**New perspectives on personalised search results: Expertise and institutionalisation**

Theresa Tran and Hilary Yerbury

University of Technology Sydney

**Introduction**

Personalization has become a buzzword in contemporary society, suggesting both individualisation and customisation and it is commonly associated with web-based information services. The concern to use the interests and attributes of an individual in some way to refine or target information is not, in itself, new. From the earliest developments of automated information retrieval, librarians were concerned with questions of the relevance or search results to individual users. Identifying specific interests and particular preferences was a key aspect of the reference interview through which a search strategy was developed for an individual. With the emergence of automated alert services, users could create profiles which reflected their interests by listing subject headings. As Hearst (2009) explains, these can be seen as explicit dimensions of personalisation, to be contrasted with implicit dimensions of personalisation which might be identified through an information user’s previous behaviours and search history using a web-based system.

When people engage with web search engines, there has been an expectation that the search results presented would be the same for someone else conducting the same search (Brusilovsky and Maybury, 2002). This expectation arises from a societal belief in the reliability of authoritative information – if you ask a question from an authoritative source, you should always get the same response. However, the introduction of personalisation by web search engines, such as Google, has changed that. Google uses personal information and user search history in selecting results and these can have a significant impact on the items retrieved and the order they are presented in. This means that the expectations that search engines will provide consistent results are misguided. Thus, research into how users understand and construct social conventions surrounding information search and what impact personalised search has on information retrieval and the use of search results is important. The purpose of this study is to investigate how a group of young people perceive personalisation of search results by Google and to explore processes of the institutionalisation of expertise, that is to say, the social conventions surrounding information search and the evaluation of search results.

Google’s positioning as the leading search engine is influential not only in information search, but also in wider social and cultural spheres, demonstrating the everyday significance of this study. In a popular sense, personalised search is relatively new to online searching, being first introduced by Google’s search engine in 2008, but its effects have been studied by a range of scholars from the information and media fields, including Pariser (2011), Vaidhyanathan (2011), Fuchs (2010) and Hillis et al. (2012). In the influential book *The Filter Bubble: What the Internet is Hiding from you,* Pariser (2011) conceptualises the effect of technologies, such as Google, through the metaphor of the ‘*Filter Bubble’*, highlighting a new era of information retrieval that influences how users engage with information and thus, how they act and think in society.

Embedded in the Filter Bubble model, one can see the sociological idea that institutionalised ideas and practices, filtered down from expert knowledge, have constructed the way that people throughout much of the world understand information search and that personalised search engines have become experts, acknowledged as socially accepted sources of knowledge, thus influencing the flow of information in a society.Using Giddens’s notion of abstract systems of expertise (Giddens,1991), search engines can be seen as examples of disembedded expertise extracted from localised contexts and reproduced across time and space. These systems of expertise shape social ideas and, as Giddens observes (1991, 112), knowledge ‘filtered back’ from systems of expertise creates a pool of shared knowledge which laypeople use to justify actions and ideas in everyday life. Expert systems allow non-experts to assume that the search engine will provide users with answers to their problem with no need for technical knowledge of information retrieval or computer programming and no need for the skilled intermediary of the librarian to construct a search strategy reflecting the user’s interests and preferences.

Although there have been many responses to this question of the acceptance of personalised search results, few scholars have supported their claims with empirical evidence of the effect of personalised search on search results and of the user’s perception of the search engine as a tool and as a source of expertise. This study aims to provide data to support its claims.

The approach of this study moves away from a narrow focus on the Filter Bubble (Pariser, 2011), which defines personalised search by the outcomes intended by the technology towards an emphasis on how personalised search engines are institutionalised within information search conventions.This distinction is important because previous studies overlook the role of user interaction with technology and do not focus on the impact of personalised search on information expertise, information seeking behaviour and information search technologies, which are significant social constructs.

**Interactions with expertise**

Expertise is continually being challenged and reinforced by social systems; social conventions on information search are predisposed to construction and reconstruction. In a society, there is a consensus on what is informative (Buckland, 1991). The dominant discursive rules in a society indicate how knowledge will be constructed within that society (Foucault, 1972). Recurring reproduction of expertise by social actors leads to expertise becoming institutionalised (Giddens, 1991). The notion that social structures are never static also applies to technological structures, leading Orlikowski (2000) to develop the notion of technology-in-practice, positioning technology alongside humans and information, showing how the three are interdependent.

Many scholars in the information science field have modelled behaviours associated with information seeking (Wilson, 1999; Ellis, 1989; Kulthau, 2004; Dervin, 1992), demonstrating that we understand these behaviours and practices through a process of social and conceptual construction. Notions of authority and expertise were clearly understood in traditional publishing and information search (Rieh, 2002) and processes of information retrieval were institutionalised through education processes for librarians and through information literacy programs in universities, colleges and high schools. Processes for evaluating the quality of the information sources retrieved (Schmidt, 1984) were also institutionalised.

