Playing with algorithms

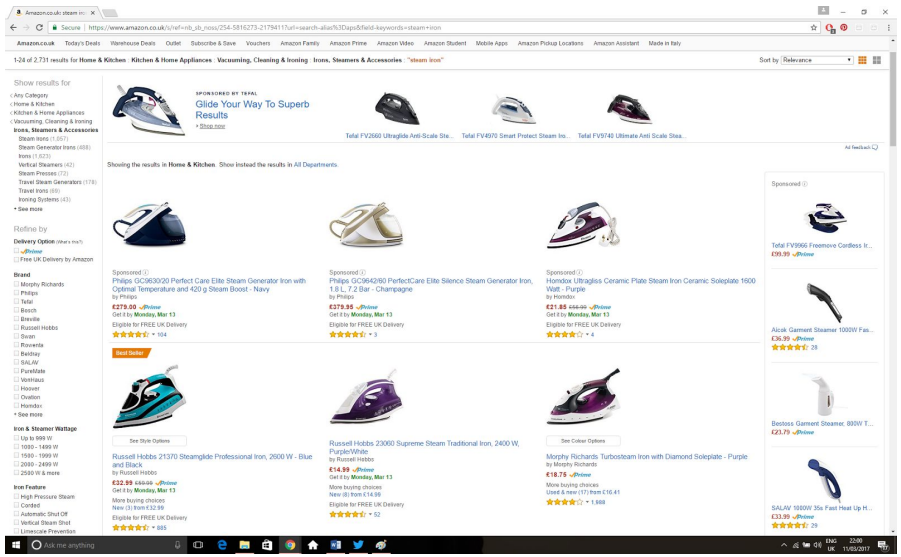
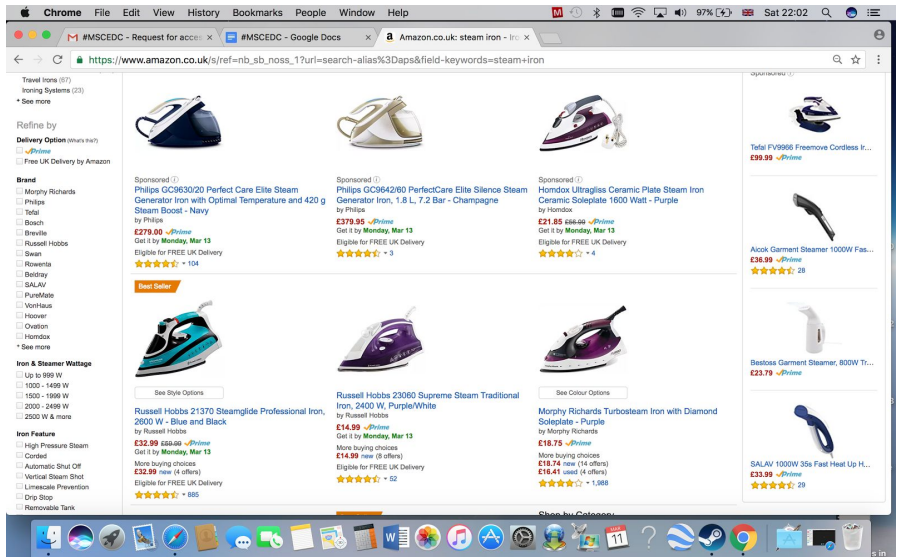
As part of our exploration on algorithms this week we (Stuart and Chenée) wanted to see how we could manipulate ‘relational practices between humans [Stuart and Chenée] and non-humans [search engines and websites]’ (Knox, 2014, p. 42). To do this we created two new Google accounts, cleared our browsing histories and provided no personal information that could have the potential to affect our experiment. We looked at how algorithms affected the options we were given and whether we could see the same items in the same order. We looked at whether our individual actions changed what the algorithm did.

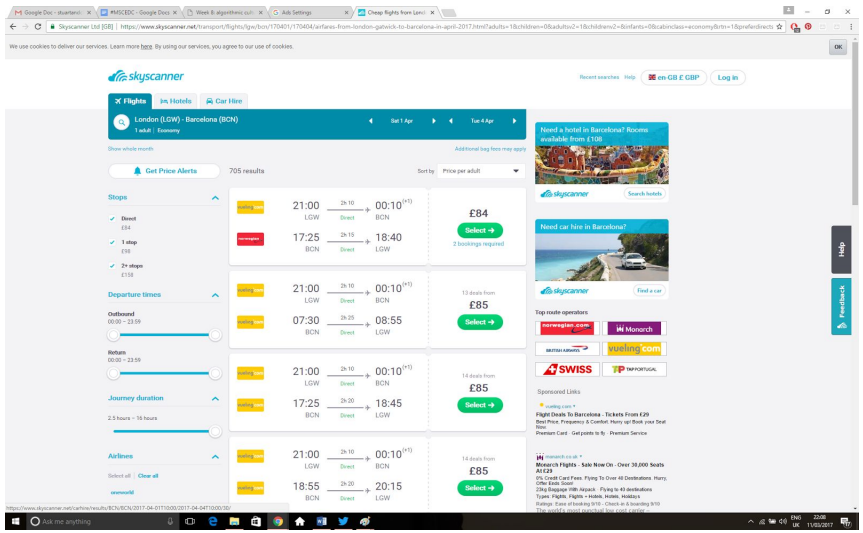
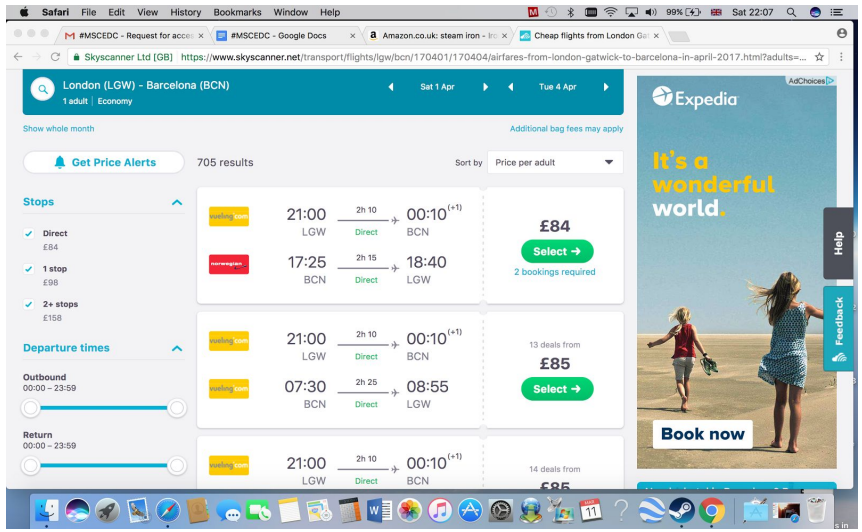
Our experiment

