

The Networked Camera: A qualitative analysis of the practices of image sharing using digital technologies

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ABSTRACT

Since the release of the first generation iPhone in 2007, the popularity of smartphones has increased exponentially. As of 2015, two billion smartphones are in use. It is projected that in 2020 two-thirds of the world will use smartphones. One of the features which underpins the popularity of smartphones is camera which allows users to capture and share images quickly and easily. The smartphone is different from older cameras for three reasons. First, it is held continually in users' possession. Secondly, smartphones are connected to data networks e.g. cellular and Wi-Fi internet. Thirdly, smartphones offer users customizable camera functions; achieved through use of different software tools.

As a consequence of the above, smartphone users are capable of creating and sharing photographic images whenever they wish, with global reach – and in a variety of ways. This thesis investigates the extent that smartphone hardware and software tools are transforming personal photography. To achieve this, the researcher develops a theoretical framework merging: the underpinnings of photography and personal photographic practices through literature review. Then, contemporary smartphone photographic practices are investigated through a set of 6 focus groups with 13-18, 18-25 and 25-35yr olds. Findings are interrogated through application of the framework to identify significant transformations and consistencies with precedent.

In lieu of these transformations, a series of design principles are generated for personal photography. These principles characterise the current and enduring expectations users have of personal photography; as well as providing an outline for their future course. These principles offer opportunity for: application in current technologies (e.g. novel or optimized smartphone software tools); reflection upon current limitations of previous photographic technology; and development of emerging photographic technologies.

This study includes two key contributions. First: a novel framework is formulated that roots personal photography's rapidly changing social and technological circumstances in its precedent and ontology. Second: via this framework, the accelerated transformation of personal photography away from a representation act to a mechanism of social exchange (coinciding with smartphone use) is described. This offers scope for: 1) academic enquiry; by further developing the model and exploring ongoing change; and 2) industry development; by configuring new tools and collaborating with existing stakeholders to explore the many untapped opportunities in personal photography as it exists today.

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LIST OF ABBREVIATIONS

GPS - Global Positioning System

MEA - Middle East and Asia

APEJ - Asia Pacific Excluding Japan

PDA - Personal Digital Assistant

API - Application Platform Interface

GUI - General User Interface

SMS - Small Messaging Service

CPU - Central Processing Unit

OS - Operating System

MP - Megapixel

SNS - Social Network Site

CMC - Computer-mediated Communication

ETC - "Express, Test, Cycle"

HCD - Human-Centered Design

MCD - Meaning-Centered Design

FOMO - "Fear of Missing Out"

CGI - Computer-generated Imagery

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CHAPTER 1: INTRODUCTION

This chapter presents an overall outline of the research, including: the research context, the problem to be investigated, and a description of the thesis structure.

To establish the research problem, an overview of the introduction of smartphones is presented, with emphasis placed on the wider context in that surrounds contemporary personal photography. Here personal photography is defined as photography practices undertaken by the population at large for everyday use; excluding professional or artistic use. This overview encouraged the researcher to conduct a research investigation to identify the impact of smartphone hardware and smartphone software tools on practices of personal photography.

Research Context

What is a smartphone?

A “smartphone” is defined as “a mobile phone that performs many of the functions of a computer, typically having a touchscreen interface, internet access, and an operating system capable of running downloaded apps” [41]. A computer is defined as: “an electronic device ... capable of receiving information (data) in a particular form and of performing a sequence of operations ... (program) to produce a result in the form of information or signals” [40]. In this way, computers transform data input into output through the execution of software programs. Smartphones are, in principle, powerful portable personal computers remotely connected to the internet – thus offering users access to sophisticated computational functions on the go.

As of 2016, smartphones represent the peak in consumer-level mobile communication technology. They are the technical successor to the ‘basic phone’, ‘feature phone’ and ‘multimedia phone’. A basic phone is categorized as offering users only simple communication functions e.g. voice calling and short message service (SMS) messaging. Feature phones and multimedia phones offer increasingly complex computational ability than basic phones (e.g. simple games, calculator, alarms, calendar, media playback etc.) – but are characterised by their: low-intelligence, customisability and lack of advanced operating system (OS); compared to contemporary technology.

Smartphones allow users to customize the functional capabilities of their hardware through use of software tools (or apps), made available to users through online

marketplaces. These apps make use of the smartphone hardware central processing unit (CPU), display, memory, camera etc.; in different ways. Each smartphone also has an operating system (OS) which offers a graphical user interface (GUI) which allows users to navigate the functions of their phone, and a set of application program interfaces (APIs) which allow these apps to run on the hardware. The most widely adopted smartphone OSs in 2015: Android, iOS and Windows Phone (accounting for over 98% of the market share in 2015 [102]).

