

# Designing for Dialogue

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*How the Design of Web Commenting Systems Affect the Conversation*

Thesis in the field of Information Architecture,

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## Abstract

Structure is an important aspect of communication. If the structure of the information delivery is faulty or non-existent the user might not be able to form a coherent history of a topic. Due to messages not being sufficiently organized to provide context this might cause information overload (1). The aim of this thesis is to investigate if, and how, the structure of information-presentation in computer-mediated communication-systems affect how the users communicate within social media and interactive sites such as blogs, social networking-communities, forum boards and on-line magazines' commenting sections.

First an inventory of the most common design structures was made and then a contextual study of the user comments within these structures was performed.

The results show that the design of a commenting system seem to affect the user response to a high degree depending on the threads design; number of shown previous comments and placing of the different elements. From these findings different designs are recommended depending on the purpose of the commenting section is to generate a dialogue, discussion or to just get feedback.

## Resumé

Struktur är en viktig del av att möjliggöra kommunikation. Om informationen levereras på ett ostrukturerat eller direkt felaktigt sätt kan det bli omöjligt för mottagaren att göra sig en sammanhängande bild av hur informationen hänger samman (1). Syftet med denna uppsats är att undersöka om, och på vilket sätt, informationens struktur påverkar hur användare diskuterar i datormedierade kommunikationssystem inom sociala medier och som bloggar, communities, forum och tidningars kommentarsfält.

Med hjälp av en inventering togs de vanligast förekommande designstrukturerna fram och med utgång från dessa gjordes en studie av hur användarna kommenterar.

Resultatet visar att designen av ett kommentarssystem verkar påverka användarnas respons i hög grad beroende av diskussionstrådens utformning, antal visade svar och placeringen av dess olika element. Utifrån detta rekommenderas därför skilda strukturella design beroende av om syftet med att ha en kommentarsfunktion är att skapa en dialog, en diskussion eller att enbart få återkoppling.

## Keywords

Computer-mediated communication-systems, dialogue, user experience, information architecture, user interface, social media

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## 1. Introduction

When a web-environment is created where a user can interact by posting text that will be published on the site, the system might facilitate the purpose or in effect hinder other uses by creating a “suggested path” of action (2) where the user is guided through the appropriate steps for posting.

As an example if the purpose is to generate feedback on site functions, this requires some kind of submission form where the user fills in the required information, while if the purpose is to have a topical discussion, the site should provide a commenting system that supports showing the dialogue between two or more participants.

However, due to satisficing<sup>1</sup> users usually do not choose the best option, but instead choose the option which brings the quickest result (3). I believe that in a situation where the user wants to comment on content this might translate to skipping previous user comments if the site’s design helps the user to do just that. For instance: by placing the text input area, or a link to it, before the previously published comments the user will not have to scroll down to comment and thus will be suggested to not read previous comments.

In spite of the best option being to see if anyone else already had written something relevant to what the user intends to post and then formulate the post accordingly, the option that seems to bring the desired result – to express an opinion – will be chosen. The difference might be subtle, but is important: a discussion thread where no-one takes in what anyone else say will not be a discussion thread, but a feedback listing.

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<sup>1</sup> A portmanteau of satisfying and sufficing coined by Herbert Simon (14).

## 2. Background

From as early as 1978 the Internet has contained systems for multi-user commentary and conversation in the form of the message boards on Bulletin Board Systems, *BBS:s* (4). From the early 1990's, as the Internet became more common in the private sphere via the World Wide Web, the use of on-line discussion forums and communities grew into a wide range of systems for user generated commentary. In the mid-2000's, as the Web 2.0-focus of interactivity became widespread, the user generated commentary has been integrated in many different types of sites.

The purpose of including user commentary options naturally differs between the type of sites as it is one of the core elements of an on-line social network but necessarily not for a news site. Some may want visitor participation in the development of the site's content (such as review- or wiki-sites) while others may not have such a clearly defined purpose (5).

Earlier work on computer-mediated communication and CMC-systems seem to have focused mainly on either human-computer interaction, the user-activity required for community survival as well as how user interaction affects the "information overload"-factor (6) (7) (8).

Kelley et al. (9) however, briefly addresses the design of discussion-threads, recommending the use of a threaded design where an answer can be attached directly on a previous posting<sup>2</sup>, citing the sequential coherence suggested by Herring (10), but to my knowledge there has not been any major study performed comparing the impact of different designs on the topic-coherence for the user.