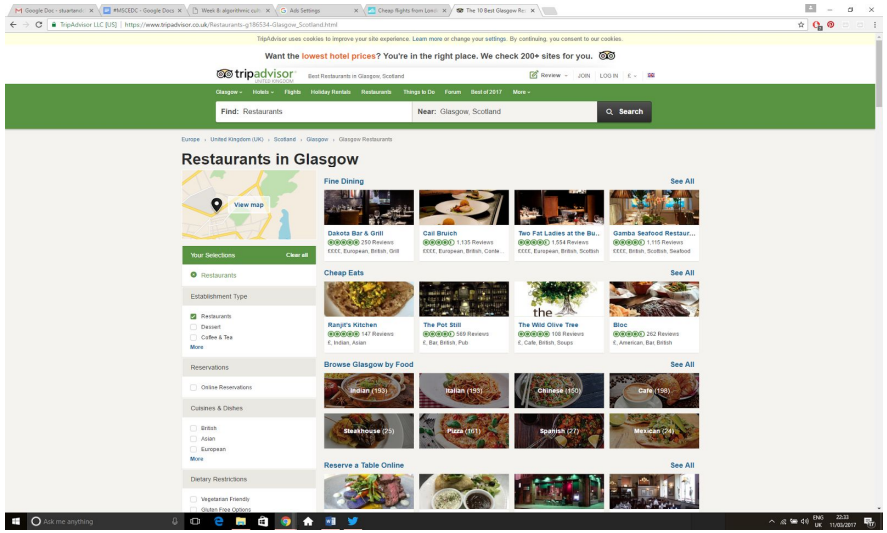
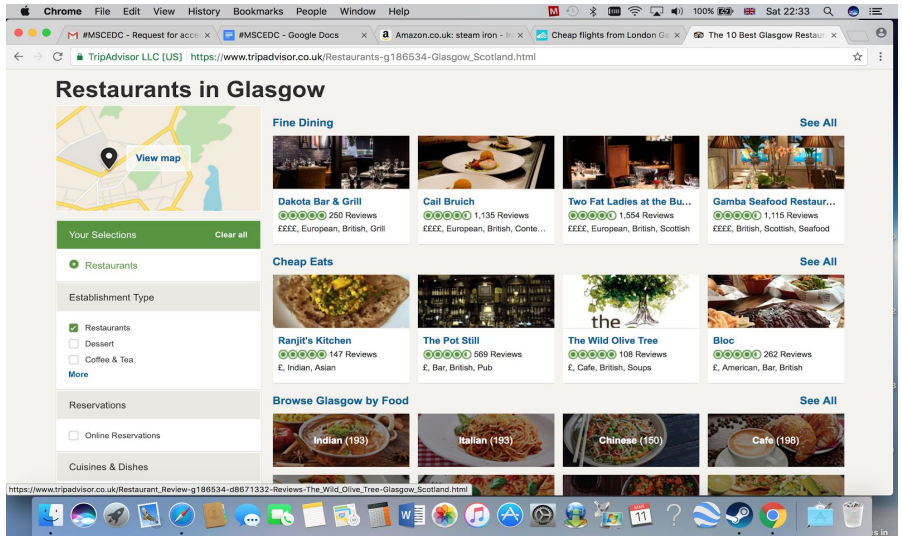
We agreed on a set of searches to perform cross a variety of websites. We would observe and compare the search results and monitor the Google personalisation settings to understand how our profiles were being shaped as our experiment progressed. These searches were:

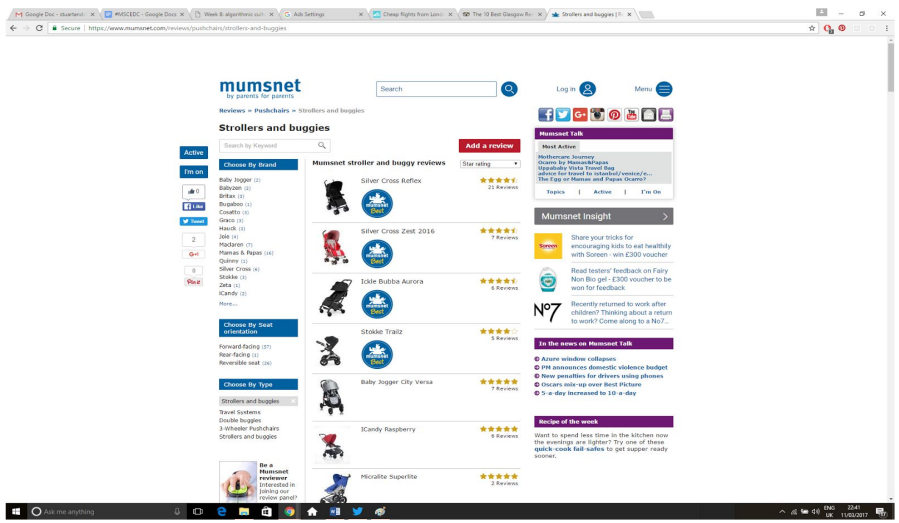
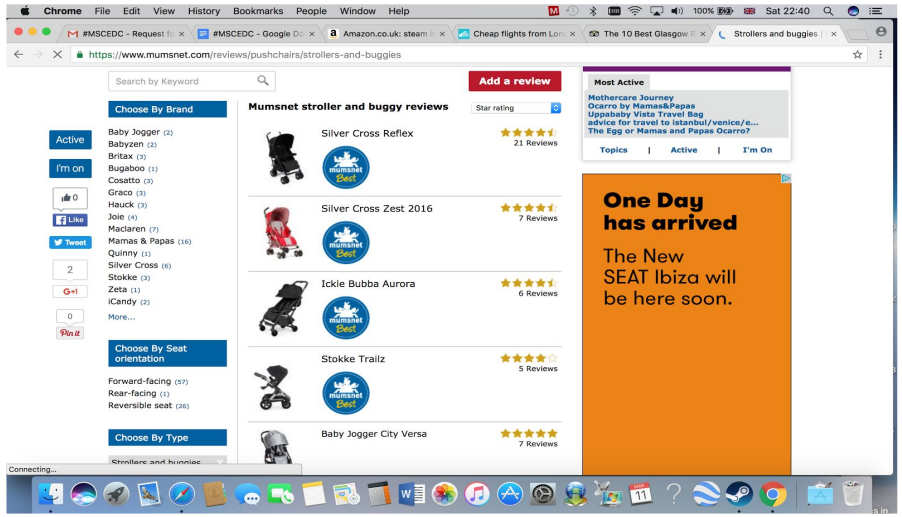
- Search Amazon for Steam Irons
- Search SkyScanner for return flights between Gatwick and Barcelona (1st April - 4th April 2017)
- Google search “Places to eat in Glasgow” and review results on TripAdvisor
- Search for buggies on Mumsnet
- Search for YouTube, then perform further searches for “Education and Digital Cultures” and a music video from the decade in which Google presumed you were born
- Google Image search for tattoos for girls (searched by Stuart) and tattoos for boys (searched by Chenée)
- Search eBay for Marc Jacobs fragrances for men
- Search Google for bicycles

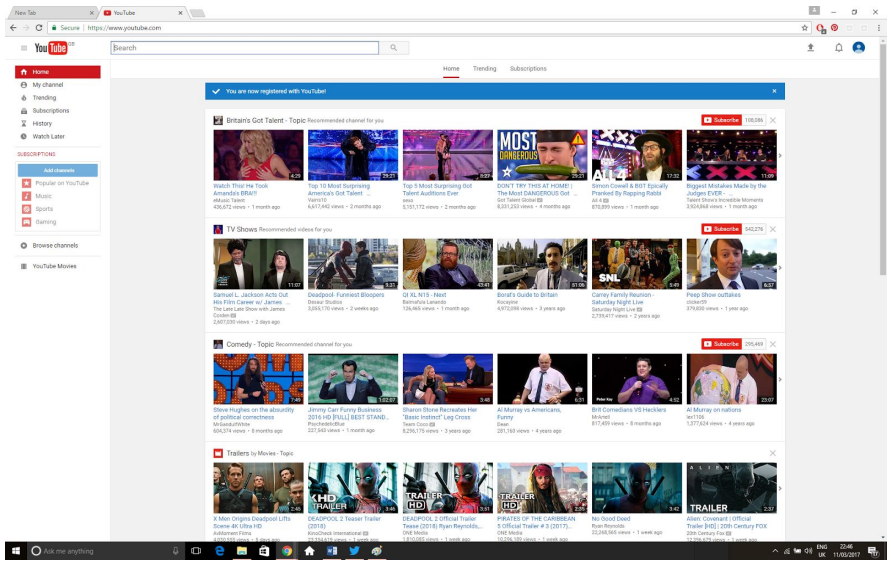
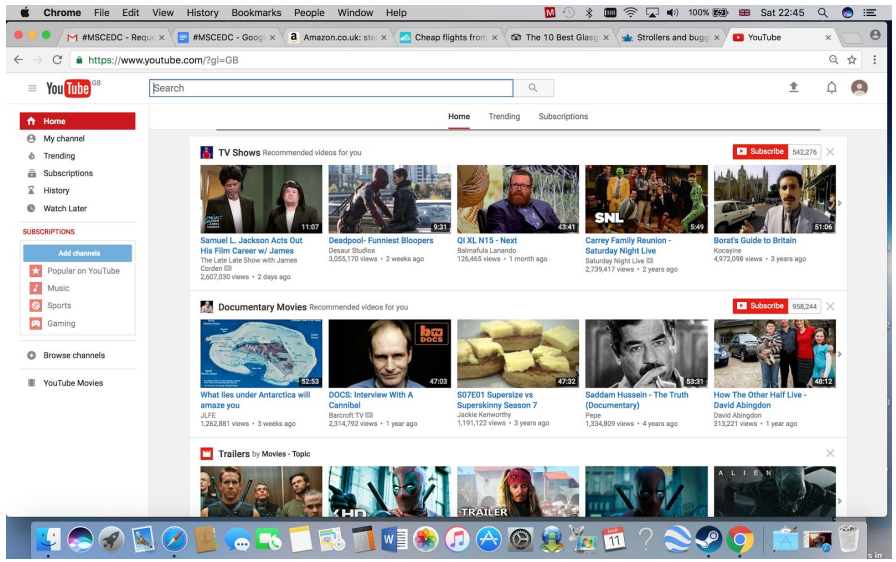
Our Results

Search 1 - Search Amazon for Steam Irons	
Stuart	**Chenée**
Fig. 1a - Amazon: Steam irons	Fig. 1b - Amazon: Steam irons
	