However, these institutionalised processes of expertise and evaluating the quality of information do not apply to information on the internet. Search engines allow users to find information and different search engines have their own algorithms to rank and return search items. For the first years of its operation, Google used a PageRank model, metadata and font size to rank and return items (Brin and Page, 1998). The PageRank model used the hyperlink structure to judge the quality of a page, where pages linked from more places on the web were ranked higher in the list of search items (Hiemstra, 2009). Knight and Spink (2008) showed that web search engines contribute to more complex information search strategies than existed in traditional information seeking and therefore, a different set of information seeking behaviours is likely to evolve. Amongst these behaviours, cognitive style, particularly judgements of quality and authority (Rieh, 2002), is a significant variable in an individual’s search strategy.

The introduction of personalised search engines has meant that the traditional expectations of the outcomes of searches have been challenged. This process had already begun with the introduction of cookies, which Google uses, for example, to remember safe search preferences, to make ads more relevant, to count how many visitors a page receives, and to protect data (Google 2015a) and with location-based information, accessible from the IP address (Google 2015b). Results among people using the same search terms are inconsistent, and this challenges traditional notions of authoritative information. Personalised search engines seem to have had the effect of diminishing the idea that the value of information is greater if it is widely accepted in the community. Consensus is no longer expected. Personalisation, through cookies for example, is increasingly adopted by search engines and websites as a way of targeting information and products, in other words, it is seen as part of customer relationshp management (cf Kim, 2002). Search engines, such as Google, collect data on users from other Google products, such as Gmail and Facebook, and use this to focus the type of information retrieved and the order search results are presented. When different users conduct the same search and receive different sets of results, this is interpreted to mean search technologies are eroding traditional ideas of authority in online information (Pariser, 2011; Vaidhyanathan, 2011; Hillis et al., 2012). Pariser (2011) uses the metaphor of the filter bubble to indicate that the process of personalisation tends to filter out information that may be important, leaving information seekers with a limited and skewed reality, a situation that will gradually worsen as the search engine is more familiar with the users’ interests. Scholars such as Knight and Spink (2008) and Rieh (2002) suggest that the use of search engines, such as Google, encourages users to forego traditional search behaviours. Pariser suggests that personalised search results may lead to ‘*informational determinism*’ (Pariser, 2011, 112), narrowing the user’s perception of quality and authority and encouraging evaluations affected by confirmation bias, that is, moving users away from traditional strategies for identifying authoritative information to a strategy based principally on whether they agree with the information provided to them. In addition, he argues that the Filter Bubble will limit ‘*mental flexibility and opennes*’as it contributes to a shift away from discovery-orientedsearching to a search and retrieval-based strategy (Pariser, 2011, 101-103).

Siva Vaidhyanathan (2011) uses the term Googlization to describe Google’s influence in areas, such as popular culture and commerce, beyond information retrieval. The notion of Googlization indicates that the cost of individualised search results is the relinquishing of control over the ideas and opportunities to which each user is exposed. Hillis, Petit and Jarrett (2013, 73) propose that the Google’s epistemological philosophy is based on ‘facticity’ whereby ‘individual engagement with information becomes grounded in immediate, experiential relationship between subject and object akin to that in the world of play’. This environment of play refers to the user-centred environment created by personalised search engines and using this notion, Hillis et al. (2013) demonstrate that the information, or objects, presented by Google, has symbolic and cultural value to the users, or subjects, and this fusing of subject (the users) and object (the search result) makes objective judgement challenging. This, they argue, contributes to individuals developing criteria for authoritative information skewed by personal bias and developed through experience with the source rather than rational evaluation. They propose that Google users adopt criteria developed through experience with the source rather than through rational evaluation, thus positioning Google as a cognitive authority. This argument again challenges the notion that individuals co-opt traditional online information seeking behaviours based on quality judgement and more traditional cognitive authority (Knight and Spink, 2008; Rieh, 2002).

Thus, embedded within notions of the Filter Bubble and Googlization is the idea that Google has legitimised itself an authoritative expert in information search. Pariser (2011) noted that people are increasingly exposed to personalised information as widely used websites, including Amazon and Facebook, adopt personalisation of their services and as a result, users will be ‘*locked-in’* (Pariser, 2011, 40) to these services to the point it would take too much effort to switch to non-personalised alternatives. Further and perhaps more significantly, these processes of personalisation of information search results will culminate in a ‘*You-Bubble’* (Pariser, 2011, 9) of information that will reinforce the beliefs of the individual rather than drawing from and adding to the collective.

