walk —— a system for exploring and finding content on the internet

walk — *a system for exploring* and finding content on the internet

walk a system for exploring and finding content on the internet

Kai Wanschura Johanna Wellnitz

**University of Applied Sciences** Schwäbisch Gmünd

Bachelor Thesis Interaction Design Summer Term 2019

supervised by Prof. David Oswald Prof. Benedikt Groß

printing and binding Drucktuell Stuttgart

typefaces Spezia and Suisse Works

The Internet should be like a city we would love to walk through, comfortably exploring the environment while being around other people.

It should not feel like a dark forest people are hiding in, afraid of expressing themselves openly.

# Contents

Introduction

- What is the Internet? 2
- Digital Pluralism, Value on the Web 4

Theory

- Types of Users and their Intention 8
- 14 Media Types and their Parameters
- Types of Recommendations and their Application 18
- 24 Ratings and Reviews on Websites and in Apps
- **34** Social Relationships on the Internet
- 44 Pace and Attention Economy

### Synthesis and Ethics

50	How Might We?
52	Threats and Limitations of the Web
54	User Needs
58	Exploration of Fast Decisionmaking
60	Exploration of Diverse Content
62	Easy Sharing
66	Design Principles
70	Conclusion

Systematic Application

74 Conceptual Fundame
-----------------------

- 80 Core Concepts
- 82 Sorting of Recommendations
- 88 Limitations and humaneness

**Practical Application** 

- 94 Initial Entry Points96 The Stroll98 Interests
- 102 Direct Search

- **106** *Direct Shares*
- **108** Connections
- 110 Sorting and Filtering
- 115 *Recommendation Types*
- 116 The Bottom Bar
- 118 The Queue
- 119 Website Preview
- 120 Mobile In-App Flow
- 123 Mobile Browser Flow
- 124 Sharing
- 128 Advanced Sharing

**Project Reflection** 

# 131 Project Reflection

Appendix

135	Acknowledgements
136	References
142	List of Figures
147	Statement of Authorship

# 0 Introduction

The Internet has evolved into an almost all-encompassing, omnipotent platform. In theory, everything can be found on the Internet. But how do we find content that does not float in the mainstream? Content that inspires us—the moment we need it? How is it possible for so many people with different thoughts, motives and tastes to not only coexist but also be satisfied on the same platform? These were just some of our initial questions that started this project. In order to commence, it was neces-

These were just some of our initial questions that started this project. In order to commence, it was necessary for us to better understand what the Internet really is and what further problems it poses.

# What is the Internet?

The Internet is a network of interconnected devices from desktop computers to servers to smartphones and other »smart devices«—exchanging digital data.

The breakthrough to become a publicly used technology, however, came with the invention of hypertext and as a result the possibility of the exchanged data being graphically represented. This publicly visible application of the Internet forms the World Wide Web. Putting it into more technical terms, Internet pioneer David D. Clark explains in his book *Designing an Internet*:

»The Internet is a communication facility designed to connect computers together so that they can exchange digital information. Data carried across the Internet is organized into packets, which are independent units of data, complete with delivery instructions in the first part, or header of the packet. The Internet provides a basic communication service that conveys these packets from a source computer to one or more destination computers.«

(2018)

# **Digital Pluralism**, Value on the Web

By definition, Pluralism is »the existence of different types of people, who have different beliefs and opinions, within the same societv« or »The belief that the existence of different types of people within the same society is a good thing« (Cambridge Dictionary, n.d.)

We understand pluralism as treating content and opinions equally, regardless of how popular they might be among people. In respect of that Digital Pluralism is the engagement with the diversity of content, information, interests, and opinions of the society on the Internet-the World Wide Web in particular.

### What Pluralism means for the Internet

Social media has in the past encouraged to follow trends, idealize influencers and push personal interests forward, especially by not being bound to moral standards and assigned to a real identity as in the offline world. However, this did not assist the dissemination of different ideas but instead reinforced a main-

stream dominated by media-effective content. Ratings and likes act as alleged objective representations of worth, while they actually are highly subjective. Users do not find the content that might suit them best first when browsing the Web-instead, they will find the results that are most popular among many people. Due to the pace of information exchange, these trends spread even faster than they did years ago, creating an even more comfortable platform for monopolies. We should not look at these topics from a business perspective only-especially through social media, it also affects the way we live our lives, choose our hobbies, spend our free time and, finally, develop our personality.

Living in the age where the demand for more humane systems is rising, we do not want to label technology and its usage as »bad«. Instead, we envision a more conscious use of technology. one that relies less on instant availability and instead provides humans with meaningful information and entertainment at the right time. Throughout our thesis, we will develop an approach, that puts people-enhanced but not governed by algorithms-at the center of finding information and inspiration, not by building a social media platform, but by reengineering search and browsing and moving it to a social context. We want to deal with the incredibly large amount of data on the Web without the loss of transparency and identity.

With Digital Pluralism we expect to disperse large streams by providing individuals with new, diverse and tailored content when it is needed.

We started our thesis with a mix of theoretical research and interviews with very different people—students and extreme users of the Web, an Open Source evangelist, an influencer, a designer at a web-dependent company, a media-critical professor, and two young designers who wrote their own thesis on web browsers.

While sometimes opinions clashed and sometimes one interviewee reinforced what another told us, guiding themes emerged, that lead the research we will write about in the upcoming two chapters.

How are humans on the Internet influenced by other users and how does the idealization of those people and their shared lives impact them? What are entry points to content? How do they affect our browsing? — especially social media and YouTube (which got surprisingly many mentions). How should we deal with the comfort of filter bubbles. Why does finding good content take subjectively »long« and would it be desirable to get to good content faster? What is the result of a fast-paced Internet? How can we address the pressure that sharing puts on people—either because they fear to not get a response at all or by receiving too many of them and feeling judged?

# Types of Users and their Intention

In 2019, the number of Internet users reached more than 4.4 billion (Kemp, 2019). Of course, all these people have various ways of using the Internet and not all of them are regular users.

Some might be occasional users, mainly using the Internet to search for something predefined (which they maybe did not find elsewhere), while others are heavy users, consuming and sharing a lot of content on various platforms across the Internet every day. And in between these two extremes are those who search for and consume a lot of content but at the same time do not like to distribute it. Although these user types are hard to define, at the end of the day all of them would like to fulfill their intention and reach their desired content or find new inspiration.

We concluded that there are four types of intentions users have when browsing or searching content on the web.

### **Outcome Oriented Search**

This means a user knows their desired content but still has to find it on the Internet. So when using a search engine with this intention, there is only one correct piece of information for the user. In this case, the user does not want to have any other inspirations on their way to their goal.



**Outcome Oriented Browsing** 

When users have a desired outcome in mind but still want to receive inspiration along the way in order to reach it, we call it outcome-oriented browsing.



8

#### Example

I know there is a specific recipe for pancakes that I have used a few times. I now want to refind this exact recipe again.

Or someone told me the name and author of an article they would like me to read. So when I search for it on the Internet, there is only this one article I would like to find.

#### Example

I would like to go to an Italian restaurant for lunch - still, I don't know exactly which one to visit. So I start searching for Italian restaurants in my area, getting a selection of restaurants I will look through to then pick one for my visit.

# Interest Based Browsing

Searching for inspiration on a certain topic, one often does not need to predetermine a specific outcome. Instead, browsing through content regarding a desired topic, stumbling upon new content and inspiration itself is the user's goal.



#### Example

I am a big fan of skateboarding, so almost every day I invest about an hour to see inspiring videos and articles on that topic, that I haven't seen before.

Fig. 3

## Free or Habitual Browsing

Users often do not have a (conscious) intention when going on the Internet, but follow their habit of visiting online platforms to browse through content they did not desire but might be inspiring to them anyway.



Fig. 4

#### Example

Being bored on the train, I unlock my smartphone and start browsing through Facebook, Instagram or Feedly. Although I didn't have any intention, I occasionally might find something I like before.



Of course the users' intentions may change during their browsing session, meaning a user could start by browsing habitually, then gets inspired by something sparking their interest, making them want to explore it further right away. This works for all other intentions as well. (Fig. 5)

We also found that traditional search engines like Google focus on satisfying outcome-oriented searching, leaving the search for inspiration to other platforms like Pinterest or Are.na.

# Media Types and their Parameters

One of the World Wide Web's initial goals was supporting universal sharing of data. Being able to carry every possible file and media type is a step towards enabling the unrestricted transmission of diverging information.

Next to the traditional formats of Text, Images, Video and Sound, we see an increasing amount of interactive content, with Maps being especially important or services, like online shops, which then again offer real-world objects to the user.

The sum of content on the Web is, however, so big, that we, as humans, need help navigating the data–which usually happens in the form of a link that is offered to us at some point, and most of the time those links are enhanced with information regarding the content they will lead us to. Depending on that content, there are different parameters that could be displayed as previews. We clustered many of those parameters and sorted them into three categories. (Fig. 7)

We found that, while most sites do a good job at displaying important objective parameters, they struggle to translate even more valuable information such as emotional connotation or required expert level.

You Tube			
Broadcast Yourself *	Videos	Categorie	S
Promoted Videos	5		
Meet 'Blue' An Aust	Driver shoots slow	DIY - How to Make	Farmer Do
PetTalkRadio	bbcworldnews	<u>a</u> SamProof	<u>cooking</u>
Featured Vide	OS		See More F
	Featured	Most Viewed Mo	ost Discussed
	BRAINS parody of S Produced by Living Dead C www.livingdeadgirlz.com A Troupe HOT LIVE UNDEA (more)	Girlz and Holy Zoo Dead Sexy Dance D FLESH BRAI	From: <u>theliv</u> Views: <b>57,3</b>
	Time: 04:09		More in <u>Cor</u>
	NWF Global Warmin Greenland DAY ONE: National Wildliff President Larry Schweiger sharing global warming ob more at h (more)	ng in e Federation in Greenland servations. Learn	From: <u>Natio</u> Views: <b>53,6</b>
	Time: 03:09		More in <u>Nev</u>
	"Consistently" by O A new original song by Om	m <b>ar K. Mills</b> har K. Mills.	From: <u>nHis</u> Views: <b>79</b> ,3

#### Sign Up | My Account | History | Help | Log In | Site:

Channels	Community		Upload
Sea	arch	1	powered Google
	The Winner's Guide From: <u>shopvictoriously</u> Comments: <u>0</u>	<u>to Winning</u>	Login to rate video 1524 ratings
n: In His pastory	Login Username: Password:	Login	Sign Up   Help
atured Videos	Login with	your Google ad	count 🕐
Top Favorites ngdeadgirlz 16 redy. nalWildlife 5	What's New   Image: Second state   YouTube N   Broadcast y   Nonprofit pr   your organiz   Image: Second state   YouTube M   Watch and u   mobile device   Create Custom P	onprofit Prog our cause! Ap ogram and use zation's messa obile upload YouTub ce.	ram ply for the e video to get ge out. e videos on your
	Create Custom P Now you can choo player, and fill it wi	ayers se the design a th any of your	and color of your playlists!
<u>s &amp; Politics</u> mage 63	First Annual Blog Da da da da da da rad movement to u Participating blogs	Action Day a! Today is the nite bloggers a are writing ab	e start of a pretty around the world. out one single
	Fig. 6 Yout	ube.com m	ainpage of 2007

# **General Parameters**

**QP** Duration and length

popularity: traffic

is part of a series

popularity among friends

amount of dependencies

SI level of figurative speech

choice of words

release date

age rating

languages

topic

genre

PD interaction time

# **Media-Related Parameters**

	Interactives
<u>QP</u>	requires input
	platform
	age rating
	playtime
	control device
<u>SI</u>	texture
	ability to collaborate
	complexity of inf. architecture
PD	similar to previously consumed
	familitarity with interactive patterns
	Sound
<u>QP</u>	song or not song
	speed: bpm

distribution of sound level

distribution of notes

bitrate or quality

- SI voice/Instruments
- **PD** emotional connections

genre similar to previously consumed

- P Quantitative Parameter
- SI Based on Subjective interpretation
- PD Personal Differnces

11:-	
MO	$e^{-1}$
v / G	00

- QPdominance of colorshas soundfiction/non-fictionexpert levelfile formattension graphimage quality
- PD speed of movement: cut

Text

- **QP** fiction or non-fiction links and references
  - tension curve
- SI expert level
- PD emotionality

reading

Fig. 7 Website Parameter Cluster

# **Types of Recommendations** and their Application

A recommendation is something, of which the creator believes that the receiver likes or needs it. In the context of the World Wide Web, for the receiver it should be an entry point for new content or new sites. Using this definition means that almost every way of content discovery is driven by recommendations, from a video on YouTube to a link in a Twitter Post.