Growth of the smartphone market and sectors

Before smartphones there were examples of mobile communications devices that offered smart functionality. The first phone to incorporate 'smart' features was the IBM Simon released in 1993. Prior to smartphones, other pre-existing devices offered users a variety of digital functions e.g. personal digital assistants (PDAs). However, in 2007 with the first iPhone running iOS and 2008 with the first Android device - the smartphone device category formed as it known today. These devices featured advanced operating systems (OS) with customisable features (available to users through downloaded software tools commonly called 'apps') and touchscreens which users interact with to access various functions.

In her 2015 internet trends report, Mary Meeker highlights some key facts relating to the growth of the smartphone market. Over the course of 20 years, the market for mobile communications overall has grown from 1% of the global population in 1995 to 73% (5.2 billion people) in 2014. In addition, 40% of these 5.2 billion users used smartphones in 2014 [102:5]. Thus, smartphones were used by 2.08 billion users, and represent 28.7% of the world's population (estimated as 7.26 billion) in 2014.

GSMA intelligence notes that "*in many developed markets, smartphone adoption is approaching the 70-80% 'ceiling' at which growth tends to slow*" [56]. Meeker also notes that overall smartphone adoption is "*strong, but slowing*"; "*owing to dependence on developing markets*" where a lower GDP per capita hinders the popular uptake of expensive smartphone subscriptions (e.g. in China, India, Brazil, Russia and Thailand) [102:10]. Despite this slowing of the market, the International Data Corporation (IDC) have logged a 13.0% growth of the smartphone market in Q2 2015, buoyed by core growth in APEJ (Asia/Pacific excluding Japan) and MEA (Middle East and Africa) regions [65]. GSMA also predict that 65% of the world population will use smartphones by 2020 [55]. This

looks set to be achieved as companies become increasingly willing and able to support lower-cost smartphones that are more suitable for these markets and their infrastructure.

As stated above, over 98% of the market share of smartphones in 2015 are represented by three primary operating systems. According to the IDC: Android's market share leads with 84.3% in Q3 2015; followed by iOS with 13.4%, and Windows Phone with 1.8%. A single OS release can be run on multiple different smartphone devices, and also accounts for many release versions as they are routinely updated. This is especially pertinent for Android and its market share, which although made by Google, is open-source and freely available to hardware manufacturers to use. As such, the market share for Android represents a vast array of: devices, manufacturers, device ages, and operating system versions. In turn, this represents an equally diverse set of smartphone experiences for users. In contrast, iOS statistics refer to Apple devices which represent a far smaller device category (10 core generations of smartphones as of September 2016).

Critically however, this section of the introduction has described steady continued growth, significance and ubiquity of the smartphone device category towards the immediate future.

Smartphone disruption of point-and-shoot camera categories

The popularity of smartphones has not only impacted the mobile communications device category. Smartphones are multi-modal devices, and feature many different functional inputs and outputs. Because of this, they can be seen to have displaced other device categories; e.g. watches, global positioning system devices (GPS), music players etc.

Most notably (for the purposes of this research) the growth in popularity of smartphones over the past decade has significantly disrupted the digital compact (or point-and-shoot) camera device category. Before the success of smartphones, digital compact cameras (and previously, compact and disposable film cameras) were widely used for personal photography.

It is the goal of this research to explore how this shift in personal photographic technology has resulted in significant transformations in these practices, and what this entails for the design of personal photography moving forward. As such, one of the aims of this section of the introduction is to establish that a technological displacement has indeed occurred in personal photography.

In 2011 it was widely reported that the iPhone 4 was going to become the most popular camera used on Flickr, a popular photo-sharing site [33]. This prediction was met in 2012 and has been stable since, with smartphones representative of the top 5 devices used to upload to Flickr. This can be seen in Fig. 1.1, captured using screenshot from Flickr’s website on the 9th of October 2015 [49].

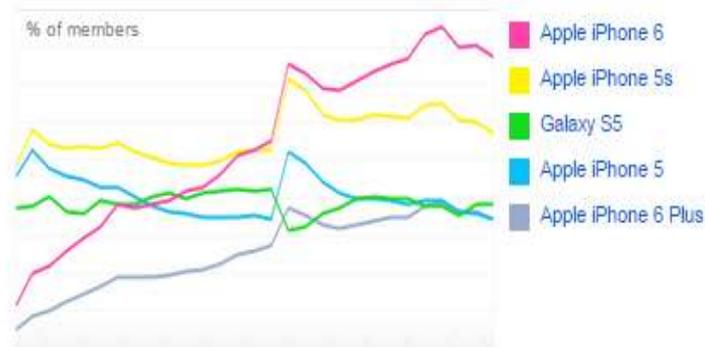


Fig. 1.1. Most popular camera in the Flickr community (09/10/2015) [49]

