"I always feel it must be great to be a hacker!"
The role of interdisciplinary work in social media research

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ABSTRACT
This paper presents first results from a series of qualitative interviews with social media researchers concerning their methods, objectives and challenges in dealing with social media data for their research. Twenty face-to-face, semi-structured interviews were conducted with researchers who have a social science background and work in different disciplines. The interviews were transcribed and coded. While many dimensions were identified concerning the whole research process of social media studies, this paper focuses on the dimension of interdisciplinarity in social media research. It looks at how social scientists describe the need for (interdisciplinary) collaboration and what experiences they have made in working with computer scientists in particular.

Categories and Subject Descriptors
J.4 SOCIAL AND BEHAVIORAL SCIENCES

General Terms
Management, Human Factors.

Keywords
Interdisciplinarity, research methods, collaboration, social science, computational social science, social media, qualitative research, interviews.

1. INTRODUCTION
Right from its beginnings, web science has been envisioned as an interdisciplinary field of research [1], [2], [3] and efforts continue to bring people from different backgrounds together e.g. during events such as the ACM Web Science conference series – with some noteworthy success in including, e.g., sociology [4]. While web science has its origins in computer science and related fields, other communities have also started to explore interdisciplinary approaches for studying web users and web-related phenomena. For example, from the social science and humanities perspectives,

terms like "internet studies" or "internet research" (as in the Association of Internet Researchers, AoIR), "web social science" [5] and "digital methods" [6] are used to refer to efforts of studying web usage "independent from traditional disciplines and existing across academic borders" [7]. However, so far there is still relatively little overlap between more social science-based communities and more computer science-based communities. While we focus on these two broad communities in this paper we acknowledge that other fields such as the natural sciences, economics, educational science, linguistics, law, medical science, etc. may also be relevant for interdisciplinary approaches to studying the web.

New methods based on "computational social science" aim to address the gap between social and computer sciences by providing social scientists with the "capacity to collect and analyze massive amounts of data" [8], with commercial internet companies like Yahoo being quick to apply such methods before social scientists in academia have done so. This might be due to the fact that "as for infrastructure, the leap from social science to a computational social science is larger than from biology to a computational biology, largely due to the requirements of distributed monitoring, permission seeking, and encryption" [8].

Just like studies of the web in general, studies of the social web or social media applications can benefit from innovative combinations of methods grounded in different disciplines and could become a broad application area for computational social science. Studying social media is a still growing research field – the number of papers featuring either "Twitter" or "Facebook" in their title has been four times as large in 2012 than four years earlier in 2008 (based on Scopus data, 508 publications in 2008, 2171 publications in 2012). The possibility to access data via platforms' APIs may have contributed to this rapid growth. Furthermore, the availability of data may have helped to inspire different research communities that can now access the respective data. Regarding research based on social media data, [9] point out that "while in many research fields related to online social activities, ethnographic approaches have predated statistical and, especially, computational approaches in the 'Twitter field' computational approaches appeared first, as can be observed by the venues or by the authors of the very first academic research on the topic." Twitter research, as one main area of social media research, is still dominated by computer science approaches, although there is also a growing number of social science based publications.

There are some indications that social scientists' appropriation of social media research may be connected to successful adoption of technical skills and interdisciplinary approaches, as "collecting, storing and analyzing these data often requires technical skills beyond the traditional curricula of social scientists. These projects require in fact, collaboration with computer scientists. Nevertheless developing a common interdisciplinary project is often challenging because of the different backgrounds of researchers" [10].

Addressing the issues of interdisciplinary collaboration and the role of technical skills in social media research this paper contributes to:

- a more detailed understanding of the challenges that researchers from the social sciences and humanities face when they work with data gathered from social media platforms,

- a furthering of computer scientists' understanding of social scientists' motivations for using social media data by revealing reasons for their interest in social media,

- and an exploration of social media researchers' experiences in interdisciplinary collaboration involving computer scientists.