This thesis is a continuation of a group project report written for the course Methodology for Measuring Usability at Malmö University (11) and is intended for information architects, the social media development community and designers of computer-mediated communication-systems, to provide insights for designing the user experience as well as, in a way, designing the user response.

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<sup>2</sup> In this thesis called "multi-threaded design"

### 3. Hypothesis

The main hypothesis for this study is that certain structures enables a more constructive dialogue than others, i.e. the ability to comprehend ideas presented as well as and communicating will depend on which design for the visual presentation structure is chosen for the user dialogue. Also that it is influenced by variables such as number of comments shown.

Factors I assume are likely to affect the willingness to read earlier comments before posting one self are, apart from the mindset of the user, the number of actions taken between reading the text and posting a comment (2), the placing of the input fields in relation to both the text and earlier comments, as well as secondary constraints like the number of fields to be filled in, the number of comments shown and whether the site transports the user to a different page after the comment is posted<sup>3</sup>. Creating a commenting system which provides as few steps as possible for the path of reading the whole thread and commenting would seem the most appropriate (fig 1).

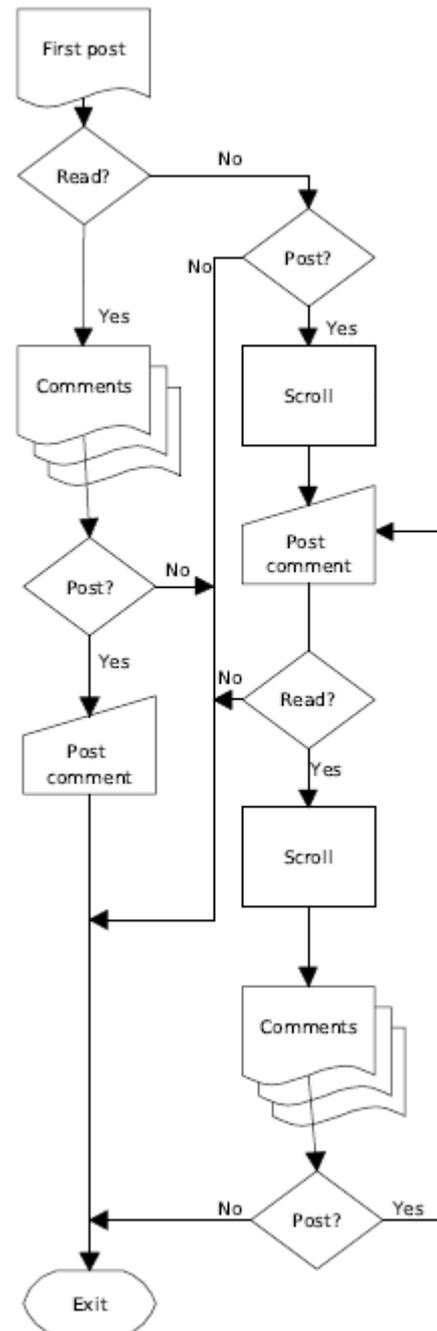


Figure 1. Flowchart of options for reading and posting in a chronologically ordered thread. The path of reading before posting provides less steps and thus would be the easier path.

<sup>3</sup> For instance a page saying "Thank you for commenting" or similar.

## 4. Method

The main objective of this work is to identify whether or not the structural design of comment system visualization influences the way people use them. As this is an expansive question it was broken down and addressed in the following research questions:

RQ1: What types of designs are commonly used?

RQ2: How do users comment?

RQ3: Do commenting differences in some way correspond to the designs?

RQ1 aims at creating an inventory of the different designs used on the most popular sites, this to see which designs that are most used by both successful sites and subsequently also by the sites' visitors.

RQ2 will study how users comment, if and how they interact with each other on different sites by doing an inventory on qualitative metrics in the comment sections.

RQ3 will combine the data from RQ1 and RQ2 to study correlations between different designs and the comments found.

### 4.1. Limitations

The limitations set up in this stage is that the communication-structures within closed, non-public, systems, i.e. mail conversations, direct messaging and similar will not be examined, since these requires access to protected data. In addition these sites often are limited to very few participants and are primarily aimed at mediating a conversation.

I also will not investigate the possible effect of active posting-constraints like login, required fields, captchas and suchlike although some of them in all likelihood have an impact on the posting audience. This due to that most sites have some kind of posting constraint to avoid spam and that these constraints are unlikely to affect the user perception of the topic.