Traditionally a variety of Recommender Systems-algorithmical evaluation and rating of content-is used to decide which content is displayed to the user. Three of the most popular ones are Collaborative Filtering, Knowledge-Based and Content-Based Recommender Systems.

Collaborative Filtering, as the overall most popular one, relies on comparing databases of users, and recommend what users with similar tastes liked to the other. (Pinela, 2017) The less person-based counterpart is the content based recommender system, that tries to make out similarities of the content itself and matches it to the user profile, generated on their preferences. Knowledge-Based systems rely on user input. These systems are,

what we generally recognize as filtering and enable the user to tweak their result by adding more »knowledge«. Most sites, of course, do not rely on using one system exclusively. Instead, they try to tackle the issues of each system by combining them into one. (Burke, 2000)

A lot of the recommendations on the web are initiated by search. In 2017 Mozilla published the results of a survey among Firefox users, saving that 36.2% of people first got to the site they are currently using by clicking on a search result. (Chuang) To enable the user to find their way in the mess of millions of possible search results, Google has build algorithms powered by Artificial Intelligence, Deep Learning, evaluating countless criteria such as source, links to other sites, keywords, popularity, freshness and accessibility. (Google Search, n.d.)

The problem we see today regarding algorithmic recommendations is, that while large platforms and corporations-especially the FAANG companies<sup>01</sup>-have easy access to algorithms that are far superior to those of smaller ones, thereby reinforcing the monopoly of a few large corporations.

Apart from that, there is the general critique of biased algorithms. Taking YouTube<sup>02</sup> as an example, there has been criticism regarding radicalization through recommendations. Writer and sociologist Zevnep Tufekci conducted a self-test in which she created a new YouTube account and started browsing for different topics, soon getting more radicalized content.

»Videos about vegetarianism led to videos about veganism. Videos about jogging led to videos about running ultramarathons. It seems as if you are never >hard core enough< for YouTube's recommendation algorithm. It promotes, recommends and disseminates videos in a manner that appears to constantly up the stakes. Given its billion or so users, YouTube may be one of the most powerful radicalizing instruments of the 21st century.« (2018) There have been countless scandals around bias, especially

centering around political topics, racism (Noble, 2018) and inequality (Oppenheim, 2018), that criticize that Machine Learning can only take into account, what users put into it. We, by no means, want to

01 FAANG (Facebook, Apple, Amazon, Netflix and Google, extensions of this group of companies include Twit ter, Baidu, Alibaba and Tencent, When talking about the Internet, we prefer to refer to these companies instead of the »big four« or GAFA, which do not include Netflix) is referring to the highest performing tech companies on the NASDAQ

02 YouTube is part of the Alpha bet Group, using GoogleBrain to Power their alaorithm

say that AI-based algorithms are generally a bad thing. They do work well in many areas. But they also for sure have severe problems, and they are inherently in-transparent.

Next to algorithmically generated recommendations, many platforms-social networks in particular-rely on personal recommendations. Unlike previously described recommendations, those can also carry personal value in that a user could have an emotional connection with the recommender.

Personal recommendations naturally carry more value than the ones offered by a machine because we assign social meaning to them. Research on trust-based recommendations suggests that one user is influenced by how much they trusts another, defining trust as »the subjective measure or a belief on a personal experience in a given context«. (Abdul-Rahman and Hailes, 2000)

Companies started using those social relationships (page 35: Para-Social Interaction) to their advantage, placing ads and product placements in Instagram posts or YouTube videos of influencers. Various social media channels distribute extreme trends. following specific aesthetics. Especially Instagram has proven to be a platform very prone to this type of recommendation. While it might be great for expanding businesses, it can also be harmful, resulting in issues like overcrowding with tourists in some places or, more generally, suppressing diversity online. Instead of users receiving diverse content from people they follow, there are a few dominating themes, that are reinforced by algorithms filtering for similar content, instead of showing content solely according to recency, as many users may still believe. (Constine, 2018)

If we take a closer look at social media, we will see that a lot of the content is optimized to be media-effective. Just like sensational headlines in newspapers, today, videos, articles and websites try to grab users' attention through their titles and lurid preview images. However, on the Internet, there is often no connotation such as knowing in advance that a page will be rather politically »right« or »left«. The content preview is all the context we get. This means if we see a post with a link on Twitter, the only information we have before looking at the content is what

the recommender writes. When we talk about media-effective content, we therefore talk about content that is at first visually appealing and secondly provides a written preview, nudging the user to click on this link. At this point it becomes also fairly apparent, that media effectiveness has little relation to the quality of the content.

While the commercialization of recommendations has been a root for mistrust, there is one type of personal recommendation that stands out among others. Our interviewees described it as inspiring, valuable and the origin of further research. These recommendations are the ones people receive directly from a friend or acquaintance. Links users receive over WhatsApp or Messenger-or, of course, directly in a conversation.

### **Filter Bubbles**

The term »Filter Bubbles« has been used a lot in the conplatform-specific bubbles.

text of the one-sided display of information on political topics, leaving it with a generally bad connotation. We identify three forms of bubbles on the Web: Topical bubbles, social bubbles and The recommendation of content, adjusted for pleasing users on the Web and the goals of platform providers to keep traffic on their sites has led to the reduction of diversity. In his paper Designing interfaces for presentation of opinion diversity, Munson describes some of the issues of filter bubbles. The lack of being exposed to contrary arguments, and instead only being confronted with like-minded people, in general leads to more extreme views. Inclusion of minority's opinions can lead to more divergent thinking and improving skills in problem solving and decision-making. He also addresses the topic that people, who feel like being part of a minority might hesitate to talk about their views, because they do not want to challenge social harmony (2009). These arguments mainly apply to controversial topics and topics that affect society in general. Instead of treating filter bubbles as generally bad, topical or social bubbles can as well be

beneficial. Exploring niches or interests will be a lot easier if the user is able to stay in a comparatively narrow bubble. In our interviews, people talked about being happy in niches on YouTube or in their topical bubble on Twitter-»going down the rabbit hole« is the popular phrase one of our interviewees references. Bubbles offer explorability inside of a topic, that guarantees relevant content, content a user will enjoy more likely than when always being confronted with opposing content. On another note, people find new topics by being able to escape their existing filter bubblecurrently often by accident.

Social bubbles might be problematic when they are limited to a group of extremists, but getting a recommendation from someone whose expertise you trust most likely will be the most valuable one you can get-regardless of it being a friend or expert on a topic. Twitter is one example, where the provided content. when following the right people, can be extremely satisfying.

So while social and topical bubbles can be helpful in many areas, platform-specific bubbles are mostly harmful. They foster monopolies. limit access to information and thereby the usefulness of the Internet as interconnected network of information.

### **Google Recommendation**

#### The Search Algorithm

The basic functionality of Google's search algorithm includes the usage of language models and interpretation of spelling mistakes. It tries to understand what type of result a person is looking for based on descriptive words such as »pictures« or »opening hours« and then analyses how often or where keywords from the query appear on a website using HTML-Tags. Instead of just repeating the query, the results should answer the search by interpreting its meaning. When providing a user with recommendations, the algorithm filters for variety in sources and an interpretation that is not too narrow. Google also incorporates the context of users such as location, search history, settings. (Google Search, n.d.)

#### The Knowledge Graph

Introduced in 2012, this is an intelligent model that uses public sources to create relations between objects and gather facts. It learns to understand words in their context and is thus able to interpret ambiguous expressions such as »Tai Mahal«. which could mean either the monument, the musician, or a restaurant. It is also responsible for the summaries-biographies or short descriptions-Google Search provides. It selects the most relevant information on a topic and links together content, like »Pierre Curie« and »Marie Curie«. The knowledge graph also makes use of other users' search behavior to predict what people will be looking for. (Sighal, 2012)

#### Crawlers

Crawlers are used to find content on the web, by checking for newly emerging links. They discover new sites and bring data about these pages back to Google. Information about webpages is then analyzed using keywords, freshness, originality or other parameters and stored in the Google search index.

#### **Ratings And Reviews**

Some of Google's search results are accompanied by a star-rating if the site provides special Mark-Up to optimize for that case. Other options to rate are directly offered by Google. On Google Maps users get the opportunity to rate locations such as restaurants or shops to provide better guidance for users navigating those locations. A reward system is used to encourage reviews. After rating enough places a person could become »Local Guide«. Different levels used to be connected to different rewards, such as vouchers for the Google Play Music and Google Play Movies, however, there seemed to be a reduction regarding those rewards.

# **Ratings and Reviews on Web**sites and in Apps

In the previous chapter, we talked about different types of recommendations. What we did not look into yet is the most common form for the user to deal with those recommendations. It is hard to imagine the commercial web without ratings and reviews. They have become critical indicators for users to decide what to buy, look at or visit, whether it is purchasing an article on Amazon or deciding on a Restaurant for a family dinner. Ratings are virtually everywhere, guiding the user through large numbers of seemingly similar content blocks, trying to aid the decision-making process.

To show how ubiquitous they are, we want to give a brief overview of popular rating- and review systems, that are currently in use.

22 Reviews	****
Accuracy	****
Communication	****
Cleanliness	****
Location	****
Check-in	****
Value	****

#### Fig. 8

11 customer reviews 



Review this product Share your thoughts with other customers Write a customer review



Showing 1-8 of 11 revie

Customer images

Top Reviews Franslate reviews to Englis

🔘 с.н. \*\*\*

Colour: C9-16GB-Schwarz Verified Purchase

atte, habe ich auf Grund des guten Preises zu diesem hier gegriffen. Dieser Player hier hat Bluetooth UND einer Lautsprecher und das für genau dasselbe Geld. Die Bluetooth Verbindung habe ich noch nicht testen können, abe die Lautsprecherfunktion ist sehr nützlich wenn man mal ohne Kopfhörer Musik hören möchte. Ich bin sehr zufrieden bis jetzt und die 16 GB interner Speicher sind mehr als ausreichend. Die mitgelieferten Kopfhörer liefern einen guten Klang, für ein nortables Gerät völlig ausreichend. Jetzt schau ich noch ob ich Filme in das passende format umgewandelt bekomme und dann habe ich wirklich einen Multimediaplaye



#### **Feedback Sections**

Apart from general quantified systems, users are often offered to express their opinion in the form of a review. When attached to a star rating, it often provides information about their criteria. Contentwise, they are more valuable than rating scales, especially because they can provide insights into other user's judgment criteria and motivations.

#### **Binary Rating**

Like and Dislike or Upvoting and Downvoting are rating scales with just two intervals-so-called binary ratings. They are frequently used for ranking content or

#### **Rating Scales**

Rating scales use an interval scale, usually with 5 or 10 intervals. On shopping sites, star ratings are often accompanied by text reviews or a more detailed view on the rating distribution. AirBnB both provides a generalized rating and ratings on individual categories like »Check-in« or »Cleanliness«.



Ich hatte his ietzt einen ganz normalen MP3-Plaver ohne Extras, nachdem dieser aber seinen Geist aufgegeber

Fig. 9



expressing your opinion on social media. In these cases, they are publicly visible. Another common use is comment sections so people can express their agreement and disagreement with another user.

#### Upvoting

This is an even more simplified way of rating content. On Instagram or Twitter, the user has an option to use the Heart-Button. Other than Binary ratings there is just an upvoting and showing support. Likes in some cases serve as a form of »saving«. A less strict form of upvoting are Claps on Medium. They are a more liberate expression of support for the author, by allowing up to 50 Claps on one article, whereby the time a user spends clapping, expresses their appreciation for the writing.

#### **Comments and Discussions**

While Comments are not really viewed as a form of rating, they provide substantial insights into users' opinion on a topic. They allow expressing fine emotional nuances, iust like a review.