Both the Filter Bubble and Googlization models assume that Google has emerged as an essential tool for online searching, and these authors highlight that personalisation of search results will have a detrimental effect on people seeking information online. This technologically determinist argument does not consider the role of information users can play in their interactions with personalised information. Conceptualising information search as a social institution using notions of expertise (Giddens, 1991) and technology-in-practice (Orlikowski, 2000) suggests that these behaviours are socially constructed.

This study begins from the notion that the introduction of personalisation by an authoritative search engine, such as Google, has institutionalised a set of information seeking behaviours, which need to be understood from observation of individual search behaviours. It takes an interpretivist approach in the investigation of how a group of young people perceive personalisation of search results by Google and includes a focus on the information search strategies they used to identify quality and authority in personalised information. Through this, it explores processes of the institutionalisation of expertise.

**Methodology**

Previous studies have taken a functionalist approach to the study of personalised information searching. This study will take an interpretivist approach, concerned as it is with understanding the *‘fundamental nature of the social world at the level of subjective experience’* (Burrell and Morgan, 1979, 28), thus incorporating the frame of reference of participants. Among the benefits of taking an interpretivist approach is the ability to consider all elements contributing to the search outcomes, including how users interact with personalised information, shifting away from focus on the impact of technologies on user behaviour.

This exploratory study, conducted in 2013, involved a convenience sample of 13 participants known to one of the researchers, aged in their early to mid-twenties (7 males and 6 females) and based in Australia. They were invited to participate on the basis that they are university graduates in a range of disciplines, used computer-based information in their work, are active online, have a registered Google Gmail account and use Google as their primary search engine. Five participants work in the same Sydney-based company in Macquarie Park with seven working in other companies in central Sydney and one in Melbourne; twelve participants live in Sydney’s south and west and one in Melbourne. Data was collected from search tasks carried out by the participants and interviews. Each participant performed two controlled search tasks unsupervised at two different locations, home and work, using the Google search engine. Participants were asked to use the computer they would normally use in each location and to log in to their Google account before they began their searches. The search results were recorded through a screen shot and the search items were recorded for each participant. One search task was a work-focussed search, seeking information on the best way to implement an Excel spreadsheet function, and the other was a socially focused task, seeking information on ‘the best cafes in Sydney’ (cf Hearst, 2009). These tasks were selected from a list of searches commonly performed developed from the literature and from informal discussions with young professionals.

After they had completed the search tasks, participants took part in a face-to-face semi-structured interview. To measure participants’ reliance on Google as a source of authority and to test whether they co-opted traditional search strategies when using personalised search, the interview questions asked individuals about their Google use at home and work, reasons for using Google, awareness of Google’s personalisation of search results and decision-making in the search tasks.

Data collected from the search tasks were analysed and compared based on the similarities and differences in the search items presented amongst the participants and between the two search locations. This research explored the differences created by personalised search, particularly on the list of search items, the type of search results (eg: sponsored ads, suggested related searches and mapped search items), the number of search items and order the search items appear based on the first page of search items from each search task. It considered how participant location, privacy settings, signing into Gmail and familiarity with search tasks relate to similarities or differences in search results.

Data collected from participant interviews were analysed through a qualitative content analysis, which involved abstraction and meaning units (Graneheim and Lundman, 2003). Data collected on Google-use and perceptions of personalised search were mapped on an affinity diagram generated through a ‘pencil and paper’ approach. In this qualitative study, language is important in revealing the priorities institutionalised within the information search behaviours and practices of participants. Credibility in this study was maintained by establishing for interview analysis a meaning unit of words that relate to a central meaning of some data and a process of abstraction to allow themes to be extracted for other data. The data on Google use were analysed using themes drawn from the literature; similarly, the perceptions of personalised search were analysed using notions of cognitive authority and quality information drawn from Rieh (2002), information determinism (Pariser, 2003) and the experiential real (Hillis et al. 2012).

**Research results**

*Using Google*

As anticipated, there was no single set of search results. Again, as expected, there were some commonalities among the search results, especially for the work-focussed question, but there was also variation both in the items retrieved and in their order in the list of results. For search task 1, the number of search results ranged between 1,250,000 and 2,580,000 and for search task 2, between 8,600,000 and 49,300,000. In each set of search results, at least two participants received the same number of results; however, even when two participants received the same estimated total number of results, the list and order of items on the first page of results were different. Surprisingly, there were four searches with the same results in the same order. A plausible explanation was that the searches were carried out in the same workplace location, with this being the influential factor. However, a fifth participant working in the same location received a different total and different order in both of the tasks. Thus, no explanation was found.