## 4.2. Research questions

### 4.2.1. RQ1: What types of design are commonly used?

To define the most prolific structures a quantitative review of the 1000 most visited sites at two separate dates was made. The sites were found by using the “Top 1,000,000 Sites”-document available on Alexa.com (12) (13). Out of these approximately 330 sites identified themselves as containing a commenting system. Sites where an account was required to view the content were left out of this study<sup>4</sup> due to the time-consuming task of registering and deactivating a user. Sites in languages other than English or Swedish were analyzed to the extent possible. Of the remaining sites 135 were then chosen<sup>5</sup> for closer study and categorization according to type of site, requirements for posting and structural design (table 1). The categorizations were chosen to facilitate an “all else equal” comparison in RQ3. Some sites were inaccessible at the time of this second study and thus could not be examined. Also, sites containing pornographic material were exempted from further study and are thus only noted in RQ1 as containing comment options.

| Code                           | Explanation / example   |
|--------------------------------|---|
| <b>Type of site</b>            | News, Sports, Entertainment, Community and other  |
| <b>Login for access</b>        | Users have to log in to view content.   |
| <b>Shown</b>                   | the number of comments that are shown in a thread, with alternate options. (3;5;10)   |
| <b>Click to show comments</b>  | Users must take action to view comments.  |
| <b>Chronological</b>           | the latest reply is at the bottom of the reply- thread.   |
| <b>Reverse chronological</b>   | the latest reply is at the top of the reply- thread   |
| <b>Other</b>                   | any other sorting option than the chronological or reverse chronological  |
| <b>Linear</b>                  | the comments are shown one single thread where replies are shown  |
| <b>Threading level</b>         | threads with option to attach a reply on any previous replies. Categorized by how many levels that are shown (threading level 0 would be linear). |
| <b>Comment option position</b> | where the user can take action to comment.  |
| <b>Visible box</b>             | if there was an input box displayed.  |
| <b>Login</b>                   | if there is any required steps for commenting.  |
| <b>Register/ OA/FB</b>         | the user has to either register a username in the site’s database or sign in via OAuth or Facebook Connect  |
| <b>Captcha</b>                 | the user must pass a captcha-test   |
| <b>Signature / e-mail</b>      | the user only validates with a short text, in the case of e-mail it must be input in the form [text]@[text].[text].                               |

Table 1 Categorization for the design of commenting systems.

<sup>4</sup> Except for sites where a registered user already was available.

<sup>5</sup> The first half of the list of sites when sorted alphabetically.

#### 4.2.2. RQ2: How do users comment?

To see differences in the commentators level of discussion, i.e. the amount of answers, replies and otherwise directed comments a thread contains, a contextual study of relevancy of comments on sites representative of each visual structure was made<sup>6</sup>. Based on similar topics the comments were assessed by how well they fit into any of six categories (table 2). Some comments may fall into more than one of the categories due to the last three not being mutually excluding or excluding all the previous three.

| <b>Code</b>      | <b>Explanation</b>  |
|------------------|---|
| <b><i>D</i></b>  | Not obviously aimed at someone, but keeping to the topic.                                   |
| <b><i>C</i></b>  | Aimed at a specific person / group of participants, on or off topic.                        |
| <b><i>R</i></b>  | Makes referrals to earlier comments, but not explicitly mentioning anyone, on or off topic. |
| <b><i>Y</i></b>  | A short comment expressing agreement or disagreement with another participant.              |
| <b><i>OT</i></b> | A comment irrelevant to the topic of the discussion.  |
| <b><i>A</i></b>  | The comment seem to express hostility towards other participants.                           |

Table 2 Categorization of comment properties

#### 4.2.3. RQ3: Do commenting differences in some way correspond to the designs?

To investigate any correlation between the design of the comment structure and the type of comments posted a comparison is made based on the results from RQ1 and RQ2 where the design structures were plotted against the frequency of comment types to see the distribution.

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<sup>6</sup> Some of these sites were not from the study in RQ1, but corresponds to the structures defined.

## 5. Results

### 5.1. RQ1. What types of designs are commonly used?

There are in effect two main design options which dominate displaying comments: the single-thread and branched multi-thread layout.

The average design of a commenting system has a clear visual hierarchy with the first post *FP*<sup>7</sup> at the top, followed by the section where the users can read and post comments, often displayed in a less prominent way than the FP (fig 1).

The comments are generally either presented chronological (54,29%) or in reverse chronological order (43,81%). Some of the designs have the option of switching chronological order and a small percentage also sort by vote (2,86%).