Fig. 12

1d ...

#### Reactions

In 2016 Facebook switched from a simple Upvoting to Reactions. With a total of 6 dif-

ferent emotions, the user can express Like, Love, Entertainment, Surprise, Sadness and Anger. Using this system the effort to understand the emotions people had on a post, is kept low, while also being way more detailed than before. Of course, those emotions are still fairly broad and the options might not be sufficient for evervone.

#### Following and Reposting

When a user decides to follow someone or repost their content, it is often not intended as a rating. But when deciding whom to follow-unless they know the person-popularity suddenly becomes a relevant factor. On Github, repositories are judged on their number of forks and stars, which is essentially their form of following a repository. By following, forking or reposting a user decides to invest their time, whereby theymaybe unintentionally-boost the popularity of that content.

#### Awarding Users

While most of the time it is the users who rate something, some sites award their users with status based on their behavior. Users of Stackexchange (Stackoverflow) receive reputation based on their votes, approved answers and edits.

26

Theory

Dan

8 | E



Thanks for the insightful and entertaining talk this morning Paul! It

was a pleasure to spend time with like-minded individuals and get a

copy of your book! Enjoy your time in Berlin!

Fig. 11



Fia. 13





#### Verification and Approval

Those Mechanisms allows users with a special status in the given context to verify what other users claimed to be true. On Stackoverflow an author of a question can pick the best solution for their issue. As a user on LinkedIn one can specify skills for oneself. Once specified, other users can endorse these skills, with differentiation between people who have worked with each other and people who have not.

These systems are just a categorization of the more widely used approaches. Lots of companies use other individually tailored systems on their platforms. The way a system is designed strongly depends on its purpose.

Overall, we can extract four main purposes of ratings and reviews: Guidance for the user, feedback for the creator, global ranking and filtering, personalized algorithm optimization.

Traditionally ratings have been provided to users, helping them to make a purchase decision. Indirectly or directly reviews thereby provide valuable insights for the creators of the given content. Ranking and-in an interactive environment-filtering provides easy access to the category. The only fairly new con-cept is personalized algorithm optimization. In the age of Machine Learning, platforms increasingly try to offer more tailored content to keep users on their site. They try to offer that tailored content at a scale that is impossible to do by hand. Netflix, Google News, YouTube and Spotify use algorithms that include hundreds of parameters to rank their content for the user. Both Google News and Netflix at this point provide up- and downvoting, to help train the algorithms.

# Problems with objectification, valuation and fake reviews

Before the Internet existed, an potentially self-proclaimed expert would give a one-to-five-star rating and publish it in a printed magazine or book accompanied by a description of how this rating came together. They provide insight into their evaluation criteria, pros and cons for a product. The Internet offers the opportunity to get hundreds or even thousands of assessments of a product, which makes it pretty much impossible for the readers to keep track. What happens next is that usually only the star ratings are extracted from a review (if it exists at all in text-form) and merged into one average rating. The result is a cumulation of arbitrary, obscure criteria, expectations, and values.

Star ratings specifically have an issue with the binary distribution of ratings, the so-called J-curve, as users tend to primarily rate products, whose performance they perceive as either extremely good or bad. That effect resulted in websites showing distribution of rating on products in detail and YouTube exchanging their star ratings altogether for a thumbs-up and -down voting system. (Hu, Zhang and Pavlou, 2009)

The J-curve poses the question, whether there is value in those type of ratings at all if basically everything is labeled »good«.





Fig. 16 J-Curve of Amazon ratings

# **Conformation among Users**

In 2010, researchers conducted an experiment about conformation in user behavior on Facebook. Using existing Facebook accounts and posting authentic status updates for 7 months, they wanted to find out how likely people were to push the like button if a stranger pressed the like button, three strangers pressed the like button or a friend pushed the like button. While they did not find any changes when a stranger pressed »Like«, chances of someone pressing the button doubled for multiple strangers and quadruple in the case of friends (Egebark and Ekström, 2017). Existing research on rational herding assumes that people imitate others if they believe them to be better informed about something to promote their own, monetary self-interest (Bikhchandani et al. 1992, 1998).

Akerlof (1980), Jones (1984) and Bernheim (1994) are suggesting that prestige, esteem, popularity and acceptance are a cause for conforming behavior.

### **Rating People**

After analyzing the use of ratings on products, sites and content, there is one case left we did not address yet. Service providers are often seen on the same level as a product offered by a company. Uber–a platform that enables private people to work as cab drivers-is one example of these services. Their model is powered by a mutual rating system, where both the driver and the passenger rate one another. Himanshu Khanna writes in The psychology of rating systems:

»[...]If a driver's rating was 4.6 or lower, Uber could consider deactivating their account. Almost 50 percent of these Uber commuters will cancel their ride if the driver has a rating anything less than 4.5 (out of 5)« (2018)

This example underlines under how much pressure drivers

(and also passengers) are to please the other, but it also applies to other situations. Comments on the Facebook Wall can be seen as ratings of people, as well as approving a skill on LinkedIn. All of these features impose pressure on a user. They are tightly connected to topics like cyberbullying and mental health but they can also be pivotal for getting or not getting a job. For these reasons we want to take a step towards designing without rating people. The next chapter will highlight this view, by providing deeper insights into social relationships on the Web.

### Interview: Marco Lauritz on Rating Systems

One area strongly influenced by recommendations and ratings is consumerism. We had the chance to speak to an expert on the topic-a designer at a company that focusses on providing people on the Internet with the best price for a product in the German market. To achieve their goal, they collaborate with big and small shops and compare the prices they offer on specific products. Marco has worked for that company for ten years. He provides us with deep insights into their motivations for specific features and his own opinion on the topic of recommendations.

#### The influence of Search Engine Optimisation (SEO)

Right at the start. Marco explains that a lot of the decisions they made came from optimizations for Google Search. User ratings are pretty much irrelevant for what the company promises. Nonetheless, very early on, they chose to adopt them onto their platform.

Back then Google's SEO algorithms were very crude compared to today. As a result, user-generated content would help with improving their ranking in Google's search index. Ratings and reviews were one easy way of getting that traffic.

Just like Amazon, they started by paying customers to rate products. After they stopped, however, the number of new ratings went down significantly. Today they have a total of more than 500 000, but it is only increasing by about one each day.

Google's SEO has come a long way since then. Marco's company, in turn, has a hard time placing itself on the top of a search today, which is an unsolved issue for them.

#### **Editorial Reviews**

While purchase advice is not the company's focus, they do offer well-founded product descriptions. An editorial team curates them based on profound research upfront. This development is one of its measures to move back to a more user-centered approach. Another one is to place »best deals« on the platforms front page. While those might be helpful steps to reclaim popularity. Marco emphasizes, that, to be successful, the company would need to regain authenticity first.

#### **Established and New Rating Systems**

Star-ratings are a widely adopted abstraction for an unreadable number of ratings.

However, in classical star-ratings, generalization and averages diminish meaning. Platforms address that well-known issue by showing the distribution in detail.

At this point, Marco brings up AI. He says it is going to be critical for future recommender systems. However, when we asked him specifically about fresher approaches by Netflix and Facebook<sup>01</sup> he is critical about how well they will work. 01 Netflix uses percentages of how well a movie matches with your He views Netflix' system as too undifferentiated and felt that usual watching behavior it did not work well for himself in the past, assuming that Facebook lets the user choose reactions his spectrum of interests is too broad. to a post that range from happy over surprised to being angry We conclude our interview with him stressing, that to get

users to interact with feedback systems, it is necessary to enable minimal feedback, using »just one click«.

# Social Relationships on the Internet

By connecting devices, the Internet inevitably connects the people operating them, too. And the reason we need the Internet to be an environment that embraces pluralism of information and content is that people are inherently different from one another.

While providing humans with access to diverse content is our primary objective, we first need to make sure to offer an environment that celebrates the diversity of identity and thought. Social pressure can be massive, and as we ultimately want our users to navigate the Internet with a feeling of joy, we need to address the topic of feeling accepted as a person. We, therefore, investigated social structures and phenomenons that are formed by Internet usage.

### **Para-Social Interactions**

Para-social Interactions are a concept, first described by Donald Horton and R. Richard Wohl in 1956 in their article »Observations on Intimacy at a Distance«. They describe one-sided (non-reciprocal) relations between audience members and *Personas*, media (specifically TV-) personalities who are »not prominent in any of the social spheres beyond the media«.

»[The Persona's] appearance is a regular and dependable event, to be counted on, planned for, and integrated into the routines of daily life.« (Horton and Wohl, 1956)

This theory of Para-Social Relations relies on *answering roles*: The Persona creates situations with anticipated reactions and thereby dictates the interaction flow. As soon as the audience members fulfill these answering roles, the para-social interaction structure takes effect.

Furthermore, the Persona's interaction with the camera and reoccurring allusions or referrals to past happenings suggest intimacy to the audience.

#### **Relevance for today**

The authors assume that most audience members realize the one-sidedness of the relationship they might have with a Persona. However, hearing many stories similar to those of Diana, that we will talk about in our next chapter (page 38: Interview with Diana Scholl), many young people do not differentiate as much. And one could argue that the feeling of intimacy is ampli-

And one could argue that the feeling of intimacy is amplified even more due to Personas posting videos from their private lives or homes and giving their audiences names.



Fig. 17 Model for content flow on the Internet. This modle is a strak abstraction and used to stress the role of tastemakershuman component, wiht the ability to

Social media influencers are modern opinion leaders for Internet users. So we conducted an interview with one to gain more insights on what relationships to fans and having a significant impact on others is like online.

Diana is a German blogger, posting personal recommendations, advice, happenings, and advertisements on her blog and her Instagram channel doandlive. On Instagram, Diana reaches more than 88 000 followers, which provides her with a large area of influence.

#### The Making of an Influencer

We asked Diana about her thoughts on why she has so many people interested in what she does. She answered that being at the right place (Instagram) at the right time (back when lifestyle and fitness blogging was not as big as it is today) made her popular among many people. She also mentioned that she thinks she might have appeared suitable as an approachable digital friend that is not too perfect in looks and behavior.

### Para-Social Interactions in Recommendations

Para-Social Interactions as described within the previous chapter (page 35) are definitely existent and sometimes are not perceived



Fig. 18 An excerpt from Dianas Instagram Page

as such by all of her followers, Diana says. There have been situations where she was greeted by strangers on the street, as if they knew her personally, looking surprised as soon as she asks who they are. She is proud, but careful at the same time, knowing about the influence she has on others, stating that it is »great to have this kind of impact on people when you use it right-but then again, who knows what's right?«

#### The Pressure of Providing Exclusivity

Diana says she sometimes feels a high pressure to find and post new and exclusive content. She especially did during her early times as an Instagram influencer, where she posted content on pinpointed topics every day. Now that she has changed from topical to more spontaneous posting, she says that she has not only lost some of her old followers but feels less pressure, too, since she »became the exclusive content« herself.

#### Ups and Downs of receiving hundreds of Reactions

Sometimes Diana wishes, she could post specific content without receiving feedback. But on the other hand, positive feedback, like people thanking her for being deeply inspiring, strengthen her belief in »why [she is] doing this.« She also likes to check back with her community, so she gets to know them better.

#### Being a Curator

Being an influencer means being a curator to Diana. She has to act as a filter, letting through the content that suits her personal beliefs and might be attractive to her audience, too.

# The People's Choice

Voting. A study of opinion formation in a presidential campaign. was the title of a 1954 study released by Berelson, Lazarsfeld, and McPhee. The researchers described the influence of media (mainly television and radio) on people's political beliefs during the USA's presidential election of 1948. Their principal findings were that decisionmaking (on how to vote) mostly takes place within a social context and therefore is not strongly influenced by mass media campaigns (television and radio). The media often acts as an amplifier to people's (political) beliefs, due to them predominantly consuming media matching their values.

They named two roles, that are assumed by people: Opinion Leaders and Followers. These roles were determined by asking the participants two questions beforehand. Opinion Leaders were those who answered both questions with a »yes«:

»Have you tried to convince anyone of your political ideas recently?« »Has anyone asked your advice on a political *question recently?*«

Based on their model of Opinion Leaders and Followers, a so-called Two Step Flow of Communication had been constructed by Lazarsfeld and Katz, as explained in their book Personal Influence (1955) where Opinion Leaders are influenced by media, while the primary influence for Followers are Opinion Leaders.