Other inconsistencies related to the peripheral information provided. Somewhat surprisingly, only four people were presented with sponsored ads and receiving them at home was no guarantee they would appear in the work search and vice versa. Similarly, there was no consistency in the presentation of mapped items in search task 2. Even though eight participants indicated they had carried out similar searches before looking for cafes, no pattern emerged in their search results. Google provides links to ‘related searches’ at the bottom of the first page of results; understandably, these appeared only in search task 2, but only seven participants received the same set of ‘related searches’ as suggestions for expanding the search. There were also differences for the searches done at home and at work, where only five participants received the same suggested related searches at home and at work.

To try to understand how some of these inconsistencies appeared, participants were asked about their use of ad-blockers, privacy settings and whether they were signed in to their Google accounts when they usually carried out a Google search. Two participants, who were aware of Google’s approach to using personal data and therefore used ad-blockers, had the highest privacy setting. In spite of the request to sign in to their Google accounts before taking part in the study tasks, these two did not do so, and yet they still received different search results for task 2, the socially-focussed task, identifying cafes.

The interview responses suggest participants have incorporated Google as a primary information search tool for everyday information seeking, and some of them have taken steps to have Google operate in the way they want to relate to it. All 13 participants said they use the Google search engine at least 90% of the time when seeking information in general. To a lesser extent, they use Google at work. Eight participants who tended not to use Google at work stated that this was because other information search resources, such as specialised databases, were used primarily. One participant, Daniel, said ‘*if we are talking about a search engine, then I’ll always use Google. But for work, if there was a database of information for that, I’ll use that’.* Phirun said that he would use Google less that 10% of the time when there was something he did not know because ‘*in a corporate scenario, the best way to learn and gain answers is from the people around you*’. This is an example of where an institutionalised practice for the creation of social knowledge has not yet been affected by the introduction of Google.

In the interview, participants stated that their reasons for using Google were often unthinking and automatic. Eight participants highlight that they *‘don’t consciously think about it’* because it is a *‘natural selection’* (Dale) and five participants said that Google was their default webpage or it was embedded in their web browser. When probed further about their decision to use Google over other search engines, four participants stated it is because Google provides *‘reliable’* results (Cadgas), the ‘*right answer’* (Vas, Dale) and *‘better’* search results (Eliza). They also acknowledged that Google is their primary search engine and they have limited experiences of using other search engines. Participants were also questioned about the types of searches they performed using Google and the responses reflected a variety of ‘*everyday*’ (Tinh) searching, with three participants using Google for searching *‘everything’* (Anh, Cadgas, Eliza).

Seven participants were not aware that Google used details to personalise their search results and assumed the search results would be the same for everyone when using the same search terms. However, eleven responded positively to personalised search for the following reasons: it would make search *‘easier’* (Daniel, Cadgas), and *‘give better results’* (Cadgas, Vas) and give more *‘tailored’* results (Rose). Even knowing about personalisation of search results, all participants would continue to use Google, and only Tinh would use Google less because of personalisation of search results. They indicated they would not change their use of Google because they are not concerned about Google using their data to personalise search results.They expressed their lack of concern as follows: *‘I don’t care’* (Anh, Daniel), *‘doesn’t bother me’* (Cadgas), *‘not that big an issue’* (Ashani), *‘wouldn’t disguise what I search’* (Dale) and *‘it won’t really affect anything’* (Sam).

***Making judgements***

The interviews revealed participants evaluated the search results, rather just accepting the Google generated search results at face value. They used a range of criteria when judging online information. The search results from Search Task 1, the work-oriented question on implementing an Excel spreadsheet function, comprised mainly user-generated help forums. Here, nine participants developed judgement criteria based on the quality of the search item, with participants using these phrases to describe the search items they chose: *‘more related’* (Sam) and *‘can be used to extrapolate more data’* (Phirun). However, participants also acknowledged that they accept Google’s judgement of information, for example stating they would use a search result item because it appeared either first or on the first page of the search results. Participants gave reasons like: *‘Google gives best results and usually appears first’*(Vas), *‘I always click on the first one’* (Ashani, Eliza) and *‘I never venture too far from the first page’* (Kershan).

Search results from Search Task 2 consisted of a variety of webpages related to cafes and included a map, established food and coffee guides, user-generated food guides, and tourism and event websites. Eight participants favoured search results linked to institutionalised authorities from the food industry, such as such as SMH.com, (the website for the Sydney Morning Herald, a widely read newspaper) the Good Food Guide and Timeout. These participants described the search results by phrases such as *‘reputable’*(Anh, Cadgas, Tinh), *‘trusted and established’* (Daniel), *‘already visited’*(Ashani) or *‘heard about it before’* (Rose). Here it is clear to see the use of cognitive authority when judging online information. Interestingly, the authority of Google established by some participants in Search Task 1 is not found in Search Task 2, where a more traditional approach to cognitive authority was observed. It is not clear why this was the case, but it may be related to the fact that Search Task 1 produced user-generated sources, based on experience and Search Task 2 presented established sources. In addition, two participants, Daniel and Ashani, reflected confirmation bias and stated they would choose search results because they were *‘similar to what I typed in’* or because it is *‘most likely to agree’* (Daniel).