The majority of the sites have some kind of posting constraint, ranging from registration on the site (or logging in via a trusted site) to filling in more than just the comment posting box. About 14% of the studied sites allowed for posting comments without any form of validation or registration.

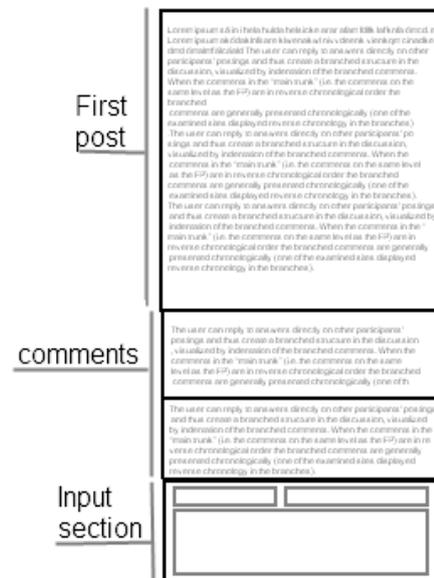


Figure 2 General structure of a commenting system.

| Amount | Type   |
|--------|--|
| 54,29% | Chronological  |
| 43,81% | Reverse chronological                                      |
| 2,86%  | “Other” (sorted by vote)                                   |
| 62,86% | Single thread  |
| 26,67% | Branch-thread  |
| 85,71% | Registration, captcha or signature demanded for commenting |

Table 3 Results of structural design analysis, showing the proliferation of different criteria.

<sup>7</sup> Also commonly called “thread start” and abbreviated as TS. In this study the FP includes, among other: articles, blog postings and video postings.

### 5.1.1. Single-Threaded

The communication is presented as a single column structure where the last posted comment is attached to the second-to-last posted (fig 4). In this category the most common order is the chronological, even though the reverse chronological is nearly as common (56,9% and 43,1% of the single threaded, respectively). The two subtypes are defined as single-threaded chronological, SC, and, single-threaded reverse chronological, SR.

### 5.1.2. Multi-Threaded

The user can reply to answers directly on other participants' postings and thus create a branched structure in the discussion, visualized by indentation of the branched comments (fig 3). When the comments in the "main trunk" (i.e. the comments on the same level as the FP) are in reverse chronological order the branched comments are generally presented chronologically (one of the examined sites, however, displayed reverse chronology in the branches). The two sub-types are defined as multi-threaded chronological, MC, and multi-threaded reverse chronological, MR, where the most common is the chronological display (61,5%).



Figure 4 Single-thread design with the input section after the posted comments.

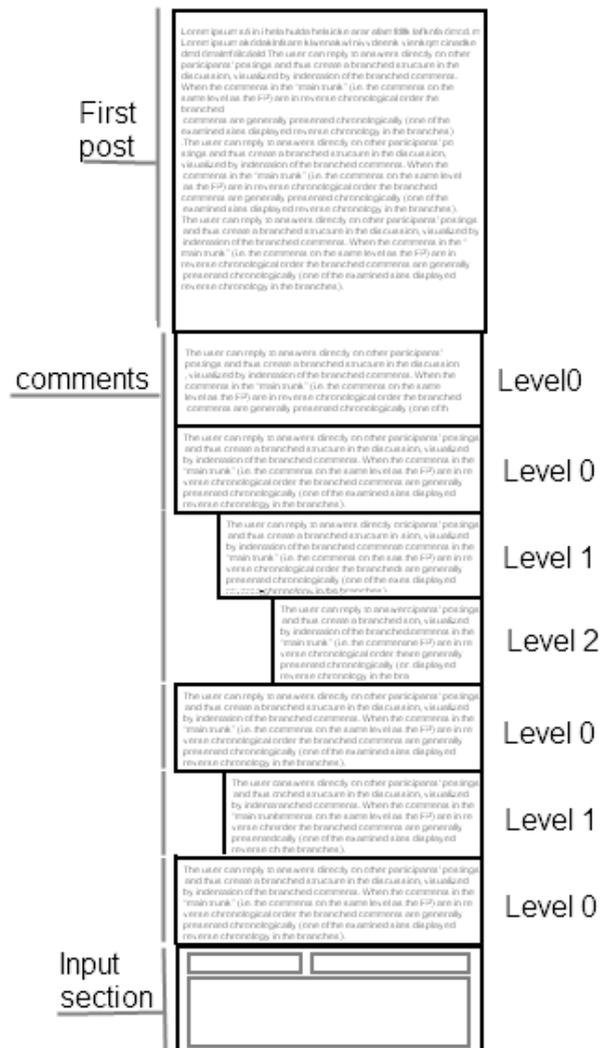


Figure 3 Multi-threaded design with two levels of branching shown and the input section after the posted comments.