We make available our insights into when and how interdisciplinary efforts between social scientists and computer scientists joining up to conduct social media research succeed. Our aim in doing so is to facilitate the crossing of traditional disciplinary boundaries, which is necessary in the pursuit of understanding the web [3]. This paper therefore answers the call of furthering the richness of disciplines and methods in the field of web research by providing a basis for more discussion about how collaboration can be accomplished:

"The future of Web Science depends on maintaining our cohesive, balances community in which no single discipline dominates. To this end, we would like more discussion about how disciplines collaborate: What are the stumbling blocks? Where do misunderstandings arise?" [11].

We have chosen to answer this call for exploring 'stumbling blocks' by focusing on concerns connected to the various steps of data analysis as the actual points of collaboration between social scientists and computer scientists in social media projects. Our paper is part of a broader project called "The Hidden Data of Social Media Research", in which we investigate the meta-level of social media research by focusing on the multiple phases of research: the research data cycle. Project topics include theory building and epistemology as well as technical dimensions of data collection, processing, management and sharing. Practical implications for everyday work, for example, in terms of research ethics and collaboration workflow are addressed as well. The initial motivation for the project was the assumption that social media is currently being studied by a variety of different groups and individuals, many of them creating their own ad-hoc approaches and methods while broadly accepted theories and shared standards are still to come. We wanted to capture this exciting state of the (potential) formation of a new research field while it is developing.

During the initial project phase we have so far conducted twenty interviews with researchers from social science backgrounds. This paper presents first results from these interviews.

2. METHOD

The exploration of the issues social media researchers currently face in dealing with social media data and an understanding of their motivations entails asking these researchers for detailed explanations and to explore meanings and contexts. We therefore decided on the qualitative approach of conducting face-to-face, semi-structured interviews, which, while unstructured enough to allow interviewees to introduce topics, employed "a thematic guide with probes and invitations to expand on issues raised" [12] in order to enable some comparison between interviewees [13]. Qualitative methods are especially useful when the aim is to discover meaning, rather than to make generalized hypothesis statements [14]. Relatively small, distinct groups are analysed with the aim to achieve a point at which no new themes emerge from the data [15].

Following this approach we conducted twenty interviews with social media researchers in the first phase of this project. Interviews were conducted during a major international internet studies conference in the United States in 2013. Interviewing scientists at a conference is a convenient and approved way of gathering insights from these experts in an environment conducive to discussion and reflection [e.g. 16]. We were able to recruit twenty social media researchers, most of them with a background in media, communication or internet studies for interviews about their experiences with social media data. Eight interviewees were working in Europe, seven in the United States, and five in Australia. Interviewees ranged from PhD students to full professors in terms of professional levels. Most interviewees had experiences in research based on social media data from several platforms. In addition to having conducted various research projects on social media, thirteen researchers had specifically based research on data gathered from Twitter data before, ten on blog data, five on data from Facebook, and many had also gathered or analysed other data from platforms such as Foursquare, Tumblr, 4chan or reddit.

We were interested in what interviewees viewed as the potential of the research with social media data and what they saw as the challenges and opportunities of interdisciplinary collaboration. In order to explore this we asked questions on how researchers' everyday work with social media data looked like in actual projects and practice. Topics discussed in the interviews hence ranged from methods for data collection, data analysis and management as well as ethical and epistemological concerns. In addition to allowing explanation, correction, thinking-aloud and discussion, the face-to-face interview situations also prove to be beneficial in providing an atmosphere of trust and non-judgment when addressing sensitive topics such as ethical concerns or the lack of best practice standards in data management. A follow-up questionnaire was also sent to participants to cover more detailed questions concerning data collection and analysis and to allow interviewees to submit additional information at their leisure. The topic of interdisciplinarity was mainly covered in the interviews, however, so results from the questionnaire have only been used to fill in details of participants' experiences with various types of social media data in this paper.