Google provides a map showing the location of businesses, such as the cafes in Task 2. Only Phirun mentioned the cafes listed on the map when judging the results from Search Task 2. However, when questioned directly in the interview, nine participants said they would consider these mapped search items in everyday information search because of its usefulness. These participants gave reasons for using mapped search items, including: *‘to see what’s convenient’*(Ashani), *‘to see if it’s nearby’* (Cadgas), and because ‘*it’s quick’* (Vas), highlighting information quality as a significant consideration in online information judgments. Similarly, those who would not consider mapped search items also focussed on the search result’s usefulness, giving reasons such as: *‘I’m looking for a list rather than an individual café’* (Mish), *‘unless I’m looking for best cafes in this area’* (Eliza), *‘because I usually look at the main search results’* (Anh) and they *‘may not be appropriate’* (Daniel).

Sponsored ads were noted by all participants. Four participants would not use sponsored ads because these relate to selling products, and they gave reasons such as*: ‘(they) have paid help and I wouldn’t use Google to buy things’* (Kershan) and they *‘are trying to pull you into buying things, and I’m not interested’*(Vas); and another three would also not use them because sponsored ads were: ‘*not what I’m looking for’* (Cadgas), *‘not relevant’* (Sam) and ‘*doesn’t really provide me information I want’* (Mish). However, four participants would use sponsored ads on the following conditions: *‘If it’s a website that I’ve heard of’* (Eliza) and *‘in situations where I already know of the site’* (Daniel), *‘(it is) what I’m looking for’* (Rose, Dale). This shows that these individuals are aware of the context of the information provided to them and that they are able to reflect on this broader context and make judgments based on their perception of the authority of the information provided.

**Discussion**

*From personalisation to a new social institution*

As anticipated, the range of search results in this study showed the effect of Google’s personalization of search results (Pariser, 2011; Vaidhyanathan 2011), a model which runs counter to the social consensus based model displayed in previous web search engines protocols, such as in the Google’s Page Rank model. Yet, at the same time, there is a tension as participants seek to assert their own judgements on the usefulness of the search results that Google’s personalised search has provided them with.

The repetitive and widespread use of Google reported by participants confirms a pervasive sense in the literature of a social consensus about its use as a tool in the information search process. Google was seen mostly as trustworthy, in its role in the social institution of information search. Some participants were not aware of the operation of personalised search, partly supporting the argument that personalised search is acting without user knowledge (Pariser, 2011). Some participants expressed concerns about personalised search limiting information and capitalising on personal data. However, these participants who mistrusted Google still continued to use the search engine, and this demonstrates that users feel they are able to manage risks when using search engines, contrary to the claim that users are susceptible to the will of Google (Vaidhyanathan, 2011). Among the reasons why participants in this study continue to use Google for information seeking is that they appear to trust its processes. The study demonstrates that, when using personalised search engines, users are able to articulate notions of trust and risk to calculate acceptable risk, (Giddens, 1991; Mayer et al., 1995), and this in turn suggests that there is a trust relationship between users and Google’s personalised search.

However, for Pariser (2011), no relationship of trust can exist between the user and the search engine because the Filter Bubble is invisible and acts without user permission. In addition, Vaidhyanathan (2011) argues that the perceived benevolence of Google in providing efficient information may create issues for users, particularly related to user privacy. In other words, users are encouraged to trust the search engine because it seems to provide helpful information, but they are not reminded of the potential breach of that trust as Google surreptitiously collects personal data. Underlying the argument of both scholars (Pariser, 2011; Vaidhyanathan, 2011) is the notion that participants are unaware of the full consequences of using search engines which collect personal data in order to individualise information search results, and search engines have more to gain from the relationship than users. From the findings of this study, it would seem that only one of the participants who was not aware of the way that Google services collect their personal data would consider changing her search behaviour, with most confirming Vaidhyanathan’s notion of the perceived benevolence of Google and its provision of helpful information.

The personalisation of online activities in a marketisation sense is, at the time of writing (2015), very common, anticipated as part of society’s discursive rules (Foucault, 1972). Google and its way of working, through its search engine, email, document-sharing services, and so on has the potential to be institutionalised as part of social knowledge (Giddens, 1991). Google the search engine, with its approach to personalisation, becomes confused with the content it retrieves. The search engine is accepted as part of our social context, and because of this confounding of technology and information content, it is perceived as an authoritative expert (cf. Giddens, 1991, 153) and influences the process of creating knowledge (Foucault, 1972, 31) within the social institution of information search. This perception becomes self-reinforcing as social systems underlying institutionalised information search behaviour and practices are supported by the trust individuals invest in systems of expertise. Data collected from the user interviews about their search tasks gave a glimpse of the extent to which Google was routinised and institutionalised as part of social knowledge surrounding information search.