#### Relevance

The finding of people being influenced mostly by other people can be observed in present mass media, too. Influencers are our modern day Opinion Leaders.

However, many people, including ourselves, criticize the Two Step Flow Theory since a one-way flow of information is rarely possible. Especially when projecting the model on interactions between Internet stars and their followers: Their followers' reactions influence influencers themselves through comments, messages, and likes based on which they tend to adjust their content (page 38: Interview with Diana Scholl).

We describe another theory that is more applicable to today's mass media, and mainly the Internet on the next pages.

## The Digital Identity

Eleanor Rosch was the first to describe the prototype theory (1975), which states that humans use prototypes to define natural categories. As opposed to establishing a category through an abstract description or setting its' boundaries, classes are a cumulation of its members with a different level of how well they represent the category. (Rosch, 1978)

When someone talks to us about a »designer«, it will create a reasonably specific image in our mind. Depending on experiences and social norms it might be a fashion designer who wears black turtlenecks and is extremely good at sketching or someone more laid back, spending their day either in front of a Macbook or by putting sticky notes on a wall. While those prototypes can differ from person to person, they are usually firmly bound to the people's cultural background and social setting. Therefore, as explained in The Social Machine, it is inevitable to sort people into categories, that we associate with them. We have to do that to understand the world around us. (Donath, 2014)

Digital Platforms should encourage these categories to be as close to reality as possible. Mismatches are harmful and can result in conflict. (Donath, 2014)

#### The Development of Identity in Online Communities

On the Internet, humans judge people using the same methods as they do offline. They take a look at what they know

about a person and try to fit them into one category. Users online have-with restriction-the chance to reveal as little or as much about them, as they want. In turn, when someone judges solely based on a screen name, they might still have strong associations, that are entirely different from the actual identity of their counterpart. On the other hand, the Web also offers the opportunity to be free from physical attributes. This chance led Donath to pose the following question:

»Can we design social spaces in which people make better sense of each other than they do face to face-that ameliorate the prejudices stemming from physical trait-based impressions, while also avoiding the confusion and deceptions of easy. ungrounded identity claims?« (2014)

Donath gives a brief overview of the development of identity online: In the early days of the Web, there was the idealistic view of a disembodied cyber-utopia. Back then, communities were mostly scientific. They imagined a place, where, detached from superficial looks, people could choose any identity they wanted. However, instead of embracing diversity, users started to use their anonymity to post hate speech and unwanted pornographic content. Consequently, when social media, such as Facebook, popped up, they required people to use their realworld identity to sign in. (2014)

Recently, as a measure against discrimination and harassment, Austria's National Council passed a law that obliges services that allow posting on their platforms to require personal data to verify their users, when they register. (2019)

This trend presents a stark contrast to the users' desire to remain anonymous, especially after numerous scandals regarding the selling of personal data to large companies. Most notably is Facebook with its data scandals in 2005, 2007, 2009, 2013, and 2014. (Sanders and Patterson, 2019)

If we want to design an Internet that encourages interpersonal communication and recommendation, we have to remember, that people are-with good reason-extremely skeptical towards platform providers. When basing personalized systems on user data, we have to take into account, that they might not be willing to share a lot of personal data online, or that the data they provide is not necessarily completely honest. On another note, we also have to be careful with anonymity on the Web, as it could be a source for bias and misunderstanding among users if they are judge each other based on sparse information.

# Pace and Attention Economy

In recent years, the Humane Tech Movement emerged, led and followed by people that criticize the persuasive and addictive traits of today's technology. Parallels with traditional media critique point to issues with the speed of distribution and lowering attention spans encouraged by the media.

In an interview with professor and relationship therapist Franz Biggel from the University of Applied Sciences of Schwäbisch Gmünd, he explained his view on the issues of today's »attention economy« and a decrease in quality (in media). Biggel states that society's rising urge to consume will reduce the amount of sustainable and high-quality products on the market as well as of content on the Internet. This urge to absorb new things is pushing faster than qualitative content or products can be created.

### An Excelleration Crisis

Peter Kafka, a German philosopher, and physicist, to whom Biggel also refers, has a similar opinion on the development of media. In an essay, recorded from his speech at the Nürnberger

Radiotage 1997, he explains his idea of the »global acceleration crisis« and how it connects to less qualitative media content (and the importance of radio).

Kafka contrasts the successful principles of biological innovation with what we call innovation nowadays. Biological change happens as genes mutate and get passed onto new generations. in case they prove useful, and will then spread even faster. From Peter Kafka's perspective, these processes are a paragon for how qualitative and sustainable things should spread. Innovation nowadays though, means selecting superficially useful ideas and realizing them, he says.

Globalization enables us to spread ideas much faster than before-broadcasting them across the globe before a proper validation process can take place.

Now, one could argue that through the Internet, the speed of distribution of ideas has increased even further, resulting in sharing of more low-quality content and the increasing consumption of unnecessary media, as Biggel states it, too.

The main question our interview with Professor Biggel and the speech of Peter Kafka raised, regarding our solution for a pluralist Internet, is: Do we have to decrease the speed of how we find and share content on the Internet to maintain a high level of quality?

We concluded that a verification process is taking place, whenever someone shares content because it is of a certain quality. As algorithms, however, often struggle to recognize quality, we want to reduce their use in recommendations and increase the number of suggestions by real people, because they, in contrast to algorithms, can take their time to reflect upon quality.

With a look back at classics of media critique, one can see that many of the critical points made back then about how the media and entertainment industry-mainly TV and Radio-are influ-



Fig. 19 Peter Kafka (1933-2000 often criticized the pace of innovation and the growing desire for consumption in todays society that goes hand in hand with a lack of understanding for sustainability.

encing society, are similar to those we find today. Neil Postman in his well-known book Amusing ourselves to death. makes the point that the way we think about intelligence and wisdom and our values regarding these topics is shaped profoundly by the media and available types of content, such as valueing logic and natural sciences in the age of literature and rhetorics and articulation in the pre-print era. Media shapes how long we are able to concentrate and how willing we are to focus our attention. »Is there any audience of Americans today who could endure seven hours of talk? or five? or three? Especially without pictures of any kind?«, he asks rhetorically-because our means of accessing the same information are much more flexible, allowing for a lot faster, customizable consumption of that same content. Postman, however, does not see the problem in individuals, but rather in society itself, as being vulnerable to distraction. (1985)

While he explicitly dissociates himself from classical media critique quite a few times, he still makes his point against speed and dispersion. (1985)

### **Humane Digital Products**

One of the leading figures behind Humane Tech, ethicist and essavist Tristan Harris, who co-founded the Center for Humane Tech, has released several articles, pointing out many design issues. In our design we would like to minimize the use of the following persuasive patterns that make people want to spend more time on it than they normally would:

Variable rewards that occur intermittently, making the users want to reuse a feature multimple times in hope of being rewarded once more-like pulling the lever on a slot machine.

FOMO (fear of missing out) or FOMSI (fear of missing something important) means people have been convinced that a platform is a very important channel for certain content, so they are in fear of missing it for the time they are not spending on the platform. (Harris, 2015)



Fig. 20 Tristan Harris (\*1985) former Design Ethicist at Google, criticizes FAANG companies for disrespect ing users' attention.

Infinite feeds can be useful if an infinite number of links (or amount of inspiration) is wished by the user. However, as soon as users would like to narrow down possibilities. e.g. when trying to select the »best« option for them, infinite feeds can push the user into spending more time on their search than they initially wanted to.

Clickbait titles-persuasive headlines, designed to spark a strong curiosity within people to make them consume content even if they didn't initially intend to-are a phenomenon that has increasingly spread throughout the Internet during recent years. (Rony, Hassan and Yousuf, 2017) These titles are often misleading since their media-effectiveness does not necessarily reflect the content quality. In addition they often portrait a highly exaggerated or distorted image of the underlying content.

Douglas Rushkoff, founder of the »Team Human«-movement criticizes today's technology on another level. He states that people are surrendering to technology by letting it direct their lives and putting it above themselves. We agree with Rushkoff to the extent that we think it is useful to connect people to one another and to let them exchange suggestions instead of leaving them to technological algorithms only. (Rushkoff, 2018)

When designing for vast platforms like the Internet, focusing not only on satisfying individual users but satisfying communities in parallel is a crucial as well as challenging task. In order to establish togetherness that is comfortable for every user on the platform, creating guidelines for the community is inevitable.

Crazy 8s, »How Might We...?«-questions, numerous ideation sessions, card sorting, defining user needs and top insights, led us to create our core opportunity areas as well as design principles our system is built upon.

# How Might We...?

In order to support our further ideation processes, we created a large pool of »How Might We...?«-questions. (Fig. 21)



# Threats and Limitations of the Web

The Internet is a network at a global scale—and when problems appear on powerful platforms, they will affect millions of users.

Previously we explored algorithmic bias (page 19), generalization, and mainstream. But sometimes racism, inequality, gendering, and sexism are already prevalent in users' lives, and when they go online, they take these views with them.

We spoke to Jan-Christoph Borchardt, who describes himself as an open source designer, minimalist and feminist. He says that the Web is split. There are cases in which the Internet can be a precious place for marginalized groups to gather-people having rare diseases, people who are hidden in society offline. But there are also fascist groups, spreading hate and intolerance.

If a platform that allows free, uncontrolled expression of opinion gets populated by the political right, racists or misogynists, it often reinforces their beliefs and makes it easy for them to attack others for disagreeing.

Jan-Christoph refers to gab.com, a tool, which claims to support comments on every side and to allow free discussion and to empower users. Looking at the website's comments, the viewer will quickly notice, that the platform is mainly inhabited by racist, with very few opposing opinion, unhindered in posting extrimist content.



Fig. 22 One of the milder comments on gab.com

Social Media is not the only place where inequality has an enormous effect. Wikipedia, which we rarely think about as a social network, has a share of less than ten percent female editors. (Art+Feminism, 2019) Articles about women are more likely to be rejected as insignificant than those of men with similar achievements. The New York Times reports that editors attacked their L.G.B.T coworkers in the past and that there have been edit wars<sup>01</sup> on whether to use peoples' gender or biological sex in articles. (Jacobs, 2019)

On another note, we also see the limitations of the Internet. Not everyone can or wants to access it. The Web is itself a bubble, representing only a specific demographic and should not be treated as a minified version of the real world. Making predictions based on society online is dangerous and discards many other prevalent opinions.

Remember Mara Wilson, aka the cute little girl from Mrs. Doubtfire, the remake of Miracle on 34th Street and Matilda? Surprise surprise surprise she's now a batshit crazy woketivist on Twitter giving Alvssa Milano a run for her money in the "craziest NPC of them all" department. "Get Rid of the Nazis"? Which Nazis? There are no Nazis in 2019. You mean anyone who

#### Mara "Get Rid of the Nazis" Wilson 🗥

One of Paul Simon's folkier songs came up on shuffle and it made me realize that if I had one wish it would be that wh\*te supremacists would never be able to hear music created by Jewish, black, or LGBT

01 fast back-and-forth editing of individual articles by editors with opposing opinions

# **User Needs**

In awareness of opportunities and weaknesses of the ac-		
tual state of the Internet, we derived User Needs from our pre-	04	
vious research, including qualitative user interviews. We mostly		60
concentrated on the needs regarding content discovery, but also		30
respected the social element of the problem by reflecting on our		be
research on social networks and relationships on the Internet (page		
34: Social Relationships). Most of these needs are directed towards		
the in-		
fluence on users' feelings while executing a particular action,		
while the essential needs deal with providing valuable content.	05	
	05	

01 The quality of content	са
should be guaranteed prior	See
to its consumption.	

		06
02	Users should be en-	te
	abled to receive new, less	a
	repetetive content.	ir

If the consumption of content is part of their downtime, it should be inspiring or leave a feeling of excitement.

03

When a user is part of a ocial network, they should e appreciated by others.

Users should not feel frustrated because they cannot find what they were searching for.