The collected interview data were transcribed into text, and interpreted using the atlas.ti software and a 'lean coding'

approach in which themes were built through reducing and combining categories found in the data [17]. Codes were discussed and iteratively defined by both authors.

3. RESULTS AND DISCUSSION

Our first results show researchers' high awareness of the unregulated and developing character of social media research methods. The highly interdisciplinary research initiatives were shaped both by the necessity to acquire technical skills and by researchers having to develop novel epistemological foundations. Participants discussed the establishment of shared methods (on concerning comparability, validity, ethics) as important for the emerging field and recognized common shortcomings of current approaches. The following results are based on the first twenty interviews within the project only and therefore focus on social media researchers from the social sciences. Further research is planned to include additional interviews, especially with social media researchers from other disciplines.

3.1 Interdisciplinarity in social media research

3.1.1 Social media researchers are already interdisciplinary

When asking social media researchers about which discipline they were located in it became apparent that for most of them this constituted a very difficult question answered usually with statements such as "This is really a huge question for me right now". One researcher even dismissed disciplinarity, saying: "I'm trying not to be in a specific discipline, on the contrary. (…) Actually I'm objecting to the idea of putting me in a specific discipline." While most of the researchers had training in media and communication studies, their interests and methods were inherently interdisciplinary. Typical answers were statements such as "I think it's weird. (…) I'm hooked into projects rather than any particular field" or "definitely I am per se interdisciplinary because (…) I really have three totally different areas of perspective, of method, of theory, that I feel I am trying to combine", or even stating that their disciplinary background was "a bit of a mess". One participant even assumed not to have a proper method ("and also I don't really have a method (…) it comes with not having a core discipline, it's a mixed method"), which was seen as detrimental with regards to competing on the academic job market where disciplines are often tightly coupled to methods. Interdisciplinarity was also apparent in biographies and researchers would "arrive from many different fields". We heard statements such as:

> "My undergraduate background is in English and radio-television-film production (…). And then I was a professional librarian."

> "I did my PhD in architectural theory. I worked in an Australian studies research institute for a while. I taught in cultural studies. Now I'm back researching in media and communications."

> "…the research team is kind of a human interaction group. But my background is media studies and cultural studies. So, I've kind of come to there from a different area. But, that area is kind of interdisciplinary anyway, so…"

Descriptions of what they thought of as their 'home' discipline therefore became complicated, an example was: "I guess that I am some kind of sociologist with a network analysis methodology applied to online social data."

Most researchers worked in institutions such as interdisciplinary grad schools, which were interdisciplinary or experimental. But some of these institutions were also new and still "trying to find [their] own feet in some way". The sense of disciplinary boundaries being challenged emerged as very prevalent in social media research, shaping research, biographies and affiliations.

3.1.2 Social media research needs to be interdisciplinary

Often, social media research teams were comprised of people with experiences in various sub-disciplines in the social sciences and also those with other disciplinary backgrounds:

> "I think this research has brought us into contact with people from computer sciences and other disciplines like that more."

Even more, all interviewees agreed that social media research was inherently interdisciplinary:

> "Everyone is more or less on the margin of their home fields, because the core disciplines usually don't deal with those subjects like mobile media (…). I think that most people don't have a home discipline called internet research."

One reason given for the inherent interdisciplinarity in social media research was the field being so new, that there were only few people who were trained as social media researchers, and that there was no typical researcher 'profile' yet. One researcher said, for example, that social media research was still in a "pioneering phase" and would at some point "settle down somehow."

However, while it is possibly due to the novelty of the area that those drawn into it embrace the richness of contrasting perspectives, researchers agreed with the statement that "as the field grows it is worth remembering that this mutual respect is powerful, precious and worth actively preserving" [11]. Researchers deemed interdisciplinarity as important in order to be able to accomplish social media research. Most even thought that it was a requirement in order to further the understanding of and the exchange on social media:

> "The whole media studies sphere is a (…) mélange of different fields and I think this is very positive because it enhances the options to tackle the material, find material, methods, perspectives, theory."