The vertical axis is representative of a percentage of uploads to the website, and the horizontal axis is representative of a period of the last 12 months. Here we see that the trend has continued with the top 5 most popular cameras used on Flickr are smartphones as of time of citation. These statistics are calculated by Flickr through automatic detection of image metadata detected when the image is uploaded to the platform. Fig. 1.2 depicts the top 5 point-and-shoot cameras in the Flickr community – here a negative trend can be seen, with uploads from the most popular point-and-shoot camera (Sony DSC-RX100) dropping noticeably over the course of 12 months. In addition, Flickr state on the page that these graphs only represent 2/3rds of images uploaded to their service, as this information is collected automatically; and that automatic recognition “*is not usually possible with cameraphones, therefore they are under-represented.*” Thus, whilst smartphones and cameraphones are the most popularly used – they may be even more so than reported here as a result of images not being detected by Flickr’s system. This may, for example, occur as a consequence of an edited or processed image being uploaded, removing metadata from the image file.

Flickr may not be representative of the whole of the device category – but is likely indicative of the wider trend. In particular, there is a correlation between the popularity of smartphones and a slump in the use and purchase of compact or point-and-shoot cameras. An article written in CNBC in November 2014, states that sales of compact

cameras are in “free fall”, citing a 32.5% yearly drop of sales by Japanese manufacturers (marking 29 consecutive months of decline). Complicating this is a stated apathy to the product in developing markets for the category. The article cites Teck Loo, head of consumer electronics at Euromonitor, who states: “consumers in emerging markets aren’t buying digital cameras at all... for the price of an entry level camera, at \$150-200, consumers are able to buy a mid-range smartphone that provides many more features” [58].

This trend was also spotted in 2013 by the Wall Street Journal. They describe coinciding trends (the exponential growth in the smartphone category; and the stagnating compact category) as the “existential moment” for the point-and shoot camera [139]. The reasoning given in the article was: “manufacturers were scrambling to adapt to a world where customers value the convenience of smartphones for quick shots they can share on social networks like Facebook and Instagram”. The article also contains a quote by Mitsuo Matsudaira, a Canon executive. Here he stated Canon’s position: “the job of the camera had been only to take beautiful pictures, but we started seeing people using smartphone cameras to share and interest started drifting that way... we have no intention of competing with the smartphone”.

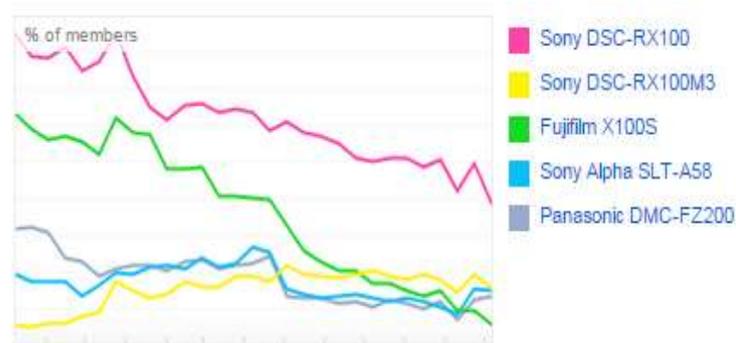


Fig. 1.2 Most popular point-and-shoot cameras in the Flickr community (09/10/2015) [49]

It is notable that in each case, reference is made to smartphone features being more lucrative to consumers – and that this was a consequence of their capability to direct access to social sharing functions. Moreover, Matsudaira’s statement overtly describes a change in “the job of the camera” spurred by the introduction of the smartphone – which fundamentally undermined the point-and-shoot’s offering to consumers. The significance of this outlined in more detail in a following section.

This section outlines the broad displacement of the compact camera at the general consumer-level by smartphones. It is important to note that these expanded functions

have allowed smartphones to fundamentally displace prior technology used for personal photography practices. These additional functions (particularly those which encourage social use) accessed through the smartphone hardware or software tools may be a cause of significant transformations occurring in personal photography as a result.

The role of the camera in popularity of smartphones

Evidence suggests that the camera is a key driver of smartphones' popularity overall. This is reflected in both manufacturers' and users' perceivable attitude toward the camera component of the device. Leading companies within the sector advertise smartphones with emphasis placed on the camera's capability. For example, Apple advertised their iPhone 6 range using "*Shot with iPhone*" adverts over the course of 2014. This campaign presented output of the smartphone's camera through images (and video) captured on the device on posters, billboards and other media (e.g. Fig. 1.3). This emphasis on the camera, rather than other features of the phone, demonstrates how important the camera was (and remains to be) to Apple's offering. In addition to this, one of Apple's latest generation of devices offers users 'live photos' where captured images are accompanied by a short 3 second video of the surrounding moments. This innovation was positioned as one of the key selling points of the device - again placing emphasis on the camera as a key component of the iPhone 6S and 6S+'s value proposition.

