature, acts as an effective mediator and facilitator of social interaction. All in all, collective content is both a consequence of collaborative activities with content and at the same time a reason and motivator for collaborative activities to occur around content.

The collective and community aspects in content interaction introduce new interaction elements, such as sense of collectivity and reciprocity. When designing community services, these issues should be considered. We believe that the behavior in content interaction will follow the present trends of community-centric interaction in the Internet. Thus, the creation and usage of collective content will become more widespread. It becomes essential to understand the requirements of this new kind of content as its role in interaction seems to grow continuously. Overall, these results can help HCI researchers and practitioners understand the essential elements in interaction around collective content, and thus assist in eliciting new requirements from communities as users of content.

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