When talking about interdisciplinarity, participants discussed both working with people from other social science disciplines and working with computer scientists. They perceived some challenges of the inherent interdisciplinarity in the field (challenges for collaborating with computer scientists follow in section 3.2), often relating to different methodologies underlying the sub-disciplines. One assumption was that interdisciplinary efforts often struggled because little common understanding of what constitutes validity can be established: "The disadvantage is that it is not so easy to have a common language."

Some addressed the distinction of qualitative and quantitative methods that still seem to divide the social sciences into different camps – although participants mostly claimed that different methods "complemented each other". However, interviewees pointed out the disciplinary rift between those who work with (quantitative) data and those who do not. And some

observed that "those people who don't have data sometimes feel beneath those who have data – but that's totally wrong."

3.1.3 Social media researchers from the social sciences challenge 'traditional' academic structures

Besides methodological challenges there are also challenges in the logistics of research. As has been mentioned above, this can play out as difficulties – but also as a rather productive variation – in individual researchers' biographies and careers. Practical challenges are also to be found in the process of publishing research results:

> "It's difficult to publish, right. Because you don't belong anywhere. So now we have a little bit of venues like JCMC, New media & Society, Information Society (…). But it's the tip of the iceberg. I mean (…) we don't belong anywhere. You go to the American Political Science Review, they were like, what is this, that is not really political science tradition. Breaking those silos, it's like you are really fighting."

Social media based studies may not fit into mainstream social science publications, especially if the journals are focused on traditional methodological practices. One participant reported problems with reviewers who were demanding quotes from social media data as a proof for originality ("You don't have any quotes! How do I know that you did in this study?") while the researcher deliberately decided not to include verbatim quotes from tweets due to privacy issues. Another researcher related how the entire section on data collection in a paper on Twitter had to be removed on reviewers' requests – which meant that the paper was published without the part originally written by the co-authoring computer scientist. From the interviews we also gathered that in many projects computer scientists faced similar problems with regards to computer science work packages in interdisciplinary projects.

3.2 The role of computer science and computer scientists

3.2.1 Social media researchers are aware of the necessity to collaborate

Interviewees believed strongly in the necessity of collaboration in general and that researchers with different competencies are required to achieve the best possible results in social media research: "It seems very hard, or nearly impossible, to do this kind of stuff in the future as a single or individual researcher."

One reason given for the need to work interdisciplinarily was the fact that data collection was both time-intensive and difficult: "It's just too much for one person to do individually" which resulted in having to 'outsource' different parts of a project which previously may have been possible to deal with on one's own.

The second reason for the need to work interdisciplinarily was seen in the newness of the field, as new fields require an open mind: "Anybody who is very closely tied to a discipline won't find the same things that other people find."

Academics from the social sciences were therefore expected to "have to learn to work – even more than before – in teams", with the social media researchers being in good positions to accomplish this due to usually already having interdisciplinary outlooks. However, interviewees did not always find that others agreed with their viewpoint: "… my approach to things has always been very much interdisciplinary in how I view things.

And I'm constantly amazed at how people don't share that view. And that there are still these disciplinary and methodological silos – that just drives me nuts." Interdisciplinarity was therefore seen as a challenge for researchers less inclined or experienced in it. However, because interdisciplinary collaboration was seen as necessary for accomplishing social media research, researchers were required to "either (…) work per se, you know, forced, with people from other disciplines, or, and that's what I would really think is the better way, you keep open yourself."

Even though the need to connect people with different skills is recognized, bringing those people together is not always easy and depends on good networking skills and the availability of research infrastructure: "It's just, I guess, luck and the size of our institution that we had enough students and professors, that some had the skills needed."