Our first task yielded exactly the same results which was expected as we had cleared our browser history. We were both recommended the same irons at the same prices and results were presented in the same order (by relevance). We also observed that the same suggested, recommended and promotional items were offered to us both. These results would suggest that either Amazon had no basis upon which to recommend products, or Google and Amazon do not share data about their customer base.	
Topics added to Google's personalisation service (Stuart): N/A	
Topics added to Google's personalisation service (Chenée): N/A	

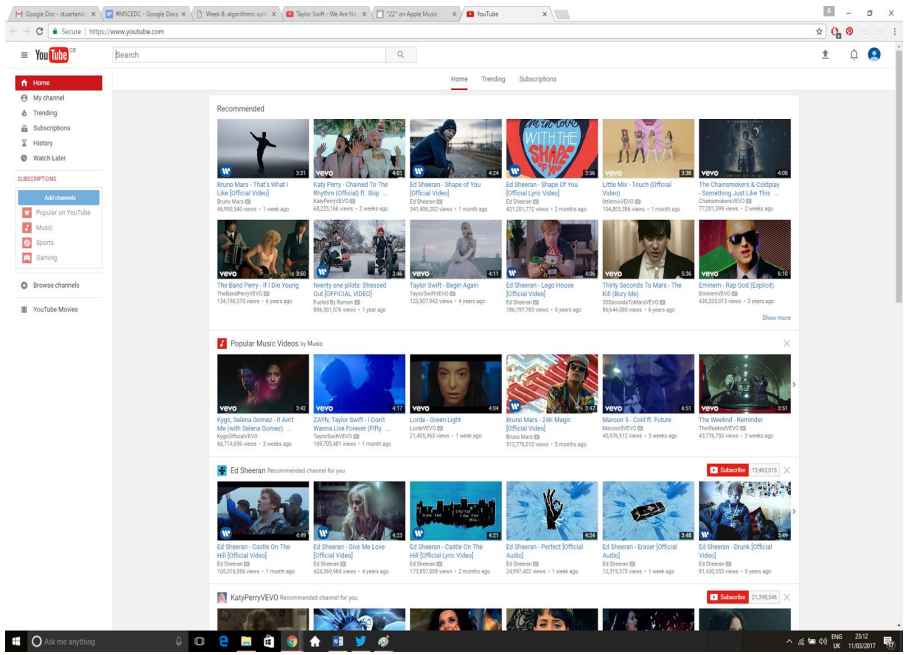
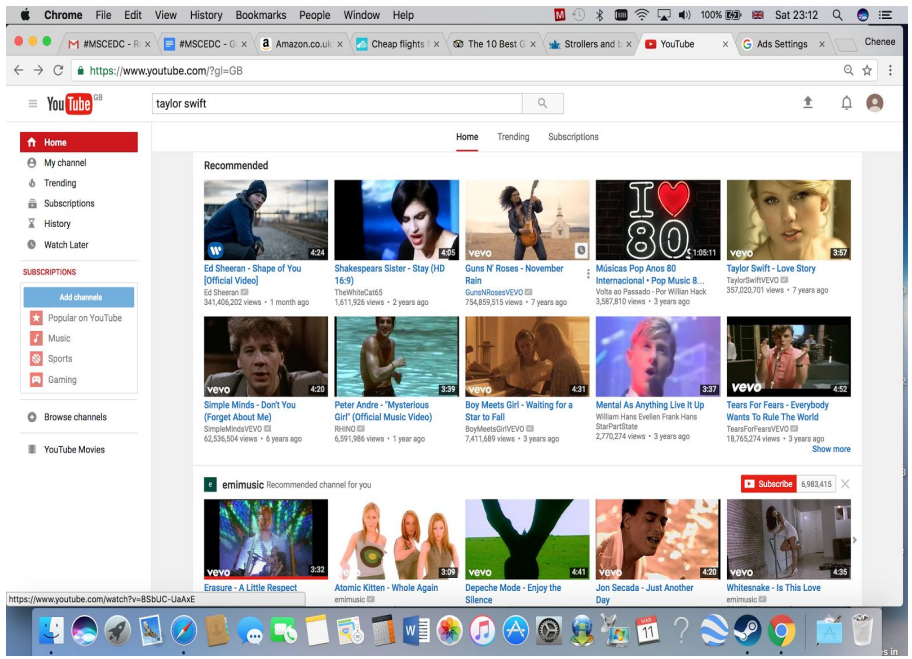
Search 2 - Search SkyScanner for return flights between Gatwick and Barcelona (1st April - 4th April 2017)	
Stuart	**Chenée**
Fig. 2a SkyScanner: Flights Gatwick to Barcelona 01/04/17 rtn 04/04/17	Fig. 2b SkyScanner: Flights Gatwick to Barcelona 01/04/17 rtn 04/04/17
	
The results were the same for our Skyscanners search with flights, times, and prices displayed in the same order (price per adult). Interestingly, the advertising bar on the right-hand side was not. Chenée's screenshot indicates that third party advertisers are able to advertise on her page. We suspect this might be due to Stuart having an AdBlocker installed on his computer. The findings would suggest that SkyScanner did not have any information on either of us prior to our visit. However we observed that Google became aware of our visit to SkyScanner and added topics of interest to our profiles.	
Topics added to Google's personalisation service (Stuart): Air Travel, Hotels and Accommodations	
Topics added to Google's personalisation service (Chenée): Hotels and Accommodations	

Search 3 - Google search “Places to eat in Glasgow” and review results on TripAdvisor	
Stuart	**Chenée**
Fig. 3a - Google: Places to eat in Glasgow	Fig. 3b - Google: Places to eat in Glasgow
	
Searching for places to eat in Glasgow, where neither of us are based, yielded the same results in the same order for both of us. Again, this would suggest that TripAdvisor (or indeed Google) has no information upon which to base its recommendations. We considered the possibility that the search results were in the same order because we had searched for restaurants in Glasgow rather than restaurants in close proximity to our locations. Google also did not add Food and Drink to our topics of interest.	
Topics added to Google’s personalisation service (Stuart): N/A	
Topics added to Google’s personalisation service (Chenée): N/A	