### 5.1.3. Posting section

There are two general placings of the comment posting section: either above (fig. 3-4) or below (fig. 5-6) already posted comments. Usually it is a combination of input fields for the commentary and, if the site doesn't demand the user to be logged in to comment, there also are fields for (screen) name, commentary and e-mail address or web page.

Some sites have a "post" or "reply" button on each posted comment which, when clicked, retrieves the necessary input fields. This is standard on the multi-threaded designs, but is also implemented on some of the single thread designs.

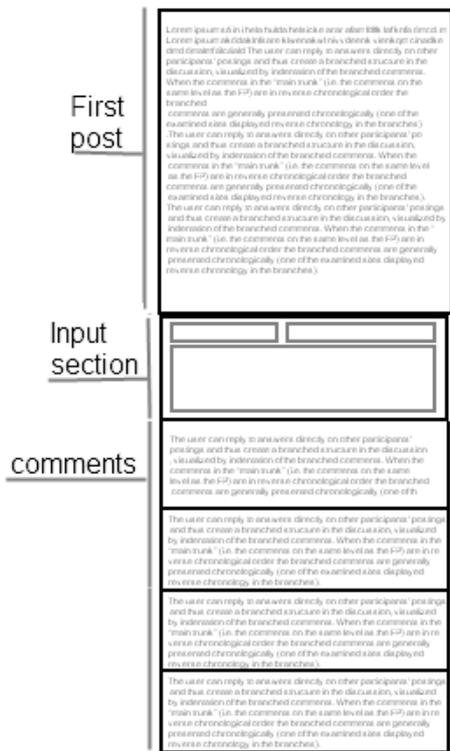


Figure 6 Single thread design with the comment input section before the comments section.

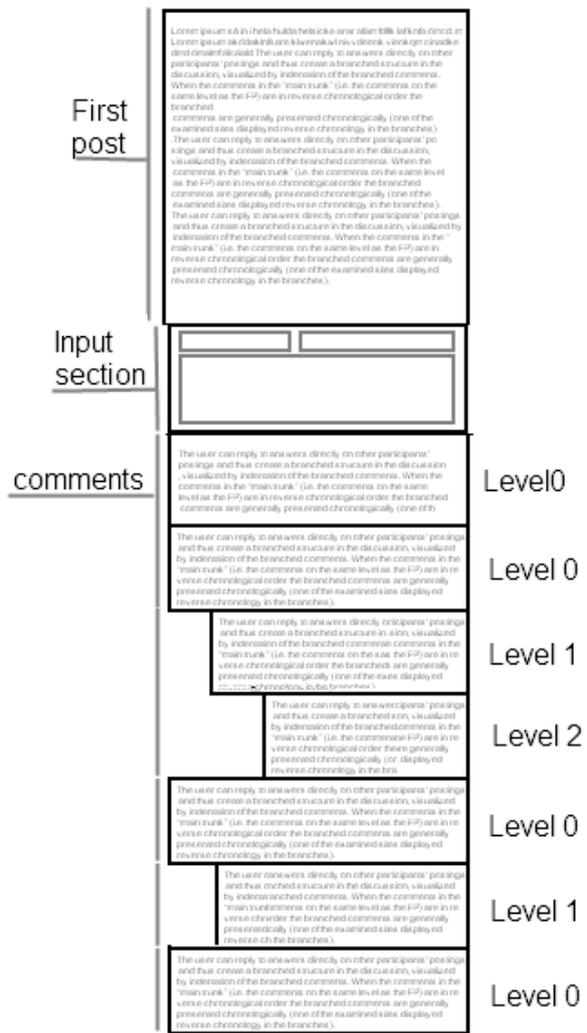


Figure 5 Multi-threaded chronological design with the comment input box before the comments section.

## 5.2. RQ2. How do users comment?

A total of 49 threads and 2024 comments were read and categorized, of these 33% were multi-threaded and 67% were of the single-thread type. Findings include that the average comment (48%) is posted as a response to previous postings, either by addressing the person responsible for the comment or referencing a statement from a comment, while almost a third (30%) of the comments that are on topic are expressing an opinion without addressing a specific person or group of persons. A quarter (25%) of all comments were revealed to be off topic, whether they continued a dialogue or not and 13% were showing animosity towards other commenters.