3.2.2 Role for computer scientists

The value of computer scientists and their skills for social media research projects was often acknowledged in the interviews. Approaches in projects seem to vary with regards to how much members of an interdisciplinary undertaking are involved in each other's specific methods and activities. Some groups take a lot of effort to let everybody understand the whole workflow: "That is one of the pedagogical goals of the group (…), which is really trying to make it so everybody understands every part of the process." Another interviewee told us he does not want to collaborate if not everybody also engages with the others' methods and in the past had even refused to collaborate in a setting where each member of a team just worked with his/her own methods and 'puts the pieces together afterwards'. There was generally a longing for the "productive tension" of negotiating methods.

In other cases, especially when working with bigger datasets, there often is a delegation of roles in the teams. It is seen as useful and easier to collaborate with others who take care of data collection "because I don't have to think about all the technical issues. (...) We are working really closely together and try to find solutions for the technical problems. But (…) they are the programmers and they are the ones that put it into the software. We are just those analyzing and finding new methods they can put into software again." The fact that reducing the roles of computer scientists to those of 'mere' data collectors could be problematic was also mentioned and will be explored in the next section.

Social media researchers were also hoping that computer scientists might be able to shed light on previously unsolvable problems connected to big data. For example, traditional social science methods do not seem sufficient for capturing phenomena such as memes, because "questions of spread are really hard to get to from a qualitative point of view and even from a quantitative standpoint I think that it would take some really big systematic work". A participant wished for "a really systematic way to be able to trace spread and then creation" in order to study social media memes.

3.2.3 Computer scientists have different approaches, questions and methodology

Social media researchers noticed both the overlap in interest with computer scientists as well as the differences regarding research foci and methods. Overlaps mostly occurred through working on the same data. Differences pertained to standards, research

questions and expectations and could, for example, concern topics such as how to make sense of user experience. Differences would often become critical at points when it came to decisions about data collection and data analysis. While social scientists in a research team would look for "single examples and they're going to do close textual analysis and build a whole story around those", computer scientists would, for example, ask for "more noise in their data, because they want to make an algorithm that can clean out the noise or something like that". Very different requirements concerning the data would therefore have to be accommodated. Different approaches needed to be allowed to co-exist, even though they might seem "fascinating and mysterious". Otherwise collaboration could become impossible, especially when ideas about the method differed considerably as is the case for those branches of the social sciences in which data collection is seen as part of the research or even coding process. On researcher put it as follows:

> "So that process of gathering, of collecting is not just something to be done automated and then a bunch of different questions applied to it. The collection process is part of the coding process, the understanding process. And it is a really foreign idea to me that you're just like, well, I've got these questions that maybe are related to gender and I have these questions that maybe are related to intensity of tweets, Hey, let's both look at the same billion tweets set. I's a different way of thinking. Not that it's invalid, but it's, I don't think I would…"

One researcher told us of the difficulties he had initially experienced when trying to interest computer scientists in social media. Computer scientists had to be convinced that social media research was worthwhile. To other researchers it seemed that computer scientists were not interested in producing negative results, which can however be beneficial for social media researchers in order to learn about which approaches are successful and which are not. Interviewees realized that computer scientists had their own research agenda and that often the tasks that social scientists required were not interesting to them:

> "They can't publish results on the things we need from them. Like collecting data or creating something to collect data. We collaborated with (...) experts in databases. And it was very difficult to find something that was useful also for them under the academic point of view."

Some social scientists were not sure about what computer scientists expected from a collaboration and even doubted that they had any incentives to participate in an interdisciplinary project. Conversely, other social scientists thought that the issue of computer scientists' role as 'mere' data collectors originated in the fact that computer scientists themselves perceived social scientists "as an end user that they need to provide a technological solution for", rather than as a collaborator in challenging traditional paradigms and methods.

In other cases, collaboration worked well, for example, because the computer scientist in a project "was really interested in doing this, because he wanted to learn". But even if there is a shared interest, or if everybody is motivated to work together, problems may occur. Some participants reported difficulties in communicating effectively:

> "I always think about, I don't know, whether he can do this. So I just suggest it, right, and then he comes and tells me a

week after, 'You know, I can also give you *this*'. And I, 'Why didn't you tell me?'"