Search 4 - Search for buggies on Mumsnet	
Stuart	**Chenée**
Fig. 4a - Mumsnet: Buggies	Fig. 4b - Mumsnet: Buggies
	
On Mumsnet our search results were the same, however, Chenée's search for tickets to Spain is evident in the advertising block on the right. Stuart's advertising block is full of helpful suggestions from the website. Based on our previous searches we were beginning to wonder about the validity of this experiment. However, this search proved to be the turning point when we noticed some real differences. The search results were displayed in the same order despite the differences in the appearance of adverts and third-party displays. We also observed that up to and including this point Google had not changed its estimation of our gender and/or age. Having noticed that the Amazon and TripAdvisor searches did not trigger and changes to our topic of interest, we were surprised to see an addition following our visit to Mumsnet.	
Topics added to Google's personalisation service (Stuart): Baby Strollers and Transport	
Topics added to Google's personalisation service (Chenée): Baby Strollers and Transport	

Search 5 - Search for YouTube (Fig. 5.1a and 5.1b).	
Stuart	**Chenée**
Fig. 5.1a - Google: Youtube	Fig. 5.1b - Google: Youtube
	
It is in our Youtube search results where the differences are most explicit. Stuart's results showed a banner dedicated to *Britain's Got Talent*. Stuart's second banner and Chenée's first was recommended 'TV Shows'. These were almost identical except for juxtapose fourth and fifth result. Chenée's fourth result was SNL, the American improv show. This paired with the absence of the *Britain's Got Talent* banner is peculiar. Chenée has recently spent time in the States and the absence of UK related content may indicate that Youtube 'remembers' geographic location information even after browsing history is cleared. Stuart's third banner had recommended comedy, whilst Chenée's was documentary films. As we have the same browsing history this discrepancy seems unusual.	

Further search for a music video to alter the age profile.

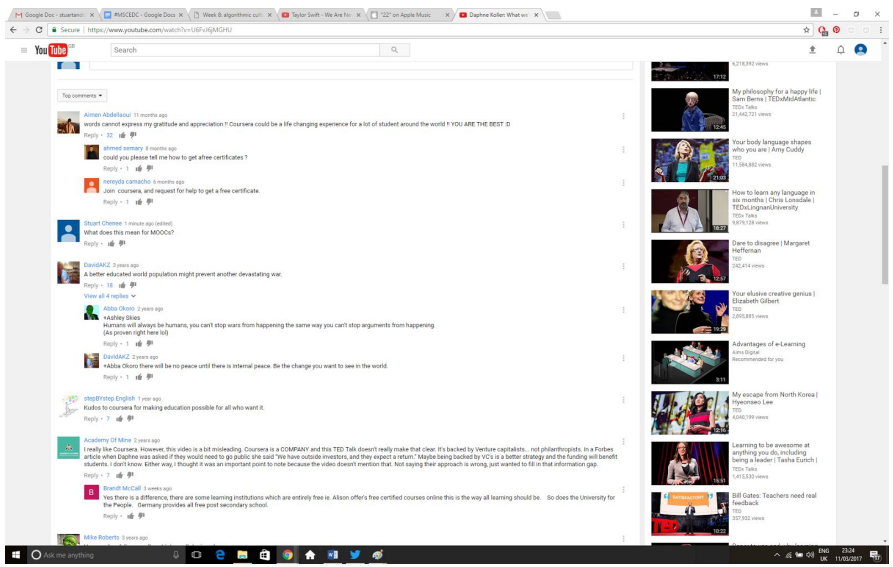
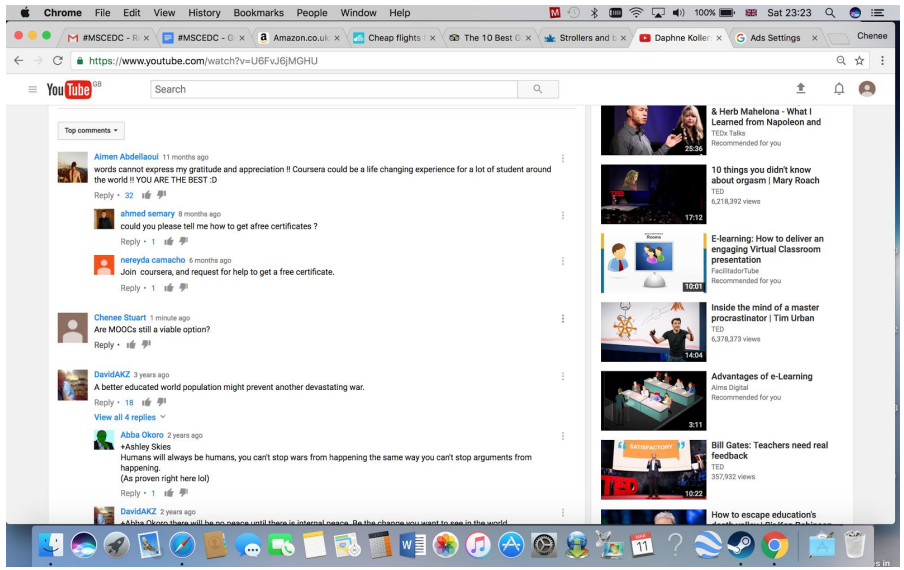
Stuart (Google age estimate 35-44)	**Chenée (Google age estimate 25-34)**
Fig 5.2a - Youtube: Taylor Swift - ‘I knew you were trouble’	Fig 5.2b - Youtube: Erasure - ‘A little respect’
	

This search was performed to test whether or not Google would alter our age profile. We wondered if Google would notice that we were listening to music from decades inconsistent with its presumptions - it did not. It did, however, add a range of music genres to each of our topics of interest and as a result offered us differing suggestions of what to watch next. As our accounts were new, we presumed these suggestions were based on the listening patterns of the rest of Youtube’s users.