Participants in this study considered Google an authoritative expert, making it one of the tools they use every day, whether at work or in their private lives. Although Pariser (2011) relates the authority of Google to users being ‘*locked-in*’(Pariser, 2011, 40), and even though participants in this study stated that their decision to use Google is often unthinking and automatic, they believe that they choose to use Google for reasons they can articulate, rather than because they are kept unaware of alternatives. Even in workplaces with established databases and defined search systems, some participants said that they would still use Google to carry out their searches, which suggests the institutionalised practices in everyday search are also filtering down to reconstruct institutionalised work place search practices.

Interestingly, some participants created authority, that is, they conferred on Google the level of expertise usually reserved for authoritative information sources in traditional publishing. In Search Task 1, some participants ascribed cognitive authority to their search results, based on their belief that Google ranked items retrieved by their quality. In their interview responses, it was clear that this view is widespread and participants believe that consciously or unconsciously others also make judgements on the quality of items retrieved by Google in this way.

Participants gave two significant motivations for using Google, ‘Familiarity’ and ‘Performance’, which suggests in most part users are motivated to use Google because of their long-term and ongoing practice. As Orlikowski (2000) argued, individuals construct technological structures through continual recurrent interaction with technology, and the apparent repeated use of Google by participants demonstrates Google has been institutionalised not only as part of the social structure, but also as part of the technological structure of information search.

The results from this exploratory study reflect that traditional strategies for identifying authoritative information of high quality still exist when interacting with the personalised results of information searches. Pariser (2011) had suggested user judgements of information would be based on a distorted epistemological framework. That is to say, people accept the information firstly because it was derived by a technology in what is perceived of as a scientific way and secondly because it is likely to reflect their biases and expectations. However, in this study, participants did make judgements on information based on their views of quality and the cognitive authority of the source (cf. Knight and Spink 2008; Rieh 2002). Their reflections on their processes did not indicate information determinism or confirmation bias (Pariser, 2011) although there is some evidence that some participants made judgements based on experiential rather than rational knowledge (Hillis et al., 2012). Both confirmation bias and experiential strategies share the idea that personalised search encourages users to judge online information based on their own individual knowledge and experiences. Each of these strategies focus on the users and the ways they conceptualise the world around them and do not consider judgements of information based on external measures of quality.

These external measures of quality include accuracy, usefulness and importance, and authority, with dimensions of trustworthiness, reliability and credibility (Rieh, 2002). The results of this study seem to reject the argument that personalisation has contributed to confirmation bias and the decline of authoritative judgements. The study provides some evidence that individuals who use Google still evaluate information. Search engines, such as Google, may seek to provide personalised information for users, but users are still able to evaluate information independently of their own bias. This demonstrates the personalisation of search results does not necessarily encourage users to affirm their existing beliefs as Pariser (2011) indicated or to rely on information they have encountered in the past as Hillis et al. (2012) argued. Instead, users in this study appear to be able to reproduce traditional cognitive judgements in order to construct external ideas of quality and authority. Personalisation of search results has not shifted judgement of online information towards user-centred criteria for the participants in this study.

Two main information search behaviours were used in evaluating search results. Firstly, in both search tasks, participants indicated they made judgements based on the search item’s usefulness, corresponding to notions of quality information in information search strategies (Knight and Spink, 2008; Rieh, 2012). Secondly, in Search Task 2, most commonly, participants used observation of established authorities, such as Timeout and Good Food Guide, to judge information, reflecting a recognition of the cognitive authority of these sources (Rieh, 2002) as a significant information search strategy for evaluating information retrieved in a Google search.

Both of these information behaviours indicate that participants are able to adopt strategies based on their own information need (Rieh, 2002), demonstrating that these individuals still use traditional methods of identifying authoritative information, although. it is also important to note that some participants did use Google’s positioning of a search item as a strategy for judging online information, which suggests an emerging strategy for judging online information based on a notion of Google as an authority.

The adoption of quality information and cognitive authority as ways of evaluating the outcomes of information search strategies resulting from personalised information searches confirms that traditional notions of institutionalised authority are still significant in information judgement strategies. If there is a divergence from the complex criteria identified by Schmidt (1984), it is that participants in this study were able to assign a priority to the criteria they used.