Exclusive content fosers diversity and provides a feeling of being unique nside of a large network.

Users should be able to 07 interact with likeminded people and receive inspiration from them.

Users should not feel 08 pressured when sharing, but instead enjoy doing so.

When sharing con-09 tent, users should not feel stressed by feedback they receive or don't receive.

When trying to focus, 10 users should not be distracted by other content competing for their attention.



Fig. 23 A snippet of our user needs and insights map

# Exploration of Fast Decisionmaking

For our Sprint on the topic of fast decisionmaking we decided to focus on concepts of fast evaluation, meaning that in order to decide whether a user would like to see content or not, they need to know the essence of the content's topic, the mood it represents and/or quantitive data like »time needed for consumption«.

So the main »How Might We...?« question addressed in this sprint was: »How might we make the content's substance understandable at first glance?« accompanied by »How might we get people to explore content that's outside of the mainstream?« and »(...) keep subjective opinions subjective?«.



Tan 











Fig. 28

Naconte The Annos Burn

A TOO ABSTRACT TO BE REPR

do I sep this ontest tille/Inle raspupati elearnable colour code for based on woods/sounds, images used , specific coli for specfic lend ahody

# Exploration of Diverse Content

#### Fig. 31



Fig. 32





Fig. 34

Fig. 35



Fig. 37

. resites esp social duffines Inspiretion Blogs ODO/MANE Vews pages O KNOW ABOUT. Multimedia ase · GO OHAVE / BUY?

Fig. 38

After exploring different options for aiding in the process of content selection, we decided to further explore in which direction our project could develop. As a means of synthesis, we sketched different possibilities for discovering new content with the premise that it should offer diverse options.

Many of the features we scribbled were already rooted in personal recommendations or »inspecting« other peoples activities and explorations. On another note they also dealt with the topic of inspirational sessions, that were not limited through the time spent in the browser, but by the time the user is interested in that topic.
# **Easy Sharing**

In our user interviews, we found that many people are worried about their postings not being well received—either because it does not reach the people who would be interested in it or because it does not appeal to a mainstream audience.

We, therefore, set out to design a sharing model that eliminates these issues by alleviating the pressure of receiving likeswhich act as status symbols-from the recommender and letting people who truely care about the recommendation receive them. Easy sharing means creating the least effort and thereby eliminating another hurdle for people to use the sharing features.

This premise resulted in two sharing concepts, both of which are designed to be reachable at any time and on any content one is browsing:

#### The Passive Share

People would like to share content to recommend something although they do not know if there is someone interested in it. In the past, this was either done via social media posts that often did not reach the right audience or not done at all because people felt like there was no audience. With passive sharing, people would be able to share content that is then delivered to others who are interested.

#### The Direct Share

Direct sharing is similar to the already widely spread sharing method of using instant messenger to send a recommendation link. When we speak of direct sharing, though, we not only mean sending links to someone but again providing them with the shared content as when it fits their intentions.

Using a low fidelity prototype (Fig. 39-Fig. 44) we conducted an informal user test, to get an impression of how these types of sharing would be received and get an understanding of the initial impression they would leave to the users. We also wanted hear people's opinion about anonymous sharing and what their pros and cons would be.

While we mostly received positive feedback, and the idea that the receiver would only get suitable content seemed logical, the direct sharing was often misunderstood as messageing, that most people would rather use to share to their friends, it seemed to associated strongly with social networks.

The different states of the Sharing Element in the order shown to our Interviewees



► ► ● 0:01 / 9:38

Dee 10 good reasons for CGI Animation in Film CGI – How is it done?

Is CGI Getting Worse? 2.638.949 Aufrufe

Fig. 40 Passively shared

Fig. 39

and recommendations



Fig. 41 Metadata to a recommendation



Fig. 42 Direct Share Pop-Up

Fig. 43 searching for a receiver

Fig. 44 selecting multiple receivers







# **Design Principles**

Throughout our research, we kept dealing with paradox issues. The same features that would be well suited for one case would turn out to be terrible in another. Anonymity is great for encouraging free expression, but also promotes harassment. Filter bubbles are amazingly comfortable for the individual, but also strengthen unilateral and extremist views. Having one platform for matching one objective, like Amazon for shopping, facilitates navigation and exploration of that topic, but is also a threat to small content providers and diversity and simplifies abuse by the provider.



Fig. 45 Design Principles

With the establishment of Design Principles, partially based on ethics, partially on our user research, we gave ourselves rules to follow, when dealing with such paradoxes, while, as a team, we benefited from developing a shared understanding of our goals.

### Protect People from beina iudaed

Provide diverse Perspectives through Interconnectivity

**Enable Users to set** constraints

Avoid biases and harassment and instead encourage tolerance. Building an environment where a person and what they accomplish is not judged directly, enables personal development but also implies more privacy.

A website usually only provides access to a limited range of information. Given the total amount of content on the Internet, a system should support accessing topic-related crossplatform information anytime to prevent the one-sided formation of opinions and encourage an exploratory, inspirational navigation throughout the web.

Filter bubbles can be useful in some cases, so we let the user decide how far away the content they see is from their original query. Providing the user with such tools also provides more transparency to the recommendation process.

### Value the Users' Time

To spent time on the Internet, can be seen as an investment. One should thus aim to provide fast navigation through content instead of displaying context-less weak links. Users should be capable of grasping the essence of content, without having to fully consume it. Providers of content should prevent »Clickbaits«, general misinformation and misinterpretation.

### Do not objectify subjective Opinions

### Respect Creators and Receivers

Values and demands towards content and objects on the Internet differ greatly from person to person. Current rating scales (e.g. the fivestar-system) abstract opinions, which are based on varying evaluation criteria, and try to calculate an average, that for the single user has respectively little validity.

Monopolies or platforms and influencers with wide reach should not receive special support or be valued more than small content providers. In reverse, however, this does not mean, that content creators should be limited in their work and creativity.

### Conclusion

How can we provide humans of the Internet with diverse inspiration and new content fitted to their current needs and individual interests, using methods that are also accessible to small content providers and individuals and create value for people on the World Wide Web in the long run?

How did our research influence what we initially said about digital pluralism? How could it actually integrate in a browser or a search engine? There are many manifestations of pluralism and not all should always be pushed onto users.

The information one person is provided with in one specific situation does not always have to be diverse, but the sum of accessible content on the Web should be, serving differing individuals and breaking platform bubbles. And for that we need to tackle the way content is spread and linked. We have to respect the different motivations to use the Web and provide means to control recommendations accordingly.

At this point the problem we faced was also an ethical one– on the one hand we wanted to make it easy to find new, qualitative, inspiring content, and on the other hand, we did not want to become part of the inhumane system of distracting notifications, endlessly scrolling feeds, and monotonous, judgmental social networks. We wanted to leverage the benefit of personal recommendations, not for direct interaction, but with people as authorities that can decide if content is high quality and worth spreading.



Fig. 46 Key Areas

We developed a system that accompanies the user from entering the Web throughout on-site browsing. An adaption for mobile and desktop addresses a wide range of Use Cases and covers the most commonly used platforms. While on the desktop it is mainly located on Browser-level, the mobile version interconnects with the Operating System.

# Conceptual **Fundamentals**

Instead of talking about »search results« or »links« we prefer the term recommendation for once to enhance that it is something positive (meaning: no hate-speech and harassment)-but also because it suggests that people use it for sharing qualitative content. It also describes the fitness of it for the user's intention.

#### **Entry Points**

The system supports the four types of intentions (page 8: Types of Users). The search query is suitable for outcome-oriented purposes and the most common entry point to the Internet. In contrast to conventional search engines, the system refrains from assuming users' intentions and contexts, if they do not explicitly communicate them, like when looking for a location.

For satisfying the needs of a user searching for something specific, the system incorporates fast access to a section dedicated to often visited, bookmarked or highly relevant sites (such as the query for a website name), while others are affected by the filtering and sorting options.

Interests assign authority to people the receiver *trusts* (page 18: Types of Recommendations). Receivers only get shared content as recommendations when the sender explicitly assigned the recommender to an interest. Interests thereby take the burden off the sender, whether their shares are relevant. Instead, the sharer can rely on their subjective judgment of the content's quality.

The decision, when to look at a particular interest stays with the users, pretty much like deciding to read a magazine or to watch a documentary on a topic.

While having the ability to explore one topic in depth is very powerful in respect of finding niches that are related to what one is already interested in and guarantee relevance of individual recommendation, interests can, when standing alone, create a feeling of being »trapped« in one topic. There is little opportunity for escaping one's filter bubble and expand the horizon to something one would not usually dive into. Using a limited cumulated feed of interests and further recommendations, that is visible upon request, enables exploration, free from unwanted monotony and domain-restriction.

### Platforms

#### Desktop

The current state of web-based software is. that, on desktop. (except for expert software) platforms mostly accessed via a Webbrowser. These Browsers-in combination with a search engine-already cover the topics of effective direct search, storing and bookmarking. So instead of trying to redesign an entire browser, we choose to focus on the subject of exploration and discovery.

We also decided to renounce the differentiation of search engines and browsers, to offer consistency and more seamless integration of recommendations with remaining browser features.



Fig. 47 Desktop Structure

Integration with the browser

The designed system partly intersects with or overwrites parts of the existing browser functionality, the most significant change being to entirely replaced the initial state when opening up the browser or a new tab. We presuppose that Bookmarks as in Safari or Chrome exist. They can be saved to or recalled from within our system.

#### Mobile

On a mobile device, Internet-based platforms are often turned into isolated Apps to be easily accessible and independent from restrictions imposed by the browser. While this is commercially advantageous, it has the side effect of creating even greater barriers for free, cross-platform exploration.

The mobile system therefor not only affects the mobile browser but the operating system, too, by taking installed apps into account within a search. Additionally, the OS integration enables »on-the-go«-options and recommendations being shown on every app as soon as it is required by the user.



Fig. 48 Mobile Structure

#### Integration of Social Media

While we offer multiple types of recommending content inside of our system, we also take note that a lot of sharing might still happen on external social networks like Twitter, WhatsApp, or Facebook. By connecting the system to a personal account on a social network, it will be able to retrieve the received suggestions and use them as part of the recommendations. We thereby do not require the user to share the same site on multiple platforms redundantly. On the receiver's side, the user can view the entire collection of shares, without the need to go through tons of feeds and messages.

Apart from that, the system enables users to follow people who do not use it themselves by accessing their public social media accounts.



### **Core Concepts**

#### Humans as authorities for declaring qualitative content

An algorithm alone cannot decide what quality is. It can filter for specific parameters of objective quality (page 17: Website Parameter Cluster), but to judge subjective quality, emotions or preferences, humans-due to their unique characters-are more suited. Similar to social networks, a model of following and followers allows users to share and receive recommendations from people, the user connects with emotionally or people whose opinion they value. As trust is not unconditional (page 18: Types of Recommendations), people are assigned to interests to decrease the amount of irrelevant content.

It is not possible to explore the interests, followers, and followings of other people, to avoid the side effect of follower count as a »rating« of a person and their popularity. However, upon the initial creation of an account for the system, users get the option to import contacts from WhatsApp or Twitter, to get a large number of people to refer to right away.

Algorithms augment the sorting of shared information by interpreting objective parameters such as how old a link is, the fitness for a topic and its relevance compared to other suggestions.

#### Alterable filter bubbles supporting the user's intention and context

Usually, platforms either hardcode fixed parameters for topical closeness directly into their algorithms, or they try to assume the user's intention using keywords and context. That reversely has the effect of recommendations seeming either random or limiting. If the algorithm decides for the user to look only at content that is similar to what they usually favor, it takes away the opportunity for people to branch out of their comfort zones and limits the possibility of exploring different mind-sets. There is no way for the user to make use of the Internet's enormous potential to provide diverse content, which merely due to its size, no other source of information can provide.

We want to encourage curiosity and support it with tools to alter topical distance while browsing. Instead of our initial idea of a freely customizable slider, we chose to provide a less granular option by subdividing it into three areas: Close, adjacent, and distantly related, which is easier to process and always offers visible changes.