Topics added to Google’s personalisation service (Stuart): Country Music, Pop Music, World Music, Dance & Electronic Music, Rock Music, Classical Music

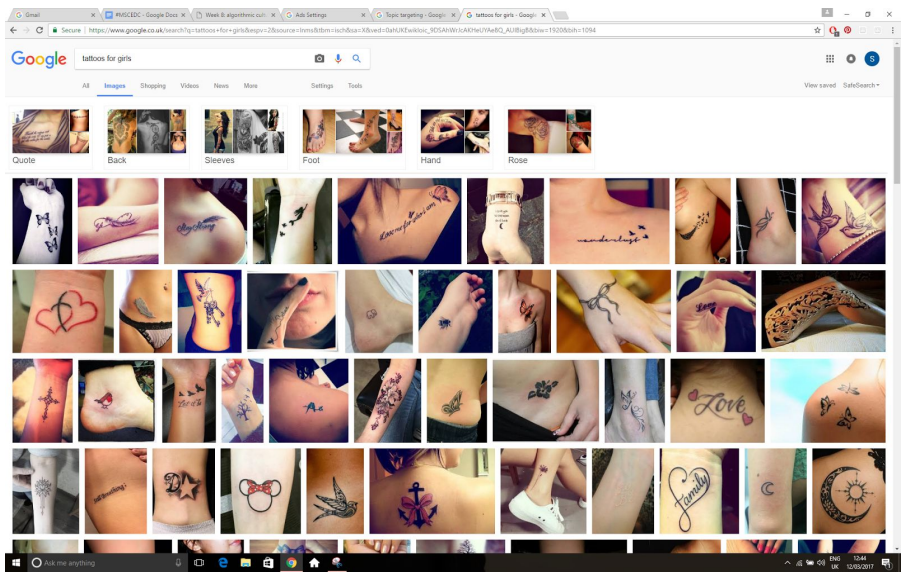
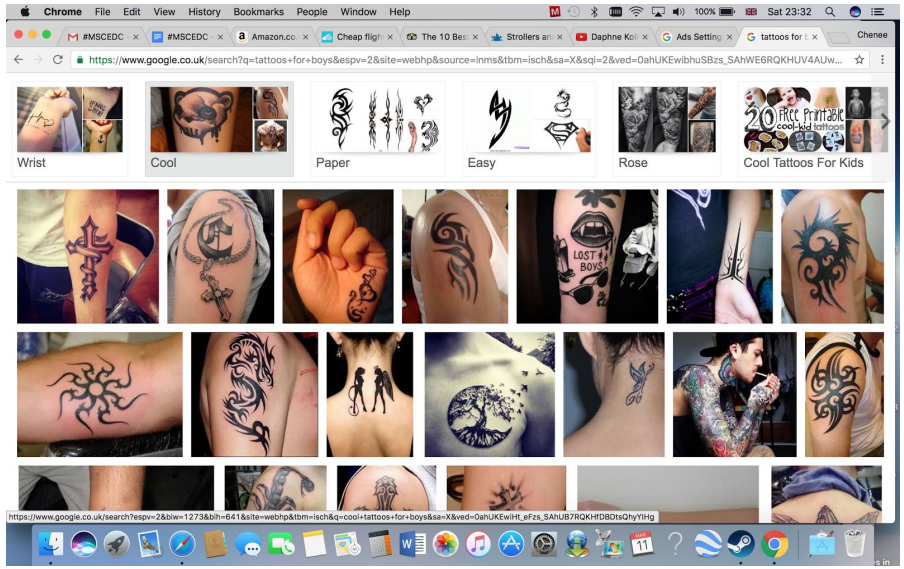
Topics added to Google's personalisation service (Chenée): Classical Music, Pop Music, World Music, Dance & Electronic Music, Rock Music, Urban and Hip-Hop Music

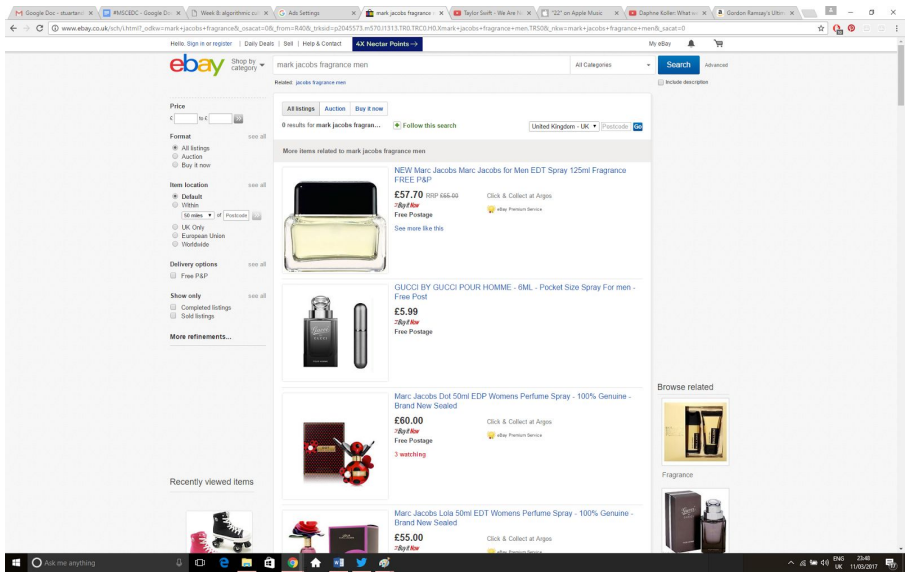
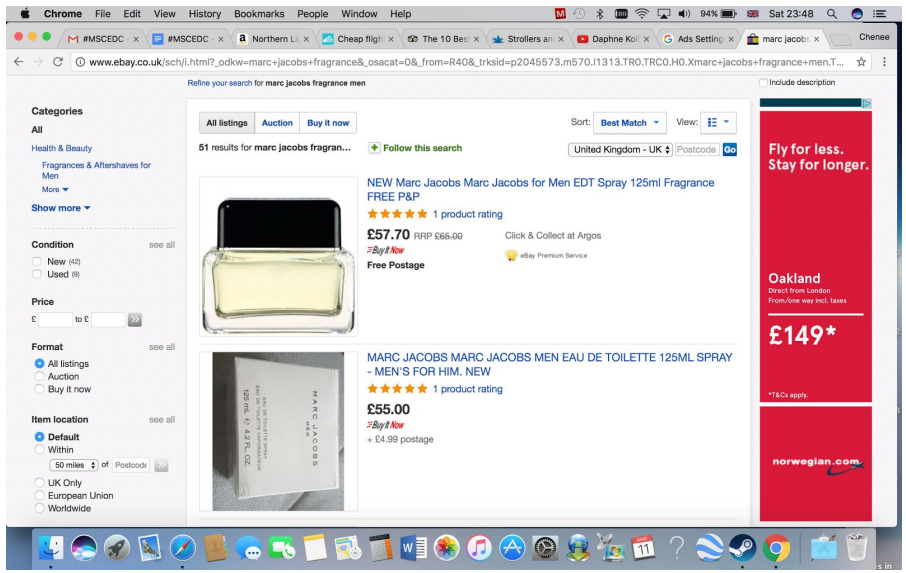
Search for 'E-Learning and Digital Cultures' results