The establishment of a common language to facilitate communication about issues of method, validity and research foci appeared to be a prerequisite for facilitating interdisciplinary collaboration in social media research projects.

3.2.4 Social media researchers are aware of the need for computer science competencies

Social media researchers were especially concerned about computer scientists' motivations and interests because they often struggled with technical aspects in social media research themselves and hoped to acquire technical skills through collaboration. Working with social media data requires different skills and different tools than social scientists are used to working with: "...it's totally different than surveys and interviews and stuff." Many researchers felt the need to acquire new technical skills:

> "Yeah, I always feel it must be great to be a hacker because you can get hold of all these great datasets."

Social media researchers believed that a lack of technical skills affected their work: "My questions are limited to what I can do." In some cases, they even perceived their own lack of programming skills as a deficiency:

> "It is kind of ironic that I'm studying, you know, new media, but unlike a lot of other researchers I know I don't have any of that kind of hands-on practical skills in that area. I'd love to be able to do that."

In the cases where researchers did possess technical skills, they were aware that others, who had the same disciplinary training but no skills or interest in programming, would not be able to work with social media data: "I'm lucky because I was always interested in these things, so I'm able to write simple programs and I understand more or less the architecture of the APIs, but most of the people in my field of course need someone to collaborate with to explain this kind of data." Some interviewees had even started to learn new methods and skills by visiting training courses. The opportunity that computer science skills offered with regards to analytical potential were valued as very high:

> "I keep running up against this issue of how much of a computer scientist you have to be to competently work with large volumes of data. If you work with smaller samples or if you do something that's sort of more the typical approach of a humanist or social scientist, then it feels a bit like you're not exploiting the advantages of specifically social media data."

However, learning skills such as programming could be a drawn-out process and might not lead to sufficient results in time. Learning may also consume time needed for other tasks, such as reviewing literature or studying the material. One researcher said:

> "I think you would be able also as a social science researcher to learn that [Python programming] stuff, but then you don't have time to theorize."

So while acquiring some new technical skills was seen as worthwhile researchers realized that they needed to compromise: "It's also about putting in time and money (…).

And you know: I'm not a renaissance man – I can't do everything."

Learning technical skills was also connected to a longing for gaining back 'control' over the research process. Researchers wanted to be independent: "I would like to do as much as I can by myself." Many of them did not enjoy having to rely on others and their judgment "I try to have a really good understanding of the system, so I can explain what we actually did, so I don't like the idea that it's just like a black box, that you don't understand anything about it and it's just outsourced". Consequently, social media researchers sometimes wished for a tool that would allow them to collect data without requiring computer science skills or colleagues to depend upon. It appears that social media research has placed them into a new situation, where their research is not yet supported by a substantial research infrastructure and data access possibilities, which they are used to in other fields of study:

"I would like to be able to not need advanced computer science knowledge in order to just get my dataset. (…) If I do a content analysis from just traditional media I just buy my papers, or I go to an archive, I can do it. I'd like to be able to do the same with Twitter."

Some participants felt that they had been left alone with the task of acquiring necessary skills ("basically I'm doing most of it on my own") and were calling for programming to become a standard part of the curriculum in media and communication studies, especially as more and more communication in all areas of society I being mediated by computers.

Acquiring technical skills eventually seemed to come down to two options: "You can collaborate with someone with technical skills, someone from computer sciences or sometimes even statistics. (...) And otherwise you have to develop your own skills." Advanced researchers would usually 'outsource' data gathering to PhD students or hire student assistants to do the job, probably also due to the lack of time that would be needed to learn – while again struggling with the disadvantages of having to depend on others:

"My PhD students are collecting the data for me. So if I had to go and collect data I wouldn't know how to do that. (…) So I'm not anymore independent – as I used to be."

3.3 Value of social media research

We saw that conducting social media research as a social scientist could be challenging and even risky for social scientists. We therefore also asked what unique value social media could offer to researchers and social science disciplines in order to better understand why they chose to address this novel field rather than sticking with traditional methods. Most of all, the social media researchers in our study were very curious and excited about the new developments in and through social media.