Other hardware manufacturers have looked to capitalize upon photography since early success of the iPhone 4. For the most part, innovations have taken the form of incremental improvements as they have become possible by more sophisticated components becoming available. This is primarily due to the restrictive nature of engineering a high-grade camera module that fits within the physical constraints of a thin smartphone body.

Despite these restrictions, there have been attempts to leverage the popularity of the camera as a means to stimulate improved market share. For example, Nokia's 808 Pureview and Lumia 1020, released in 2012 and 2013 offered users image output that had significantly higher megapixel count (MP) than competitors in the market. HTC attempted to innovate through development of 'Ultrapixel' technology in their HTC One in 2013. Here the technology contained a lower megapixel count than competitors; instead, featuring larger pixel size producing images with increased clarity and colour detail. Continued improvement of the camera module is critical for smartphone manufacturers; both in attracting consumers, as well as competing within the market. More recent models such as the LG G5 and the Huawei P9, have used dual rear cameras to offer a choice between lenses (wide angle and standard) and improve image clarity and detail (through a second monochrome sensor), respectively. In September 2016 this has been followed by the iPhone 7 Plus which uses dual cameras to offer an optical zoom (where the second telephoto lens allows for 2x zoom) as well as upcoming 'bokeh' depth of field effects through software emulation. As such, the camera remains a key site of innovation (and attempts at wooing customers) within smartphone devices today.



Fig. 1.3 Example of Apple "Shot With iPhone" subway poster (Image by Elvert Barnes on Flickr [4])

Evidence suggests that cameras are also one of the most critical components of smartphones' appeal to users at the point of purchase. Kantar Worldpanel ComTech's 2014 survey *The Smartphone Purchase Experience* explored drivers behind smartphone purchase in the US. When asked which functional considerations are the most important to the purchasing decision; the quality of the camera was cited as the third most significant

driver behind: 4G/LTE capability and general reliability/durability (and above: battery life, screen clarity and processor speed) [140].

This is also reflected in smartphone usage following purchase. Meeker cites a study by Zogby Analytics which highlights that 44% of millennials (adults between the ages 18-34 at the time of citation in 2014) described using their smartphone camera at least once a day. The majority of remaining participants reported use every other day (22%), or at least once a week (21%) [102].

Crucially, forms of social sharing appear to be driving increased activity. When asked “*for what things do you use your smartphone camera?*” 76% of respondents described doing so to “*post on social media.*” [102:68]. It should be noted that “*social media*” is a broadly used term that describes a number of web and communications tools (e.g. social network sites, messengers etc.)

Smartphones and social media appear to be driving image production in general. Fig. 1.4 taken from Meeker’s 2015 internet trends report shows a dramatic increase in photos uploaded and shared per day over the past 15 years (estimated from publically available information). In 2014, 1.8 billion images were created and shared daily (this amounts to 657 billion photos yearly – with conservative estimates suggesting that over one trillion images would be created and shared in 2015). Most importantly however, is that a large proportion of images being produced appear to be being used for social interactions across various social network sites. Significant growth of image creation and sharing has also been seen on messaging platforms (e.g. Snapchat and WhatsApp) from 2012. Whilst Fig. 1.4 only accounts for images being created and uploaded to various social network sites, the sheer volume (and growth in volume) of images being generated for this purpose is significant; and as such likely dwarves the amount of photographic images being created for all other purposes. This section has described how, with use of smartphone hardware and software tools, production of photographic images is exponentially increasing. Furthermore, growth is driven by everyday personal photography, now created for (and distributed upon) forms of social media.

Increasing popularity of smartphone photography and social media

Over the course of the past decade use of social network sites (SNSs) has grown significantly. In 2007 Boyd and Ellison provided a definition of SNSs as: “*web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2)*

articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system” [20:211].

Thus, SNSs are unique from other kinds of online communication as they encourage users to maintain a digital presence online (through a profile page containing information about the user) – and use this as a means of interacting with others’ through various digital actions. The first social network sites were founded in the late 90s (Six Degrees in 1997 and LiveJournal in 1999). Generally speaking, these early sites are utilized by users to describe their experiences to one another, through this profile creation and the exchange of various increasingly sophisticated forms of media (beginning with text, images, and then video and richer forms of media as online technology matured).

The term ‘social media’ is used today to describe wider phenomena in digital communications and online activity that have emerged from these earlier social network sites. The Merriam-Webster dictionary defines social media as: “forms of electronic communication (as Web sites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages and other content (such as videos)” [104]. As such, the kinds of services and apps that are considered ‘social media’ today have broadened both in terms of audiences and networks (now including instant messengers and hybrids) as well as content being shared.