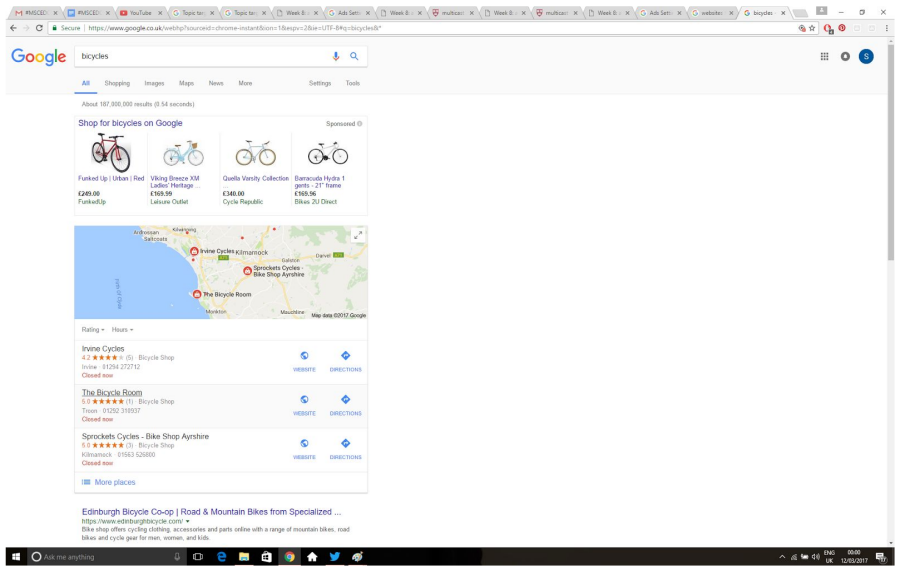
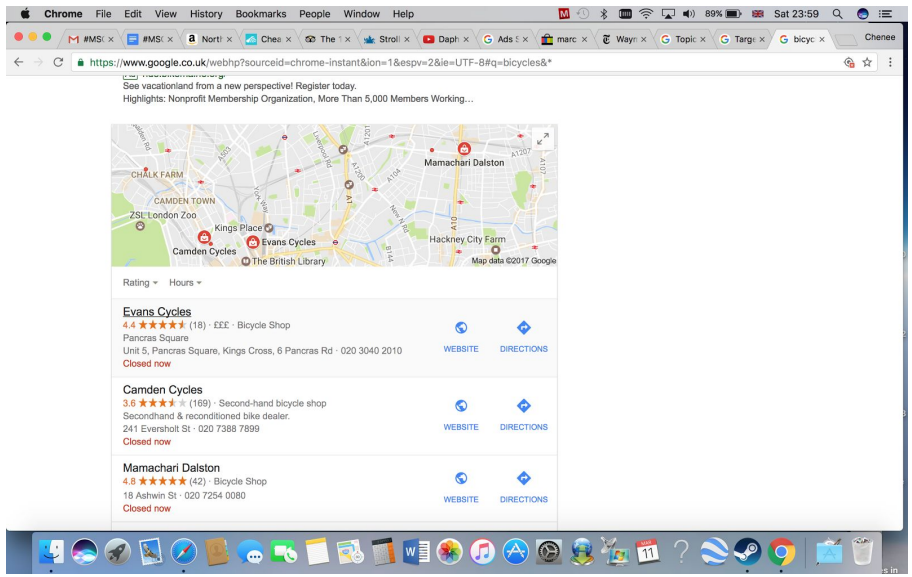
Stuart	**Chenée**
Fig 5.3a Youtube comments: 'Daphne Koller: What we're learning from online education'	Fig 5.3b Youtube comments: 'Daphne Koller: What we're learning from online education'
	

We used this test as an opportunity to assess how our comments would be ranked after watching a video about online education. We hoped that as we were making the most recent contributions to the discussion we would be able to notice each other's comments. This was not the case despite both making very similar comments. Interestingly, we were able to view or own contributions which appeared to be at the top of the list of comments. We suspect this placement leads those who comment to believe that their comments would be visible to any new

visitors and that those comments have a good chance of being viewed by a large number of people. Whereas, in fact, our evidence shows that others are unlikely to see posts by people outside of their circles (Knox 2014). Furthermore, we noticed that Stuart's default avatar was blue in colour, and Chenée's was taupe - which we concluded was an attempt at determining our genders. Google profiles had not been updated to reflect any gender recognition.
Topics added to Google's personalisation service (Stuart): Education
Topics added to Google's personalisation service (Chenée): Education