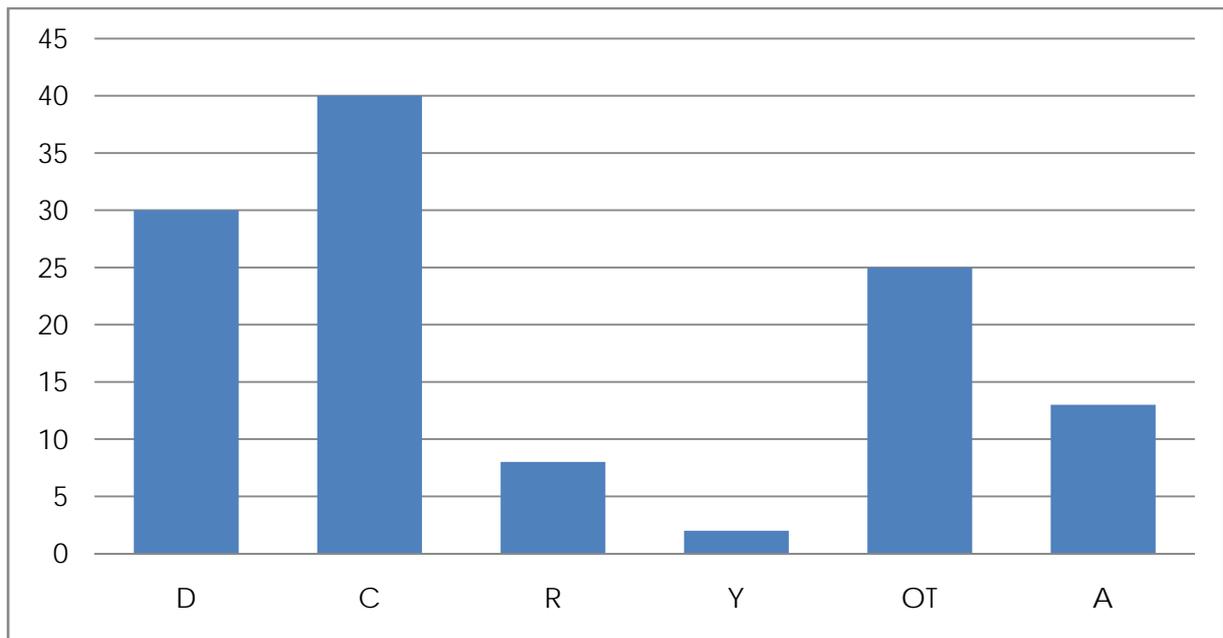


Chart 1 Diagram of comments found. D: on topic, but not directed at anyone; C: comment aimed at someone; R: referencing earlier comments; Y: short statement of dis-/agreement; OT: off topic; A: adverse sentiment.

### 5.3. RQ3. Do commenting differences in some way correspond to the designs?

#### 5.3.1. Multi-threaded compared to single-thread design

When the data from the RQ2-study on comments is combined with the data from the RQ1-study of comment system structures they show a big difference (around 10%) in the amount of both conversational and off-topic comments depending on whether the basic structure is multi- or single-threaded. The numbers show benefits towards the multi-threaded design as it seems to generate more conversations and less off-topic comments (chart 2).

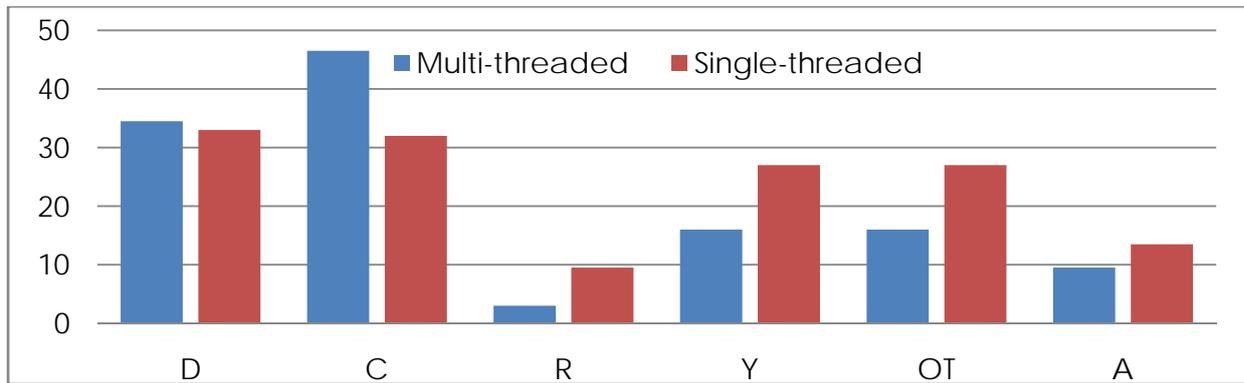


Chart 2 Difference in commenting between Multi-threaded design and Single-thread design.