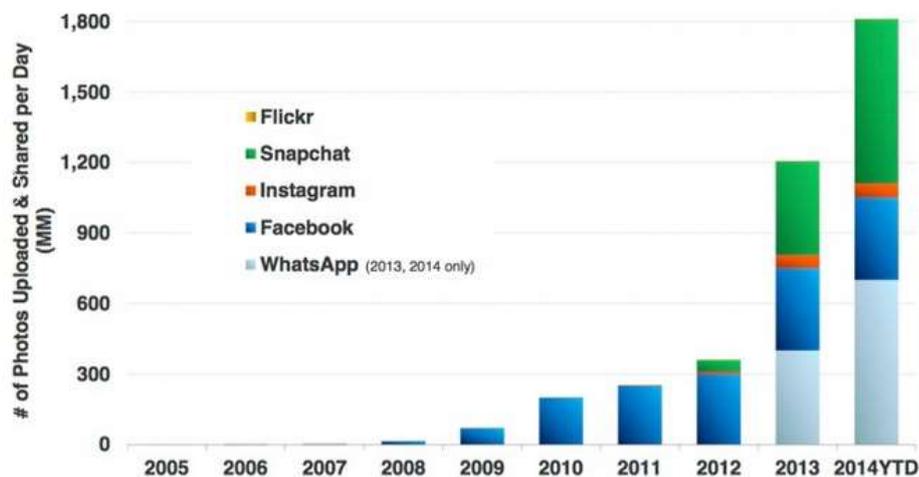


Fig. 1.4 KPCB estimated photos uploaded and shared per day 2005-2014YTD [102:62]

It is of note however that social media has become increasingly visual - and is accessed increasingly through use of smartphones and other mobile platforms (e.g. tablet computers). Time spent online is dramatically shifting from desktop computers to tablets

and smartphones. In 2013, Statista (using comScore data) identified that social networking had become a mobile-first activity in the United States, with 65% of time spent social networking occurring through mobile devices [50]. Furthermore, Statista published comScore data (collected in 2013) in 2014 which demonstrated that social networks had become mobile first in the U.S., as can be seen in fig.1.5.

In conjunction greater social media engagement on mobile, a more general shift has occurred; with mobile internet use overtaking desktop usage in 2014. This was reported in August 2014 by comScore, who found that total activity on smartphones and tablets (combined as 'mobile' and detected through identification of mobile operating systems) accounted for over 60% of digital media time spent in the United States. Furthermore, "approximately 7 out of every 8 minutes" spent consuming digital media using mobile devices was found to be done so through dedicated smartphone software tools ('apps') rather than mobile web browsers [31:4] - highlighting the importance of dedicated software design in the uptake and use of social media tools.

The 2015 report offers further insight into this growth. In a comparison between the top 1000 apps and top 1000 web properties it was found that: "not only do mobile ... properties have audiences that are more than 2.5x the size, but these audiences are also growing twice as fast (+21% year/year vs.+42% y/y)" [31:13].

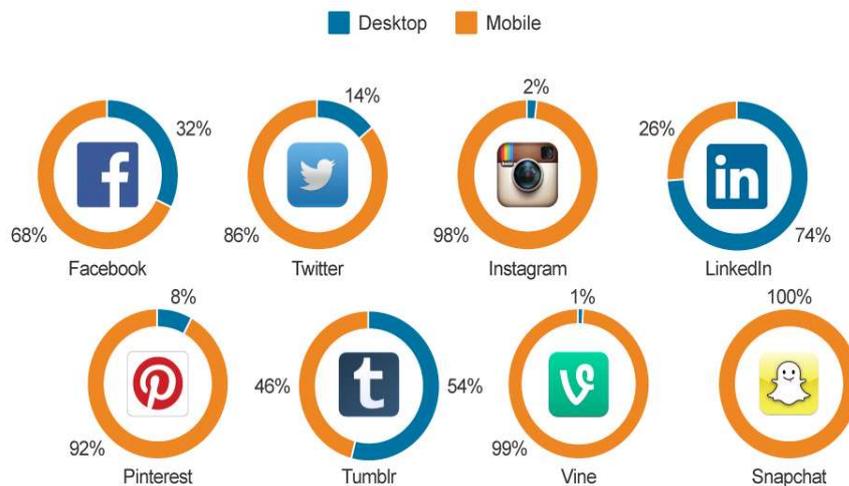


Fig. 1.5 Statista visualization of comScore data from December 2013 displaying % of time spent on social networks in the US, by platform [99]

A crucial insight in the report however is that certain content categories are now driven exclusively by apps – with photos and instant messaging in particular leading the way. 92% of digital time spent interacting with photos online in the U.S. was through software use (photography ‘apps’) [31:39]. This further confirms the extent that smartphone software tools and their design are significant in shaping the unique attributes of smartphone photography – and as a result, contemporary personal photography at the broader level.