### **Diversity of content through** cross-platform linking

We explored earlier, why and how monopolies are harmful to the Web (page 19: Types of Recommendations). We nevertheless do not want to restrict content providers, so we instead add a layer on top of the existing sites, that creates new connections among platforms. Neither are those thereby entirely managed by the website creators, nor are they organized by biased platform users. Instead, their themes are the connecting element. The recommendation can originate from a person, who has never visited the website the user is currently viewing and could thereby offer an entirely new perspective. These suggestions will most likely compete with existing

recommendations offered by the platform. We decided against intervening with their recommendations nevertheless because we value the independence of creators and regulation is harmful to the free expression of small content providers equally as much as for larger ones.

# Sorting of Recommendations

#### The Bubble Size

The mental model behind changing the bubble size is that elements of information (mostly webpages or app views) are arranged in a two-dimensional space. The closer two items are to one another, the stronger is their topical relation. The user is located somewhere on that canvas, defined by either a search query, interest or currently visited website.

By selecting a bubble size, the user selects the size of the area around themself on the generated 2D-space, from which elements should be shown to them. This means, that if the bubble size is set to large, the user will not just get recommendations for pages/elements close to them (in the small bubble area) on the first page of the results, but also some elements from the area within the medium and the large bubble size are.

In case the user had first set the bubble size to small and will then change it to a larger one, keeping the same query, they will be shown even less elements from the small bubble size area (after changing the size), so they do not encounter content they have seen just before.

An algorithm that is able to define the localization of the user and the consumable elements on the two-dimensional space could work as follows in Fig. 50.



		Current or In	: Website terest	
website		website	≣	
website	2	website	=	
website		website	2	

#### A Feasible Method



#### Fig. 51 Feasable Sorting

In oder for the algorithm to define what is meant by the user's query and thereby locating them on the 2D-space, the first three Google results could be used as exemplary pages. (Fig. 50)

The algorithm then—e.g. through Latent Dirichlet Allocation-could square the key words and topics of these exemplary pages with the ones of every page recognized by our system. Pages that have a lot of key words (and therefor topics) in common, will then defined to be closer to each other on the 2D-space, than such with less similar key words.

These keywords will be found not only in written text but also in HTML and metadata as well as in videos with spoken language.

#### A Desirable Method

Aside from its feasibility, it would be more desirable to use an algorithm that does not rely on Google in order to define where the user will be located on the 2D-space but instead has its own mechanics to recognize topics meant by the users' queries. The method by which the pages are allocated, including LDA, could remain the same.

$\begin{array}{c} & & & & & & & & & & & & & & & & & & &$	

Fig. 52 Desireable Sorting

#### Settings & Filter Options

Further filtering options, as well as those already introduced, always affect the content provided by our system only. All the recommendation views-be it the ones that appear after a search query or the ones that are shown on the go-can be filtered by various parameters.

Important user settings such as blocking and unfollowing people, deactivating personalization or basic settings like logging out must be available, too.

#### Prioritization of recommendations

After the definition of how content that will be shown to the user is selected, there are still rules to be defined in order to sort that content. For every kind of recommendation view, we defined parameters and their importance by which the recommendations are sorted. (Fig. 53)

Additionally, repetitions of the same or very similar content (appearing on various webpages) or showing multiple contents from the same platform or source after another should be avoided by our system.

Stroll

### Search Query

Interest

### Bottom Bar

	not seen and fresh	fresh	not seen and fresh	not seen and fresh
	personal direct contained in an interest	personal direct contained in an interest	personal direct contained in an interest	personal direct contained in an interest
	personal passive contained in an interest	personal passive contained in an interest	personal passive contained in an interest	personal passive contained in an interest
	personal direct not contained in an interest	personal direct not contained in an interest	algorithm results	personal direct not contained in an interes
	algorithm results	algorithm results		algorithm results
↓ ↓	personal passive not contained in interest			
	(seen and) older	less fresh	seen and older	seen and older
	(seen and) older personal direct contained in an interest	less fresh personal direct contained in an interest	seen and older personal direct contained in an interest	seen and older personal direct contained in an interest
	(seen and) older personal direct contained in an interest personal passive contained in an interest	less fresh         personal direct         contained in an interest         personal passive         contained in an interest	seen and older personal direct contained in an interest personal passive contained in an interest	seen and older personal direct contained in an interest personal passive contained in an interest
	(seen and) older  personal direct contained in an interest  personal passive contained in an interest  personal direct not contained in an interest	less fresh         personal direct contained in an interest         personal passive contained in an interest         personal direct not contained in an interest	seen and older personal direct contained in an interest personal passive contained in an interest algorithm results	seen and older  personal direct contained in an interest  personal passive contained in an interest  personal direct not contained in an interes
	(seen and) older         personal direct         contained in an interest         personal passive         contained in an interest         personal direct         not contained in an interest         algorithm results	less fresh   personal direct contained in an interest   personal passive contained in an interest   personal direct not contained in an interest   algorithm results	seen and older  personal direct contained in an interest  personal passive contained in an interest  algorithm results	seen and older  personal direct contained in an interest  personal passive contained in an interest  personal direct not contained in an interes  algorithm results

### Prioritization of Recommendation Types

the importance of different types with *identical relevance (in terms of content)* 

### Direct Shares

#### anti-chronological

personal direct



# Limitations and Humaneness

While, in theory, it is possible to provide endless recommendations, we limit their number to avoid long phases of passive and unintentional browsing.

Especially inside of the »Stroll«-section, which is fairly general, there is a danger of it being a distraction rather than an entry point to the actual valuable content.

On-site recommendations are limited to a maximum of four at a time unless the user decides to change the recommendation options. In that case, the system would generate a new set with four different recommendations.

While we decided against pages due to reasons of usability, we choose to insert indicators in the feed, that, in intervals, tell the user how many recommendations they have already watched.

In case the user is not trying to explore, they can quickly turn off recommendations entirely. We designed the system in respect of providing inspiration in context, which means that any form of notification or messaging would be detrimental to it, as it would distract from the current focus. We consciously leave it to platforms dedicated to enabling discourse and active communication to take on the part of instant suggestions and commenting.

For the final interaction and visual design, we focussed on delivering an unobtrusive experience. We went through multiple iterations of visual design before getting to the final state shown on the following pages.

As we focussed mainly on the conception of mechanisms that would address our core problems, the following screens should not be seen as an all-encompassing product, but rather as an interconnected system of propositions for navigating the explorable Internet.

For the communication of the project, we will create a website which explains the value and the exact operating behavior of our system.



Fig. 54 General Information Architecture

# **Initial Entry Points**



The mobile version integrates into the regular OS-Search. It does not require an application to be open beforehand. Most features of the App can be accessed via that search by typing in a Quick command such as »Stroll« or the name of an Interest.



The initial view on the desktop when opening a browser starts with a simple view of search bar and Interests. The reduced visual style based on the look of the operating system should cause as little distraction as possible. There are no nudging notifications or alerts.

An explanatory onboarding would assist the first use of the system. We valued a minimal look over complete understandability, to be able to offer a more contentfocused experience in the long run.

Fig. 56 Desktop Home Screen

## **The Stroll**

Similar to a feed, the Stroll is a collection of received recommendations. Their number is, however, limited. Except for direct shares, interests are the primary source for stroll-results.

	Search or URL	
۹ ا	Search Q	
Interests +		
Presentation software, slide design, talks, rhet	Presentation, Slide Design Slide Logic: The Emergence of Presentation Software and the Prehistory of In 13 min https://www.computerhistory.org 04.12.16	
mobile, StartUp, Web Technologi	In many parts of our world today, group communication centers on visual materials built with	
Baking Cheesecake, Pizza, Banana Brea	generally depend on the use of personal computers, presentation software the guises of p Anna Cai shared 24.06.19 😩	
Jazz classic, releases	Jazz, classics Jim — Sarah Vaughan, Clifford Brown ↓ 5:54 min https://open.spotify.com 23.05.19 Sarah Vaughan, 1945 Lullaby Of Birdland, April in Paris, He's my Guy, Jim, Your're Not The Kind, Embracable You, I'm Glad There's You, September Song, It's Crazy Jeffrey Verhoeven shared 24.06.19 •	
	Technology, mobile Spotify's redesign simplifies navigation and highlights podcasts for its sub The finite techerunch.com 23.05.19	
	Spotify is officially rolling out its redesigned experience, which puts a greater emphasis on podcasts. The company today announced a new version of its "Your Library" section is being rolled out now to paying subscribers on its Premium plan. Hilda Kaly shared 24.06.19 🗴	
	Slide Design Columbus' PowerPoint Presentation View.com 23.05.16 A humorograve DowerPoint presentation in which Christopher	
OD Lirect Shares	E Queue	

Fig. 57 The Stroll accessed using the system search

### 😑 Stroll

<u>T</u>≣ 13 min

#### Slide Logic: The Emergence of Presentation Software and the...

**≚ Anna Cai** 24.06.19

#### ♪ 5:54

#### Jim – Sarah Vaughan, Clifford Brown



Joeffrey Verhoeven 24.06.19

In many parts of our world today, group communication centers on visual materials built with "presentation software", often...

Sarah Vaughan, 1945 Lullaby of Birdland, April in Paris, He's my Guy, You're...

### Interests



Fig. 59 Exploring the interest »Presentation«

Interests represent the preferences of a user. While they are mostly aiding the long term use, people can also use them for outcome-oriented browsing, that is supposed to go over the course of a day because they also rely on past direct or passive shares, that fit the category. One such use case would be looking for a new »Mobile phone.« By adding the keywords »shopping« and »releases« the interset will primarily collect user-generated content, but also fill it up with algorithmic matches when the number of personal recommendations is too small.

see Entry Points on page 74 for the basic concept behind Interests



An Interest uses a customized algorithm to get a better understanding of the user's definition of that subject. It is fed with the content of received shares the user looks at and thereby able to specify the topic and supplement the keywords the person used to describe the interest upon creation.







		đ
		1 an 111 1 march 1 1 march 1
	Add	
	Add	
	Add	÷.,
	Add	
	Add	
	Add	
Cancel	Add Interest	
Fig. 62 Creating the	Interest »Presentation	) <i>«</i> (

# **Direct Search**

The direct search is the alternative for what conventional search engines offer. While personal recommendations are still prioritized, regular search results of high relevance are mixed into the feed.



Queue

Fig. 63 Search Results with a Map-element



Meetu	
	Meetup
Q	Meetups
Q	Meetup Munich
Q	Mewtu
Q	Meetup Berlin

Fig. 66 Quick Find on Desktop

#### Quick Find

Munich Jazz Meetup (München, Germany) | Meetup

meetup.com



All Images

The »Quick Find«-area offers results from bookmarked sites or extremely relevant results such as: Searching for the name of a popular website would provide that website instantly.

We decided to depict the Map-Use-Case as a particular case that occurs quite often and differs strongly from the regular result list.

Jazz Bar Munich





< 3 of 3 >

### **Black Sunglasses**



Serif typefaces the readability have historically been credited with increasing both the readability and reading speed of long passages the readability of text. Serif typefaces the readability typefaces the raadahilitu hava

Fig. 67 Zoomed in personal recommendations of the Map-Element

Close

Presentation > 3 min 23.05.19

nday	closed
sday	5pm - 1am
dnesday	5pm - 1am
ırsday	5pm - 1am
lay	5pm - 2am
urday	5pm - 2am
ıday	closed

# **Direct Shares**

	1 19.00 10001	
Direct Shares	S	
yesterday ———		
Hildy Kal	y 24.06.19	
<u>म</u> 6 min ा	Technology	23.05.19
Spotify redes navigation an	ign simplifie d highlights	es s podcas
www.techcrunch	.com	
Spotify is official experience, which	ly rolling out it h puts a great	s redesigned er emphasis

on podcasts. The company today anounc...

▶ 3:01

23.05.19

I Want To Be Happy – Erroll Garner

Jazz

open.spotify.com



Ready Take One, 2016 High Wire, I Want To Be Happy, I'm Confessin (That I Love Y...



The »Direct Share«-section provides the user with an overview of their received shares in chronological order. Not only does it collect recommendations from the tool itself, but also those from external networks. It is one of our very few features surrounding storage and recollection.