The tension in the research results reinforces the idea that technological structures are constructed through the interactions between social actor and structure (Giddens, 1991) and are not determined by the technology designer (Orlikowski, 2000). As social actors, participants demonstrated they are able to interact with Google within at least two contexts, work and everyday life. The nature of technological structures means established structures can be challenged by recurring practices favouring other search tools, and in this study, participants appear to be adapting their everyday use of Google to the workplace, where internal databases and peer knowledge are already institutionalised within these organisations, rather than bringing their work practices into their everyday lives as McKenzie (2012) has found.

This approach to institutionalised authority is one of the conventional ways individuals interact with social institutions. Importantly, the ideas that constitute quality and authority may change within a culture or operate differently in different contexts. This can be seen in the different authorities identified by participants between Search Task 1 and 2. However, overall, the results of this study confirm users still co-opt conventional strategies when dealing with information searching, even if, in the process, they create new examples of institutionalised authority.

**Conclusion**

The outcome of this research is a broader understanding of how young people interact with the results of Google’s personalised search engine results and how these behaviours and attitudes are becoming institutionalised in our everyday information search practices. Essentially, Google has become a preferred method for implementing an information search strategy within the web-based information seeking process. This study indicates that Google is seen as a source of expertise, and following Giddens (1991), it is becoming institutionalised. Google’s institutionalisation within the social structures of society means that it is impacting on the conventions of information retrieval and information search strategies and behaviours. Being institutionalised in social knowledge, the notion of personalisation is reproduced and reinvented through processes explained by ideas of power, reflexivity, and trust. Currently, the social structures surrounding information search are dynamic.

The scope of this research project was limited. It focussed on the popular use of Google and Google products by a group of people in their 20s, living in Australia. The number of participants was also small. The participants were known to one of the researchers. While these three factors may limit the ability to transfer these findings to other contexts, participants and the tasks they were asked to complete were chosen on the basis their behaviours would represent the information search practices of young people who use Google often.

The purpose of this study was to understand the impact personalised search results had on social conventions surrounding information search and the evaluation of search results. There are a number of implications which flow from the conclusions. Firstly, there are implications for our understanding of the literature. Concerns about personalised search engines by previous scholars have taken a different focus and resulted in studies of the impact of personalising search results on information itself, leading to theories of how this would relate to users as individuals (Pariser, 2011; Vaidhyanathan, 2011; Hillis et al., 2013; Fuchs, 2010). As a social structure, expertise embedded within information retrieval systems filters down to information search behaviours and strategies associated with web search engines. This study, taking a broader social perspective, confirmed that Google is established as an expert within information search, and its use has developed as a social convention in everyday information seeking. More importantly, the ways in which these conventions emerge result from the interaction between user and social structure. This suggests behaviours and strategies observed in this study can shift in favour of or against personalised search engines in future when personalisation becomes more widely adopted by information retrieval systems and more apparent in everyday search for users.

Secondly, there are implications for understanding the behaviour of individuals. Google is established as an authoritative expert in information search and individuals trust in expertise. As a consequence, individuals are willing to allow risks to their privacy in favour of relevant search results. Individuals feel they are capable of managing the risks and have a set of expectations for Google as a search engine. However, they may not have fully made a link between their use of email and other Google services and their use of Google as a search engine. Not all users of Google are aware of personalised search engines or its impact on the results they receive. Previous studies have attempted to shape the popular understanding of personalised search engines by projecting the idea these search engines filter information (Pariser, 2011), capitalise on user data (Pariser, 2011; Fuchs, 2010), influence user beliefs (Hillis et al., 2013; Vaidhyanathan, 2011) and needs regulation (Vaidhyanathan, 2011). This study has highlighted the need for users of web search engines to be aware of the presence of personalisation in their everyday information seeking and shift the misconception that web search engines necessarily provide consistent information amongst individuals. Google is used on a global scale and thus the implications of these findings may have a global reach. The understandings from this study will allow intermediaries such as university librarians to educate their users to recognise the implications of personalised search results in their individual and collective information search practice, and regulate their use of search engines accordingly.

Following from this, there is a third implication of these findings, and that is for workplaces. There is an assumption in many workplaces that there is a single acceptable answer to a question. Many workplaces have internal databases which have been designed as the source of authoritative information for employees. Yet, participants in this study still used Google as a search tool, even when such databases were available. This has the potential to undermine the expected flow of information in the workplace twice over. Firstly because it introduces information which is not authorised and, secondly, because different employees searching for information on the same topic will almost certainly get different results. This potentially can lead to problems with inconsistency of decision-making and business practices. This study suggests that the strength of the conventions of everyday information searching propel employees to use Google at work. This might encourage organisations to consider how this behaviour could impact on the quality of work produced.

The results of this exploratory study seem to disagree to some extent with dominant views in the literature, and thus further research is called for. The conceptualisation of personalisation as information expertise provides sociological frameworks, including ideas on discourse and power, reflexivity and trust, which could be used in future studies.