Notably, image-based (and smartphone specific) social media tools such as Instagram and Snapchat are category-leading successes. Their growth furthermore is also driven predominantly by uptake from young users [102:68]. This evinces that smartphone photography (as a component of visual social media) is driving growth and a generational change within social media – with visual media now emerging into prominence as a consequence of younger users. Furthermore, younger users’ uptake of apps and practices providing an indication of future developments in this area, wherein the smartphone camera and its use appears to have a central importance.

This section has established the interconnected growth of: social media, smartphone software tools, and smartphone photography as a key component of visual social media in particular. This strongly implies a sea change is occurring both in: social media becoming increasingly visual; and personal photography practices through the use of smartphone hardware and software tools as a means for this transformation to be enacted.

Smartphones and contemporary visual culture

The popular use of smartphones, and certain key software tools over others has led to a number of observable transformations in photography in practice, and wider visual culture. A number of these are described in the following section of this introduction, as a means of supporting the tenets and significance of the research. This section offers a brief overview of contemporary visual culture exploring smartphones and social media.

The purpose of this section is to establish broader changes within visual culture that have occurred in parallel with the emergence of smartphones and their use for practices of personal photography.

Use of smartphone hardware and software has become important to notions of publicity and celebrity in contemporary culture

Today, many of the world's most recognizable celebrities connect with fans by using smartphone hardware and software tools to capture and distribute photographs and videos.

Through sharing with fans in this way; many public figures have amassed large online fan-bases who engage with media through various new digital interactions (e.g. likes, comments, replies, re-sharing, etc.). Users receive updates from public figures by connecting with them as 'friends', or by becoming a 'follower' on social networks thorough use of various smartphone software tools.

This is unique from ways that fans have followed their idols in the past (e.g. television, magazines, and newspapers); as it allows them to:

- 1) Determine more precisely who they receive updates about, through a specific subscription to their updates
- 2) Receive updates which appear to come directly from the celebrity (or their public relations teams) rather than through secondary sources
- 3) Use interactive features to achieve a greater sense of access and interaction with the person they follow, and other fans
- 4) Perceivably engage with public figures through the same tools and practices as they do with their own peers

As such, contemporary social media tools and smartphone photography and video provide a novel set of distribution channels for public figures' typical activities which are shared on a day-to-day basis (e.g. a fan following pop-star Rihanna on Instagram can view photographs from concerts and information about new music being released.) As a consequence, many celebrities have reached a state of prominence that extends beyond that which was previously possible; and are using photography, video and social media distribution meaningfully to increase their prominence.

Through smartphones and software tools, public figures also share images and videos in a way which reflects a broader concept of themselves

Public figures may often use these tools to depict daily activities beyond what they are primarily known for. Dwayne "The Rock" Johnson's Instagram profile includes publicity

images for his latest film – but also, more candid depictions of his day to day life. We see this in Fig 1.6, where publicity images (a Forbes magazine cover) is shared alongside posed shots in the gym, and a more personal depiction of The Rock, and his young daughter.

This broader depiction of The Rock’s activities – beyond publicity images alone – provides perceivably greater insight into the day-to-day reality of his life than might be seen in older forms of publicity media. This is because these kinds of images also appear to have been directly shared with fans by the Rock himself whereas publicity images would likely be subject to greater scrutiny and control (selection, visual editing, etc.) by public relations teams. Images such as these provide a more direct, and unmediated access to public figures’ lives.

Marwick and Boyd noted this shift when studying behaviour of celebrities when using Twitter, stating: “*the fragmented media landscape has created a shift in traditional understanding of ‘celebrity management’ from a highly controlled and regulated institutional model to one in which performers and personalities actively address and interact with fans*” [98:1]. Part of this more informal address and interaction with fans in visual social media – appears to be the depiction of more ordinary, everyday activities through images.