#### 5.3.2. Comparison by chronology

When chronology of comments is taken into consideration there is a higher percentage of off topic and adverse comments in the comment structures where comments are presented in reverse chronological order than in the designs where the comments are presented chronologically. Also there seems to be a significantly higher amount of off topic and adverse comments in the single thread-designs than the multi-thread designs (chart 3).

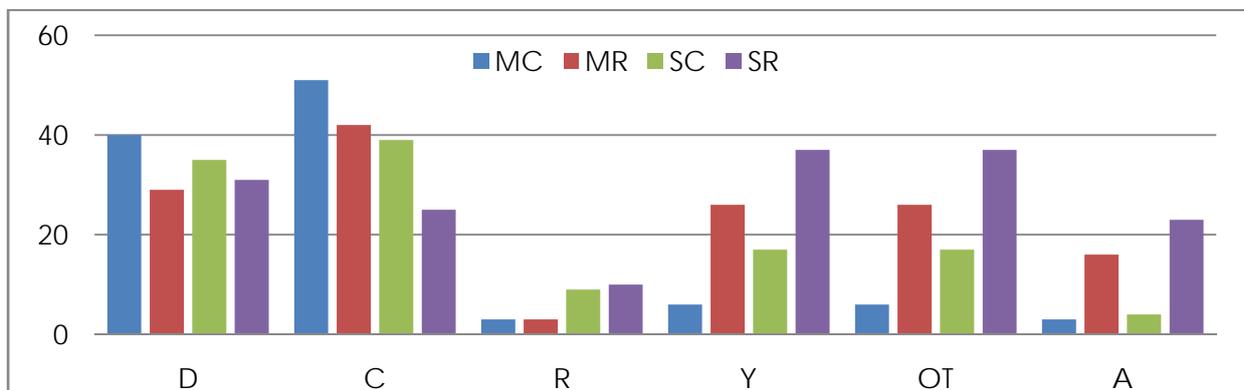


Chart 3 Difference in commenting depending on threading and chronology (multi-threaded chronological (MC), single-threaded chronological (SC), multi-level reverse chronological (MR) or single-level reverse chronological (SR)).

### 5.3.3. Comparison by number of comments shown

The amount of previous comments shown does not make a difference on the conversation until the number shown rises to 20 or above (chart 4). Indicating that the more comments shown, the more the users will involve themselves in what has been said earlier. Assuming that a high level of conversation means that users read previous comments this also seem to verify that users are less prone to take action to view more comments if they have the satisficing option not to do so.

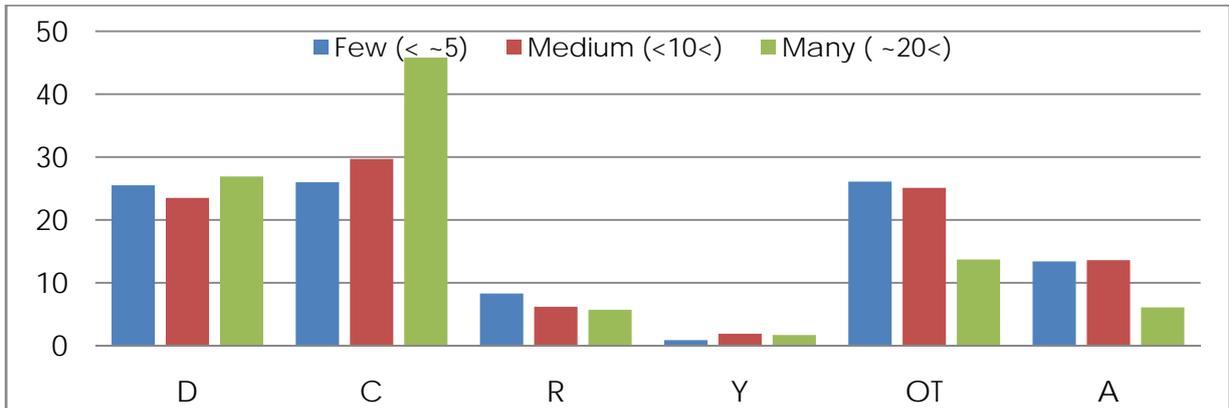


Chart 4 Difference in commenting by how many previous comments that are shown as default.