3.3.1 Social media researchers value the 'newness' and excitement in the field
Researchers expressed their positive experiences in being part of an emerging field and were driven by their own interest ("Everything is interesting in social media"). They enjoyed the novelty of the topic, highlighting that "it's fascinating because it's totally different" and that "there's a feeling of being able to explore, of being able to do new things." They felt that others were also inspired by the new possibilities of social media

research and described it as "good to be in a field where there is a lot of excitement"

By exploring the chances and challenges of social media as an object of study they also hoped to contribute to new research directions that would become even more important in the future: "I think that there are researchers and attempts to create some kind of common social media related knowledge. That's going to be (...) useful for something else in the future." And they also saw that they could help to pave the road for other researchers to follow them into this new field: "I see ourselves as pioneers, we have to do that. It's, we are starting, we are working with the flame for the whole. You know the young generation who would come after." There sometimes even was a feeling of responsibility to move forwards into such new topics and new (interdisciplinary) methods: "It's our obligation as researchers, really to open the road and not to close our eyes and not to allow ourselves to be stagnated in one of the disciplines."

3.3.2 Social media researchers value the availability of data
Despite the technical challenges in data access, social media researchers were impressed by the possibilities of new data collection approaches ("And we had all this data and we were like: Oh my gosh, we have this amazing data!"). Even though they often cannot perform the computational tasks themselves, they get the impression that collecting data has become much easier ("Because it's so easy to gather data, because anyone can do it now, because we have established tools.") and that you can collect data for a variety of topics: "You can gather data from any context you want. So you can... you could be a researcher in Australia and look at the Arab spring and you could be a researcher in Germany and look at protests in Brazil." For them, social media data is "very available compared to ethnographic research. (…) If you do ethnographic research you have to go into the field. You have to go to the gatekeepers. And inform those people about your research (…) and build up a relationship to the ones that you're doing research about."

Sometimes there even seems to be so much data that one does not know where to start: "I have death by opportunities." And some researchers had collected more data than they could use for their studies: "I thought it would be interesting, and it *would* be interesting, just, I haven't had time to look at everything".

This richness of available data also comes with a lot of critique, such as that researchers use this type of data just for "convenience", not because it necessarily helps with their research question ("So: I wanna do research on language. And Twitter happens to be a really good way to get a whole bunch of data about language"). In some cases this critique seemed not too far-fetched as single researchers were indeed inspired by this particular availability of data and turned to it simply "because it's there": "It doesn't make intuitive sense to keep trying to think about the representative sample when you have these huge amounts of digital traces of activities on a particular topic. It doesn't seem to make sense not to do it, I suppose. Why not, because it's there." The critical reflection of social media as a source of research data – and the challenges posed to epistemology and methodology – were major elements in the interviews and we intend to publish them as a separate study in the future.

3.3.3 Social media researchers value the potential of immediacy

It is not only the availability of data that drives social media research. Researchers also see a particular value in the specific type of communication one can observe in social media. Because especially Twitter is easy to use and characterised by both the brevity and the instantaneousness of posts (spread happens immediately) it becomes possible for users to share information unidirectionally with many others. This allows researchers to observe previously hidden or at least not easily accessible aspects of human activities, such as protests or discussions about TV shows and sports events, where "you can map the audience conversation."

While it takes a long time to prepare a survey to inquire people's opinions about a topic, social media conversations happen while a topic or event unfolds: "It's publically available interactions (…) on large scale." Social media promises immediate access to reactions and opinions, i.e. one does not need to ask people a long time after an event but can capture immediate reactions. It might thus be less influenced by memory lapses. And it also profits from the absence of the researcher: Compared to survey data or interview data "another great advantage of Twitter data is that I think this is something that I'd label as naturally occurring data. So this data is not motivated by means of researchers." For social scientists this can be an interesting addition to other methods, as it can help to discover the "discrepancies" between "what people say they do" and "what they actually do".