Search or URL	
	Q Search Shares

#### Spotify's redesign simplifies navigation and highlights podcasts for its sub...

Spotify is officially rolling out its redesigned experience, which puts a greater emphasis on podcasts. The company today announced a new version of its "Your Library" section is being rolled out now to paying subscribers on its Premium plan.

#### Ready Take One, 2016

High Wire, I Want To Be Happy, I'm Confessin' (That I Love You), Sunny, Wild Music, Caravan, Back To You, Night and Day, Chase Me, Satin Doll, Latin Dogs, Stella By Starlight, Down Wylie Avenue, Misty

#### Design Milk: Design Blog with Interior Design, Modern Furniture, & Art

Serif typefaces the readability have historically been credited with increasing both the readability and and re the readability have historically been credited with increasing

Fig. 69 Received Direct Shares on Desktop

# Connections

Apart from adding people to an interest in when editing it, the user can drag people from the »Following«-section directly onto the Interest.

When the user opens up this section, they will occasionally receive suggestions on who to follow, which are mostly made up of people that follows the user, but whom the user does not follow back (not part of Figure).



### Search or URL Q Search People mutual Unfollow Unfollow mutual Unfollow mutual Z. Unfollow Unfollow mutual ion not signed up Unfollow Unfollow Unfollow Unfollow not signed up

Fig. 70 Following and Followers section

Fig. 71 Adding someone to an Interst



# Sorting and Filtering



Fig. 72 Mobile Bubble Size

<b>Spotify ()</b> is officially rolling out its
recommended by
algorithmic recommendations
personalized
media types

Fig. 7	' <mark>3</mark> Mok	ile Filte	ering C	)ptions

Filtering
algorithmic
hide toolba
logout
$\bigcirc \bigcirc$

Personalized feeds are incredibly comfortable for users, but at the same time, they contain the danger of being able to see a neutral reflection of content. When disabling the personalized results, the user will get a list, which is not influenced by personal recommendations or browsing history. On the other side of the spectrum, the user also has the option to receive only personal recommendations and being free of the distraction algorithms might cause.



Fig. 74 Desktop Filtering Options

#### Will Change Your Smartphone – The New York Times

#### New Hork Times

### in iOS 13 Q Will Smartphone

and Google operating systems are new features. Here are the few you

#### 67 $\mathbf{x}$



Fig. 75 Desktop Bottom Bar Options

₽

1 D

LOG IN

Q

...

As the search of the mobile version, the search inside of the bottom bar options can be used to call up Interests or the feed and would redirect the user to the start page.

Pre	Q
Premiere	
Preview	
Premier League	
prepare.con	
Presentation	Interest

Fig. 76 Desktop Bottom Bar Search

Sorting and Filtering

#### Presentation, Slide Design

Slide Logic: The Emergence of Presentation Software and the Prehistory of...

<sup>™</sup> 13 min https://www.computerhistory.org 04.12.16

In many parts of our world today, group communication centers on visual materials built with "presentation software," often crafted by a speaker him or herself. As a result, meetings now generally depend on the use of personal computers, presentation software the quises of p... Anna Cai shared 24.06.19

lazz classics

#### Jim — Sarah Vaughan, Clifford Brown

♪ 5:54 min https://open.spotify.com 23.05.19



Technology, mobile

Sarah Vaughan, 1945 Lullaby Of Birdland, April in Paris, He's my Guy, Jim, Your're Not The Kind, Embracable You, I'm Glad There's You Sentember Song It's Crazy Jeffrey Verhoeven shared 24.06.19 🔇 From Twitter Jeffrey Verhoeven Can't stop listening to Sarah Spotify's redesign simplifies navigation an Vaughans music. This one is my **T**= 6 min techcrunch.com 23.05.19 favorite lately! #legend https://open.spotify.com/album/7w Spotify is officially rolling out its redesigned exper X89EWCK8cNZeGnBS5bMG podcasts. The company today announced a new ve.... rolled out now to paying subscribers on its Premium plan. Hilda Kaly shared 24.06.19 ≚



orDaint presentation in which Christenha

Fig. 77 A Recommendation imported from Twitter

Recommendations from external social networks receive the same weight as direct recommendations in the feed. The user can view an abstracted version of the source by hovering over the Website Icon. Clicking on it will forward the user to the post on the social network.

see Intearation of social Media on page 78

◎ ◎ ◎ ↓ ⊑ ▶ …

# **Recommendation Types**

The most prominent media on a site determines the overall recommendation type on that source. There are three standard types-Text, Audio, and Video-that are also used to filter content. Apart from the system will also display locations (Fig. 63: Map Element) and shopping sites.

Information Design

### Magic Ink

I 32 min http://worrydream.com/ 23.05.19

The ubiguity of frustrating, unhelpful software interfaces has motivated decades of research into "Human-Computer Interaction." In this paper, I suggest that the long-standing focus on "interaction" may be misguided. For a majority subset of software, called "information softwa... Anna Cai shared 24.06.19 🗳

#### Indie, Royalty Free **Black Sunglasses**

♪ 3 min https://icons8.com/icon 23.05.19



and music for your videos. Black Sunglasses by LoveFine Anna Cai shared 24.06.19



vimeo.com 23.05.19

Fig. 78 A Text Recommendation

Designers, download the design stuff for free — icons, photos, UX illustrations,

Fig. 79 A Audio Recommendation

Presentation Apple Keynote 2007

The iPhone was a revolutionary product from Apple and it changed the way smart phones look in work. This video... Anna Cai shared 24.06.19

Fig. 80 A Video Recommendation



### **The Bottom Bar**

We are aware that some users might see the bottom bar as an element of distraction. We designed it to be static, hold little contrast when inactive and dispensed the use of profile images from previous designs, to prevent attracting the user's attention.



Fig. 81 Incative Bottom Bar





### The Queue

The Queue is a link-list curated by the user, that is attached to the tab it is located in. Its main benefit is in the context of audio-visual-media, where it enables the user to create

Playlists. Instead of being bound to one App or Platform for listening to Music or Watching a Video, it makes it possible to play Audio- or Video elements from multiple sites in a row. It thereby competes with native autoplay-features of sites like YouTube or Netflix, which lock users in by applying this method of endless autoplay. Users can also add text elements to the Queue, which disables the autoplay feature.

Playlists can be exported to or imported from the Browser' bookmarking panel or as link-lists.

## Website Preview



Fig. 83 Desktop Bottom Bar Content Preview

The Website Preview summarizes essential information about the recommended link. It can be accessed by hovering over the link for 1500ms. After that, the user can hover sideways over the other recommendations. which will then expand without delay.

# Mobile In-App Flow



Using a two finger swipe-up gesture, the user can call up the mobile bottom-bar to receive recommendations to the content inside of an application. A single swipe up will open the settings and a single swipe down will close hide the bottom bar again.







Fig. 87 Mobile Browser View

### **Mobile Browser Flow**



**Spotify ()** is officially rolling out its redesigned experience, which puts a greater emphasis on podcasts. The company today announced a new version of its "Your Library" section is being rolled out now to paying subscribers on its Premium plan. Its goal is to make it easier to move between Music and



Fig. 89 Extended mobile Browser View



Sarah Perez @sarahintampa / 1 day ago



 $\equiv (X)$ 

**Spotify (**) is officially rolling out its redesigned experience, which puts a greater emphasis on podcasts. The company today announced a new version of its "Your Library" section is being rolled out now to paying subscribers on its Premium plan. Its goal is to make it easier to move between Music and Podcasts and find the podcast shows and episodes you want to hear.

The company in May previewed this news with select press while the redesign was



Fig. 88 Extendend mobile Browser View after Scrolling

# Sharing

By disabling commenting and rating entirely, we want to contain negative or unserious recommendations.



Fig. 90 Mobile Direct Sharing

While being one of the most inconspicuous features, passive sharing is one of the essential mechanisms inside of the system. It is the fastest way for recommending content.



#### ≡ Q. PERSONAL TECH

#### TECH FIX

### How Upda and Andro Change Yo

New versions of the packed with hundre should know about



By Brian X. Chen

June 5, 2019



e 🔞 🔟 🗄 IpadOS isn't just a new na... 🛛 wired.com 🛛 🖉 🕨 How face recognition of

Fig. 91 Desktop Passive Sharing

### The New York Dimes



 Image: Participation of the second secon

Due to the heavy use of social networks, we suppose that people would use the direct sharing feature a lot less than passive sharing.



# **Advanced Sharing**

For long-scrolling websites with multiple in-itself-logical segments, a user might want to specify their shares. To avoid the recommendation of small elements or individual images or sentences, we decided on a feature that crops the top off the page and leads the receiver directly to the addressed segment.



Fig. 95 Advanced Sharing Options

Fig. 94 Sharing with Position



Year after year, Apple and Google announce big upgrades for their

Year after year, Apple and Google annound smartphone operating systems. That mean makes your phone tick is about to change -

With change comes new things to learn. The which are free, improve our devices by fixing strengthening security, but they can be introupdate includes hundreds of new features.

Apple's iOS 13, the next version of the iPho which was unveiled this week, includes new called dark mode to make the screen easier Google's Android Q, unveiled last month, in

It is hard to estimate what the actual effect of such a system would be. While we are convinced that it is great for providing relevant content following the users' intentions, the issues of extremist abuse and encouraging to explore opposing opinions remain unsolved.

Even though we focussed of designing inconspicuous recommendations, exploration implies constantly offering new information to the user. However intentional and useful for providing alternatives to monocratic suggestions, this mechanism for endless discovery could be seen as contradictory to building an overall humane system.

Appendix
# Acknowledgements

First and foremost we would like to thank our supervising Professors David Oswald and Benedikt Groß for supporting such a vast and complex topic as a Bachelor Thesis. We thank the following people for honestly and extensively sharing their views and ideas in insightful interviews:

Jan-Christoph Borchardt from Nextcloud, Diana Scholl from @doandlive, »Marco Lauritz« from that secret Internet company, Julius Sohn and Julius Gehrig who created refresh.study, Professor Franz Biggel, Nico Brand and Paul Käppler, and Jennifer Piperek

as well as all of those who participated in our short interviews and user testings throughout this semester. At last, we thank our lovely fellow students and good friends for crashing our project room on a regular basis and making our whole time at this great University even more enjoyable and our families and friends from outside the HfG, for always supporting us under any circumstances.

## References

Afef, S., Brahmi Z. and Gammoudi M. (2016). Trust-Based Recommender Systems: An Overview In: 27th IBIMA Conference. [online] Available at: www.researchgate.net/publication/297248637 Trust-based Recommender Systems An overview [Accessed 22 May 2019]

> Art+Feminism (2019). Get Involved, [online] Available at: www. artandfeminism.org/ [Accessed 2 June 2019]

Berelson, B.; Lazarsfeld, P. F. and McPhee, W. N. (1954). Voting: A study of opinion formation in a presidential campaign Chicago, IL: University of Chicago press

Berners-Lee, T. and Fischetti M. (1999). Weaving the Web: The Past, Present and Future of the Web by its Inventor. London: **Orion Business** 

- Burke, R. (2000). Knowledge-based recommender systems, [online] Available at: www.researchgate.net/publication/2378325\_Knowledge-Based\_Recommender\_Systems [Accessed 22 May 2019]
- Cambridge Dictionary (n.d.). *Pluralism* [online] Availabel at: https://dictionary.cambridge.org/dictionary/english/pluralism [Accessed 02 Feb 2019]
- Chuang, J. (2017). Content Discovery, Navigation, and Workflow. Firefox Context Graph, [online]. Available at: medium.com/firefox-context-graph/content-discovery-navigation-and-workflow-300462bdc04d [Accessed 8 Apr. 2019].