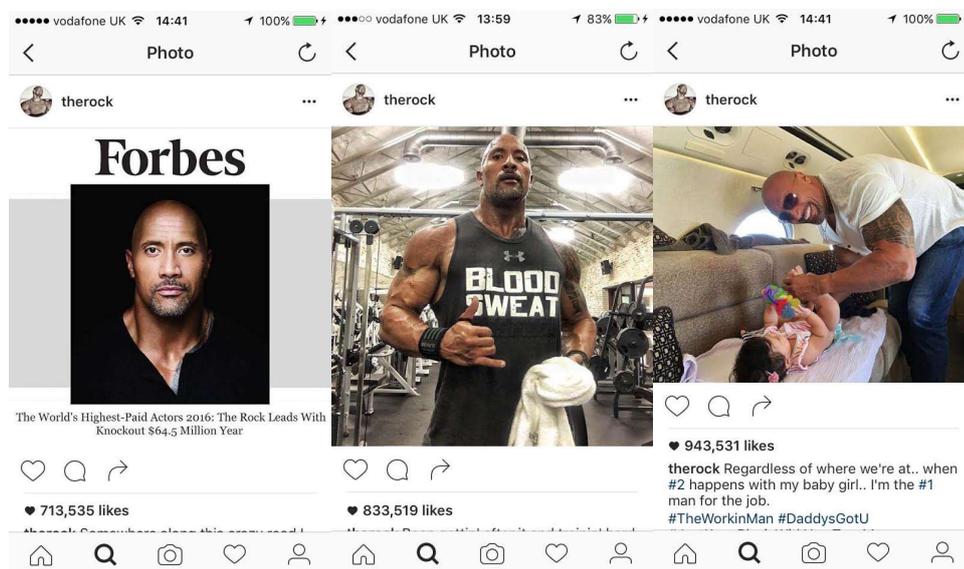


Fig 1.6 Three of The Rock’s Instagram images [68] [66] [67]

In images such as these shared on Instagram, fans see familiar subject matter; that appear to have been recorded using tools and practices that they themselves use and are familiar

with (e.g. through use of the same smartphone hardware and software tool which they use to connect with their friends and family). Therefore, the interaction appears more authentic, approachable, or true to life than before.

This greater access is also reflected in the ability for fans to interact with posts which have been shared. Such an activity, despite the unlikelihood of actually resulting in substantial contact with The Rock, may give the impression to fans that they are directly interacting with their idols.

Combined, these features of visual social media (analogous means of creation, directness, interactivity, informal representation) likely encourages fans to perceive greater access to public figures through the use of these tools than ever before.

Different tools appear to offer celebrities different ways to represent themselves to fans

In prior sections of this introduction it has been established that a small number of smartphone software tools have become popularly used.



Fig. 1.7. Informal images posted by Kim Kardashian [71], Cristiano Ronaldo [119] and Rihanna [47] to Instagram

Significantly, the differing design of these tools appear to generate unique practices of use in themselves. Whilst this research is concerned with everyday users (this is explored in greater depth in a following section of this introduction) – some indications can be observed in usage by public figures.

For example, Snapchat’s ‘My Story’ feature (a secondary sharing function within the tool) allows users to share images and videos for 24 hours. Once 24 hours has passed, the image or video which has been shared becomes inaccessible to viewers. As a result, users share images and videos using Snapchat “My Story” knowing these will be seen sequentially, and viewed within twenty-four hours.

Thus it is a compulsory part of the design of Snapchat and ‘My Story’ that images that are shared are ephemeral. This, along with use of other optional features (e.g. ‘3D Lenses’, drawing tools, filters etc.) may shape the practices and purposes of photography undertaken using the smartphone hardware when using software tool, when compared with others.

An indication of these differences can be seen when comparing two sequences of 5 images shared by Kim Kardashian on Snapchat ‘My Story’ (Fig 1.8) and Instagram (Fig 1.9) from the 31st of August.



Fig. 1.8. Screen-captures of a chronological series of 5 images posted to “My Story” on Snapchat by Kim Kardashian. Accessed at 4:05pm on the 31st of August 2016

The first thing to note is that the five images shared through Snapchat’s “My Story” feature were taken and shared over the course of five hours. The images taken and shared over Instagram however were shared over the course of 5 days.

Secondly, whilst the images shared through Snapchat ‘My Story’ were captured by Kardashian at the time of sharing (if an image is shared via the camera roll; this is made clear to the through a border being added to the image being shared); it is impossible to determine if the images shared on Instagram were captured in sequence. This is because Instagram does not provide means to distinguish between images created at the time of

sharing; and those which are from another instance or even from another photographer (the first, second and fifth images posted appear to be publicity or journalist images).

Third, the first three images in the Snapchat sequence include text that has been positioned on top of the image. The third in the sequence also includes use of a “3D Lens” which adds a virtual element to the image (a crown of yellow butterflies). In comparison; the images shared on Instagram feature (barring the third image which is an image created on Snapchat, itself using a ‘3D lens’; then posted to Instagram) no visual elements superimposed onto the image.

Whilst this is only a single set of examples, and not an exhaustive comparison of the differences, or usage by public figures at large; it demonstrates how different design choices in software tools shape different practices of using smartphone photography as a means to connect with fans.