3.3.4 Social media researchers value the opportunity to observe society

Ultimately, researchers are exploring the possibilities of observing society through social media. They recognize its value as a communication channel that is "being used by a very large population for a variety of functions" and "where we can see people's activities over long periods of time." Within internet environments, communication structure that used to be "ephemeral" becomes "manifest", "visible", "crawlable" and "analyzable" and researchers in our interviews were concerned with analyzing the "relationship between the structure we see on the internet and the structure of society".

Yet, the interviewees did not expect social media to be a mirror of society per se. Rather they demonstrated a critical reflection about the reciprocal relationship between society and the internet, recognizing that one can influence the other. Not only researchers look at society through social media but also society can observe itself through this channel "for the first time (…) in a new way." There is a chance that society is again affected by this observation, and researchers were also interested in studying the effects this can have on society. Some effects had already been described, for example that the "internet has and social media has created an interesting kind of shift of the structure of power between institutions, between the traditional elites, between users." To study such developments it might not always be feasible to exclusively work with data collected from social media. The adaptation of new social media can further tell us a lot about culture in general:

"So I think how people handle Twitter, how it kind of sparks extremes, dystopian, utopian notions, it says a lot about culture. So Twitter in itself is interesting, not just the debates

on it as a window into elite voices in society, but in itself it is interesting to see what people do with something new in terms of media."

It is recognized that social media data can yield quite different advantages and insights for scholars from different disciplines, for example linguists or economists and researchers were curious to see other disciplines involved in discussions ("I would love to have more psychology in some of these panels because it is extremely interesting from their perspective"). Again there were also very critical discussions about the use of social media to study society and about the respective methodologies, but these topics are beyond the scope of this paper and will be presented in more detail in the future.

4. CONCLUSION AND OUTLOOK

In this paper we have looked at different dimensions of interdisciplinarity in social media research. We focused on the perspectives of social scientists who study social media. We could therefore present results illustrating a) the general need for interdiscplinarity for this particular research field, b) the more specific need to work with computer scientists, and c) the specific value social media adds to social scientists research. All results were drawn from semi-structured interviews with twenty social science researchers. Our approach enabled us to capture a detailed and fine-grained image of the facets of interdisciplinarity from social media researchers' point of view and thus allowed us to present first insights in the challenges and chances perceived.

Studying social media brings with it both chances and challenges for social scientists. In addition to technical difficulties with the scale and size of data – which can be addressed by making data and skills available for social media researchers as proposed, for example, in computational social science approaches – we found that there are also other challenges. First, the interdisciplinary work presents challenges due to differing ideas about validity, best practice and research interests. Such difficulties have already been described as common obstacles in interdisciplinarity [18]. Second, there is in particular a lack of clarity about the derivation, validity and explanatory power of the new 'type' of data being made available through APIs and other crawlable sources. On the other hand there is obviously a lot of potential to try and accomplish new things and to learn by doing. And, last but not least, there are differing ideas about what data needs to look like in order to be understandable and interesting to the different disciplines.

While much work is understandably 'result driven' – in the sense that interdisciplinary collaboration is made to work regardless of difficulties in order to produce scientific output, there is still a lot of work needed to define, test and learn how social scientists and computer scientists can work together productively. As is the case for most interdisciplinary work it seems that in order to allow for successful collaboration the way in which validity in research is achieved needs to match or at least a way needs to be found for different disciplines to fulfill the respective validity requirements.

This paper presents first results from a larger project on studying the evolving field of social media research. Not all insights from the first round of interviewing social media researchers could be presented here and thus we will in the future present more detailed results concerning in particular the epistemological shift in social media research, the issues around

personal data, trust and privacy and general social media research ethics. We are aware that these dimensions especially demand interdisciplinary perspectives and will therefore conduct more interviews with researchers from additional disciplines.

5. ACKNOWLEDGMENTS

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