### 5.3.4. Comparison by placement of comment submission box

The placing of the comment submission field for comments gives no difference in the level of single, on topic, posts (35% vs 33%) and posts referencing earlier comments (7% vs 8%), but as for the rest of the comment types there is a 11% difference in the amount of replies to previous posts and almost double the amount of off topic comments (32% vs 18%) (chart 5).

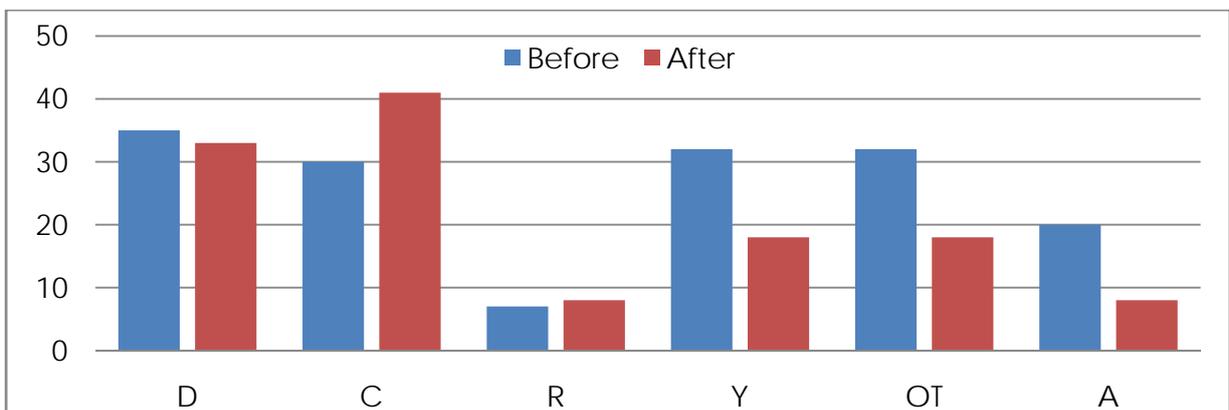


Chart 5 Difference in commenting by the placing of comment submission field, before or after the posted comments.

## 6. Discussion and Summary

The findings in this study seem to validate the hypothesis of the chronology as a major factor for generating a consistent discussion within a commenting field. When comments are shown in the order posted (i.e. later posts after earlier in the order of reading) the amount of replies to a specific post are significantly higher than when shown in the reverse chronological order.

The multi-threaded design seems to be better both for visualization of inter-participant communication in the discussion and for mediating a discussion or dialogue than the single-thread design. This could be attributed to the suggested path facilitating answering directly on a comment that inspired the reply.

However, although there seems to be an higher amount of discussion in the multi-thread than in the single-thread structures, the branched threads seemed to show more of repetition in the comments<sup>8</sup>, implying that even though users read the branch they are on they might not read the other branches of the thread before posting. Possibly due to the suggested path of posting an answer in the current branch before reading the comments on other branches. Further study is recommended to decide if that in fact is the case.

Placing the input fields above the comment section seems to work as a barrier where the user is less likely to scroll down and read previously posted comments and then scroll back up again to post a comment, than to post the comment and then leave the thread.

### 6.1. Suggestions for designers and architects

The findings lead to some recommendations for designers and architects of computer-mediated communication-systems.

To create a path of action that leads the user into conversating with others about the topic the design should display comments chronologically with the comment posting section placed after the last visible comment. Also more than 20 comments should be shown to give the user an incentive to read a large section of what's been previously posted to increase the possibility to see the context of the discussion. Whether a single-thread or a multi-thread structure should be chosen is up for debate, but I would recommend the single-threaded due to the risk of repetition in the different branches of the multi-threaded design.

However, if the aim is to provide feedback on what is in the first post / thread start, a different design should be chosen. To discourage discussion among the users there should be an option to comment before reading the comments, either via a distinct skip-link or via placing the comment posting fields there. Also, I recommend that at most 10-15 previous comments shown and the main structure should be a single-threaded design so as to suggest that conversation is not intended.

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<sup>8</sup> This was not part of the study protocols, but is based on observations during RQ2.

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