Future research could also be conducted into the extent to which the Google search engine is displacing traditional workplace information retrieval systems and information search strategies and how workplaces which need their employees to present authorised information are managing this. It could be interesting, therefore, to explore the ways that people’s reactions to personalised search results and web search engines may have implications for the teaching of information literacy at the tertiary level.

In conclusion, this exploratory study has proposed that in the future, the study of the impact of personalisation on search results and their evaluation could take a sociological approach, focussing on the interaction between individuals and social and technological structures.

**References**

Brin, Sergey and Lawrence Page. 1998. “The Anatomy of a Large-Scale Hypertextual Web Search Engine.” *Computer Networks and ISDN Systems* 30 (1-7): 107-117, doi: <http://dx.doi.org/10/1016/S0169-7552(98)00110-X>

Brusilovsky, Peter and Mark Maybury. 2002. “From Adaptive Hypermedia to the Adaptive Web.” *Communications of the Association for Computing Machinery* *(ACM)* 45 (5): 31-33.

Buckland, Michael. 1991.“Information as Thing.” *Journal of the American Society of Information Science* 42 (5): 351-360.

Burrell, Gibson and Gareth Morgan. 1979. *Sociological Paradigms and Organisational Analysis: Elements of the Sociology of Corporate Life*. London: Heineman.

Dervin, Brenda. 1992. “From the Mind’s Eye of the ‘User’: The Sense-Making

Qualitative-Quantitative Methodology.” In *Qualitative Research in Information Management*, edited by Glazer, Jack and Ronald Powell, 61–84. Englewood, CO: Libraries Unlimited.

Ellis, David. 1989. “A Behavioural Approach to Information Retrieval System Design*.*” *Journal of Documentation* 45 (3): 171-212*.*

Foucault, Michel. 1972. *The Archaeology of Knowledge and the Discourse on Language*. New York: Pantheon Books.

Fuchs, Christian. 2010. “studiVZ: Social Networking in the Surveillance Society.” *Ethics and Information Technology* 12 (2): 171-185.

Giddens, Anthony. 1991. *The Consequences of Modernity*. Cambridge: Polity Press.

Graneheim, Ulla and Berit Lundman. 2004. “Qualitative Content Analysis in Nursing Research: Concept, Procedures and Measures to Achieve Trustworthiness.” *Nurse Education Today* 5: 282-293.

Hearst Marti. 2009. *Search User Interfaces*. Cambridge: Cambridge University Press.

Hiemstra, Djoerd. 2009. “Information Retrieval Models.” In *Information Retrieval: Searching in the 21st Century*., edited by Ayse Goker and John Davies Wiley, Chichester, West Sussex. doi: 10.1002/9780470033647.ch1

Hillis Ken, Michael Petit and Kylie Jarrett. 2013. *Google and the Culture of Search*. New York: Routledge.

Kim, Won. 2002. “Personalization: Definition, Status and Challenges Ahead.” *Journal of Object Technology* 1 (1): 29-40. <http://www.jot.fm/issues/issue_2002_05/column3>

Knight, Shirlee-ann and Amanda Spink. 2008. “Toward a Web Search Information Behavior Model.” In *Web Search: Multidisciplinary Perspectives*, edited by Amanda Spink, and Michael Zimmer209-234.Berlin: Springer.

Kuhlthau, Carol. 2004. *Seeking Meaning: A Process Approach to Library and Information Services*, 2nd edition, Westport, CT.: Libraries Unlimited.

Mayer, Roger, James Davis, and F. David Schoorman. 1995. “An Integrative Model of Organizational Trust.” *Academy of Management Review* 20 (3): 709-734.

McKenzie, Pamela and Elisabeth Davies. 2012. “Genre Systems and “Keeping Track” in Everyday Life.” *Archival* Science 12 (4): 437-460.

Orlikowski, Wanda. 2000. “Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations.” *Organization Science* 11 (4): 404-428.

Pariser, Eli. 2011. *The Filter Bubble: What the Internet is Hiding from You*. New York: Penguin Press.

Rieh, Soo Young. 2002. “Judgment of Information Quality and Cognitive Authority in the Web.” *Journal of the American Society for Science and Technology* 53(2): 145-161.

Schmidt, Janine. 1984. “Apparatus: a Mnemonic for the Evaluation of Reference Resources.” *The Reference Librarian* 4 (11): 301-311.

Vaidhyanathan, Siva. 2011. *The Googlization of Everything (And Why We Should Worry)*. Berkeley: University of California Press.

Wilson, Tom. 1999. “Models in Information Behaviour Research.” *Journal of Documentation* 55 (3): 249-270