Clark, D. (2018). Designing an Internet. Cambridge (MA): MIT Press

Constine J. (2018). How Instagram's algorithm works. Tech Crunch, Available at: techcrunch.com/2018/06/01/how-instagram-feed-works/ [Accessed 22 May 2019] Donath, J. (2014). The Social Machine: designs for living online. Massachusett: The MIT Press Egebarkm J. and Ekström M. (2017). Liking what others "Like": using Facebook to identify determinants of conformity. Experimental Economics Volume 21, Issue 4, pp. 793-814, Available at: https://doi.org/10.1007/s10683-017-9552-1 [Accessed 12 May 2019] Google Search. (n.d.). How Search Works. [online] Available at: https://www.google.com/search/howsearchworks/algorithms/ [Accessed 20 Mar. 2019] Harris, T. (2016). How Technology Hijacks People's Minds: from a magician and Google's Design Ethicist. Tristan Harris Essavs [online] Available at: www.tristanharris.com/2016/05/ how-technology-hijacks-peoples-minds-from-a-magician-and-googles-design-ethicist/ [Accessed 29. May 2019] Horton, D., & Wohl, R. R. (1956). Mass communication and para-social interaction: Observations on intimacy at a distance. Psychiatry, 19, 215-229.

D

Е

G

Η

Hu N., Zhang J. and Pavlou P. (2009). Overcoming the J-Shaped Distribution of Product Reviews. Communications of the ACM, vol. 52, no. 10, pp. 144-147

B

Α

С

- Jacobs, J. (2019), Wikipedia Isn't Officially a Social Network, But the Harassment Can Get Ualv. The New York Times. [online] Available at: www.nvtimes.com/2019/04/08/us/wikipedia-harassment-wikimedia-foundation.html#commentsContainer [Accessed 2 June 2019]
- Kafka, P. (1997), Das Radio und die Beschleunigungskrise. In: Radio im Zeitdruck. Medienzeit und Beschleunigungskrise. München: Fischer (Reinhard).
- Kemp, S. (2019) THE STATE OF DIGITAL IN APRIL 2019: ALL THE NUMBERS YOU NEED TO KNOW [Blog] WeAreSocial, Available at: wearesocial.com/blog/2019/04/the-state-of-digital-inapril-2019-all-the-numbers-you-need-to-know [Accessed 26 Mav 2019]
- Khanna H. (2018). The Psychology of Rating Systems. Medium (online) Available at: hackernoon.com/the-psychology-of-rating-systems-3103e26fddd8 [Accessed 28 May 2019]
- Lazarsfeld, P. F. and Katz, E. (1955). *Personal influence: The part* played by people in the flow of mass communications. New York, NY: The Free Press.
- Μ Munson S., Resnick P. and Zhou D. (2009). Designing Interfaces for Presentation of Opinion Diversity. In: 27th International Conference on Human Factors in Computing Systems [online] Boston, Available at: www.researchgate.net/publication/221515349 Designing interfaces for presentation of opinion\_diversity [Accessed 22 May 2019]
  - National Council of Austria (2019) Bundesgesetz über Sorgfalt und Verantwortung im Netz und KommAustria-Gesetz
    - Noble, S. (2018). Algorithms of Oppression: How Search Engines Reinforce Racism. New York: NYU Press

- Oppenheim, M. (2018) Amazon Scraps 'Sexist Al' recruitment tool. Independent, [online] Available at: www.independent. co.uk/life-style/qadgets-and-tech/amazon-ai-sexist-recruitment-tool-algorithm-a8579161.html [Accessed 22 May 2019]
- Pinela, C. (2017). Content-Based Recommender Systems Ionline1 Available at: medium.com/@cfpinela/content-based-recommender-systems-a68c2aee2235 [Accessed 22 May 2019]
- Postman, N.(1985). Wir amüsieren us zu Tode: Urteilsbildung im Zeitalter der Unterhaltungsindustrie, Translated from American by R. Kaiser., 7th ed., Frankfurt am Main: S. Fischer Verlag GmbH
- Ronv, M.M.U., Hassan, N., Yousuf, M. (2017). Diving Deep into Clickbaits: Who Use Them to What Extents in Which Topics with What Effects? ResearchGate, [online] Available at: www. researchgate.net/publication/315682513 Diving Deep into Clickbaits Who Use Them to What Extents in Which Topics with What Effects/stats [Accessed 29. May 2019]
- Rosch E. (1978). Principles of Categorization [pdf] Availabel at: commonweb.unifr.ch/artsdean/pub/gestens/f/as/ files/4610/9778\_083247.pdf [Accessed 15 Apr. 2019]
- Rushkoff, D. (2018). How to be "Team Human" in the digital future (TED Salon: Samsung) [video] Available at: www.ted.com/ talks/douglas\_rushkoff\_how\_to\_be\_team\_human\_in\_the\_ digital future [Accessed 29. May 2019]

S

0

Ρ

R

Sanders, J. and Patterson, D. (2019) Facebook data privacy scandal: A cheat sheet [online] Available at: www.techrepublic.com/article/facebook-data-privacy-scandal-a-cheat-sheet/ [Accessed 12 April 2019].

Κ

Ν

J

- Singhal A. (2012). Introducing the Knowledge Graph: things, not strings. Google official Blog [online] Available at: googleblog.blogspot.com/2012/05/introducing-knowledge-graph-things-not.html [Accessed 20 Mar. 2019]
- Strickler Y. (2019). *The Dark Forest Theory of the Internet*. Medium [online] Available at: onezero.medium.com/the-darkforest-theory-of-the-internet-7dc3e68a7cb1 [Accessed 11 July 2019]
- Tufekci, Z. (2018). YouTube, the Great Radicalizer. The New York Times, [online] Available at: www.nytimes.com/2018/03/10/ opinion/sunday/youtube-politics-radical.html [Accessed 15 Mar. 2019]
- van der Stigchel, S. (2019). *How Attention Works: Finding Your Way in a World Full of Distraction.* Translated from Dutch by D. Guinan. *Cambrindge(MA): MIT Press*
- Victor, B. (2006). Magic Ink: Information Software and the Graphical Interface. [online] Available at: http://worrydream. com/MagicInk/ [Accessed 25 May 2019]

Т

V

# List of Figures

	The figures are the authors' own	38	Fig. 18 An excerpt from Dianas Instagram Page
	creation, unless marked otherwise		Retrieved June 17, 2019, from www.instagram.com
		45	Fig. 19 Peter Kafka (1933-2000)
9	Fig. 1 Outcome Oriented Search		Retrieved June 17, 2019, from www.gegen-den-unterga
	Fig. 2 Outcome Oriented Browsing		de%3anachruf-boerger.html
10	Fig. 3 Interest Based Browsing	46	Fig. 20 Tristan Harris (*1985)
	Fig. 4 Free Habitual Browsing		Retrieved June 17, 2019, from www.fastcompany.
12	Fig. 5 Browsing on the Web		com%3aperson%3atristan-harris.jpg
15	Fig. 6 Youtube.com mainpage of 2007	51	Fig. 21 How Might we?
	Retrieved June 17, 2019, from https://web.archive.org/	53	Fig. 22 One of the milder comments on gab.com
	web/20071016025905/http://youtube.com/		Retrieved June 17, 2019, from https://gab.com/popular
17	Fig. 7 Website Parameter Cluster	57	Fig. 23 A snippet of our user needs and insights map
24	Fig. 8 Screenshot of AirBnB Rating Scale	58	Fig. 25 Scribble One
	Retrieved June 17, 2019, from www.airbnb.com		Fig. 24 Scribble Two
25	Fig. 9 Screenshot of Amazon Feedback Section	59	Fig. 26 Crazy Eight One
	Retrieved June 17, 2019, from www.amazon.de		Fig. 27 Crazy Eight Two
	Fig. 10 Screenshot of YouTube Binary Rating System		Fig. 28 Crazy Eight Three
	Retrieved June 17, 2019, from www.youtube.com		Fig. 29 Scribble Three
26	Fig. 12 Screenshot of Medium Claps, Instagram likes and Twitter likes	60	Fig. 30 Scribble Four
	Retrieved June 17, 2019, from www.medium.com, www.instagram.com, www. twitter.com		Fig. 31 Scribble Five
26	Fig. 11 Screenshot of a Comment on LinkedIn		Fig. 32 Scribble Slx
	Retrieved June 17, 2019, from www.linkedin.com		Fig. 33 Scribble Seven
27	Fig. 13 Screenshots of Facebook and LinkedIn Reaction	61	Fig. 34 Scribble Eight
	Retrieved June 17, 2019, from www.facebook.com and www.linkedin.com		Fig. 36 Scribble Nine
27	Fig. 14 Screenshot of Follower Count		Fig. 37 Scribble Ten
	Retrieved June 17, 2019, from www.twitter.com		Fig. 35 Scribble Eleven
	Fig. 15 Screenshot of Reputation Element		Fig. 38 Scribble Twelve
	Retrieved June 17, 2019, from www.stackexchange.com	64	Fig. 39 Initial State with sharing options and recommendation
29	Fig. 16 J-Curve of Amazon ratings		Fig. 40 Passively shared
37	Fig. 17 Model for content flow on the Internet.		Fig. 41 Metadata to a recommendation
			Fig. 42 Direct Share Pop-Up

tergang.

dations

66 Fig. 45 Design Principles 71 Fig. 46 Key Areas 76 Fig. 47 Desktop Structure 77 Fig. 48 Mobile Structure 79 Fig. 49 Social Media Integration 83 Fig. 50 Sorting and Bubble Sizes 84 Fig. 51 Feasable Sorting Fig. 52 Desireable Sorting 87 Fig. 53 Recommendation Sorting Fig. 54 General Information Architecture 92 94 Fig. 55 Mobile Home Screen 95 Fig. 56 Desktop Home Screen 96 Fig. 57 The Stroll accessed using the system search 97 Fig. 58 The Stroll acessed using the system search Fig. 59 Exploring the interest »Presentation« 99 100 Fig. 60 The »Presentation«-Interest on mobile. Fig. 61 Expanded mobile sidebar Fig. 62 Creating the Interest »Presentation« 101 102 Fig. 63 Search Results with a map-element 103 Fig. 64 Search Query with mixed Web- and App results Fig. 65 Search Results with »Quick Find«-Element 104 Fig. 66 Quick Find on desktop 105 Fig. 67 Zoomed in personal recommendations of the Map-Element 106 Fig. 68 mobile received direct shares 107 Fig. 69 received direct shares on desktop Fig. 70 Following and Followers section 108 Fig. 71 Adding someone to an interst 109 Fig. 72 Mobile bubble size 110 Fig. 73 Mobile filtering options 111 Fig. 74 Desktop filtering options Fig. 75 Desktop Bottom Bar Options 112 Fig. 76 Desktop Bottom Bar Search 113 114 Fig. 77 A recommendation imported from Twitter 115 Fig. 78 A text recommendation

Fig. 43 searching for a receiver

Fig. 44 selecting multiple receivers

65

115	Fig. 79 A audio recommendation
	Fig. 80 A video recommendation
117	Fig. 81 Incative Bottom Bar
118	Fig. 82 Desktop Bottom Bar Search
119	Fig. 83 Desktop Bottom Bar Content Preview
120	Fig. 84 Initial Spotify view
121	Fig. 86 Spotify with small bottom bar
	Fig. 85 Spotify with extended bottom bar
122	Fig. 87 mobile Browser view
123	Fig. 89 Extended Mobile Browser View
	Fig. 88 Extendend Mobile Browser View after scrolling
124	Fig. 90 Mobile Direct Sharing
125	Fig. 91 Desktop Passive Sharing
126	Fig. 92 Desktop Direct Sharing Options
127	Fig. 93 Desktop Direct Sharing
128	Fig. 94 Sharing with position
129	Fig. 95 Advanced Sharing Options

### Images contained within the Designs

### 94-129 Screenshot of Tech Crunch

Retrieved May 25, 2019, from https://techcrunch.com/2019/06/13/spotifys-redesign-simplifies-navigation-and-highlights-podcasts/

### Screenshot of The New York Times

Retrieved May 25, 2019, https://www.nytimes.com/2019/06/05/technology/personaltech/ios-android-2019-updates.html

### Screenshot of Spotify

Retrieved May 25, 2019, from https://open.spotify.com/album/7wX89EW-CK8cNZeGnBS5bMG?si=-NvdjkWuSWyrR9j7bZ08Lg

Appendix 145

# Statement of Authorship

We hereby declare that we are the sole authors of this bachelor thesis and that we have not used any sources other than those listed in the bibliography and identified as references. We further declare that we have not submitted this thesis at any other institution in order to obtain a degree.

Schwäbisch Gmünd, 18 June 2019

Kai Wanschura

Johanna Wellnitz