Search 6 - Google Image search for tattoos for girls (searched by Stuart) and tattoos for boys (searched by Chenée)	
Stuart	**Chenée**
Fig. 6a - Google images: Tattoos for girls	Fig. 6b - Google images: Tattoos for boys
	
We made further attempts to prompt Google to make assumptions about or genders by making gender-specific searches. We also expected Google Images update our list of interesting topics. We were surprised to notice that this did not happen. Using Google Images as a search tool make no noticeable impact on our experiment. We may need to expand our search to test this further.	
Topics added to Google's personalisation service (Stuart): N/A	
Topics added to Google's personalisation service (Chenée): N/A	

Search 7 - Search eBay for Marc Jacobs fragrances	
Stuart	**Chenée**
Fig 7a - Ebay: Marc Jacobs fragrance men	Fig 7b - Ebay: Marc Jacobs fragrance men
	
There were no notable differences between each search - other than the on-screen adverts which we concluded differed due to Stuart's AdBlocker. There was also no changes to our Google profiles.	
Topics added to Google's personalisation service (Stuart): N/A	
Topics added to Google's personalisation service (Chenée): N/A	

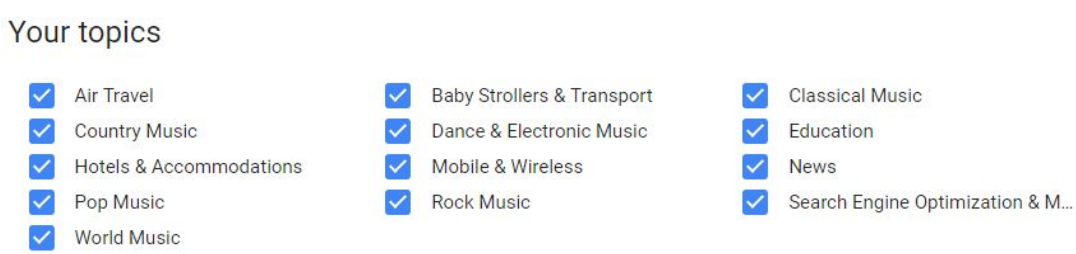
Search 8 - Search google for bicycles	
Stuart	**Chenée**
Fig. 8a - Google: Bicycle	Fig. 8b - Google: Bicycle
	
The bicycle Google search results were the first time that we noted geographical conditioning on the search results. The results on this occasion appeared to be listed in order of distance from our current location. We suspected that this was based on information held on our IP addresses rather than as an output of an algorithm.	
Topics added to Google's personalisation service (Stuart): N/A	
Topics added to Google's personalisation service (Chenée): N/A	

Summary

It was not until the end of the experiment that we learned of Google's topic and keyword targeting schemes. We understand that an increasing number of websites and services are being configured with such schemes and that as we were interacting with these sites, Google was matching our current browsing trends to any recommendations that it may suggest in the future.

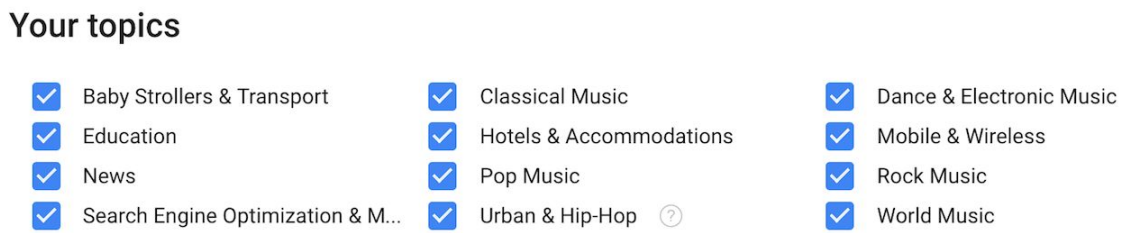
The list of interests compiled within Google was consistent with the searches we agreed in the planning stages of the experiment (Fig. 9a and Fig. 9b), only excluding 'Air Travel' on Chenée's topics (Fig 9.b).

Stuart (Fig. 9a)



(Note: The news and Search Engine Optimization topics were added whilst following an example to understand Google's topic and keyword targeting schemes)

Chenée (Fig. 9b)



(Note: The news and Search Engine Optimization topics were added whilst following an example to understand Google's topic and keyword targeting schemes)

Our searches failed to prompt Google to adjust its estimation of our age ranges. Google also failed to presume our gender - however this could be because we indicated our preference not to disclose, rather than leave it open for interpretation.

Interestingly, only our eBay and Google Images searches failed to trigger any changes to our list of relevant topics. Google have a presence and influence on other popular web pages.

The findings of our experiment would concur with Fenwick *et al* (2011 cited in Knox 2014, p50) that online spaces are co-dependent on content creators, users, consumers and authors of the software, all these relationships create a complex ecosystem which is structured around individual experiences for each internet user.

Areas for further exploration

In the future it would be worthwhile to attempt the experiment again to consider differing factors that affect the outputs of algorithms. It would be interesting to observe whether search results and comment feeds would be arranged differently had we been “friends” within Google Circles throughout the duration of the experiment. We may also note entirely different results had we provided personal information such as age and gender.

Another aspect that would be worthwhile exploring is how repeated searching might change the Topics of Interest and whether repeated searching may encourage Google to re-evaluate its estimate of our age ranges.

Whilst this experiment highlighted how web services collect information to establish patterns, we appreciate that browsing habits form only one part of a complex and enmeshed set of circumstances upon which algorithms are based.

References

Knox, J. K. (2014). Active algorithms: sociomaterial spaces in the E-learning and Digital Cultures MOOC. *Campus Virtuales*, 3(1): 42-55.