Fig. 1.9. Screen-captures of a chronological series of 5 images posted Instagram by Kim Kardashian on the 1st-5th of September 2016 [73] [72] [77] [75] [74]

The key difference here being that, by design, ‘My Story’ appears to encourage users to share more frequently with sequences of images depicting informal moments; whereas, at least in the case of Kardashian, Instagram is used to place emphasis upon certain images and less so the ephemera of the day to day. Crucially, these two styles of use were being utilized by Kardashian during the same time period; albeit for seemingly different ends. Kardashian stated as much, saying “*My Instagram is definitely my expression and what I love to show the world. My snap (sic) is kinda (sic) my silly sarcastic alter ego*” [76]. Thus, to Kardashian, there a clear distinction between how she uses the two software tools.

This research is interested in how such differences in software tools (alongside smartphone hardware in general) impact the day-to-day photography practices of every

day users. More indications about significant differences between the uses of these tools is provided later on in this introduction.

Visual social media has been used to generate extreme publicity

Instances such as: the sharing of a group 'selfie' at the Academy Awards on the 3rd of March 2014. The Wall Street Journal confirms that this, seemingly offhand moment was part of a promotional campaign undertaken by Samsung on the day of the Oscars to share images taken at the event through use of its new smartphone handset the Samsung Galaxy Note 3 [138]. As of time of citation, this image has been 'liked' 2.3million times (indicated by a non-verbal interaction with the tweet, (then denoted by a non-verbal interaction with the tweet by clicking a star icon, and now a heart icon), and 'retweeted' (re-shared by a user to their followers on their own feed) 3.3million times – more than any other 'tweet' to date [39]. This scale of distribution and reach led to this moment being considered news itself.



Fig 1.10 A group 'selfie' captured by Bradley Cooper at the 2014 Academy Awards on a Samsung Galaxy Note 3 and then shared by Ellen DeGeneres on Twitter [39]

Behind instances such as these; and the coverage from secondary outlets which follows – a set of complex cultural, social and technological phenomena occur.

The Twitter account from which the image was shared, had a significantly large number of followers who would be actively interested in updates from the host, DeGeneres at the time the awards show was being broadcast on television. Thus, even prior to the image

being re-shared ('retweeted'); it would be seen by millions of people (at the time of writing, DeGeneres' twitter account has 62.3million followers). Crucially, when "retweeted" the image was then subject to a secondary phase of distribution on the platform: those who re-shared the image (3.3million people as above) would then redistribute the image to their own followers, whether or not they themselves followed DeGeneres.

The ability for digital objects to be shared exponentially in this way has reshaped our relationship with wider society. This scale of distribution is often described as something (a piece of media) going 'viral'. The word 'viral' is used to describe this phenomena, in that a digital object (e.g. an image such as the one above) is seen to spread on a logarithmic scale, analogous to the spread of computer malware, or a virulent disease.

The effect of this is the redistribution of a particular digital object by an audience. This is an implicit statement by the audience member, that it should be seen further by their own network of friends or followers. When such a large redistribution has happened (as above); this represents a consensus between audiences that the digital object being redistributed is culturally significant.

This differs from the previous models of communication; wherein the extent to which a piece of media was distributed would be determined by a smaller number of commissioners (e.g. television and radio executives); and not the audience themselves. In, *The Network Society: Social Aspects of New Media*, Jan Van Dijk refers to this shift as a transformation in the "information traffic pattern" from that of "allocution" (where information is distributed to an audience from a centralized source) to "conversation" where the source of the information is no longer centralized. Van Dijk describes conversation as "...an exchange of information by two or more local units, addressing a shared medium instead of a centre and determining the subject matter, time and speed of information and communication themselves" [42:12]. In this way, within the networked society of Van Dijk, it is increasingly difficult to discern between audience and content creator. This is especially so, as when a digital object is redistributed, it is often remixed, or re-contextualized (e.g. through addition of new elements or annotation etc.) This is explored further below.

As such, that digital objects (whether images, video or otherwise) can become 'viral' is entirely distinct from precedent and reflects increased emphasis on the audience as

stakeholders and active participators in significant moments within visual culture. Furthermore, where celebrity is concerned – this implies a greater degree in participation by audiences in the significance of distributing their role model’s media; and therefore increasing their fame and significance. Notably, certain pop stars have their own fan base communities who are extremely active online in supporting their idol, e.g. Justin Bieber’s “beliebers” who have been able to exercise significant online campaigns for their hero.

The emergence of memes and image macros in visual culture

Other significant forms of visual culture have emerged which reflect this transformation. A common practice online involves the sharing of ‘memes’. The term meme is derived from the Richard Dawkins book *The Selfish Gene*; wherein Dawkins coined the word ‘meme’ from the Greek “*mimeme*” as a “*unit of cultural transmission, or a unit of imitation*” traded between people. This led to the establishment of the field of mimetics – which focuses on the evolutionary study of culture. Dawkins states: “*just as genes propagate themselves in the gene pool by leaping from body to body via sperms and eggs, so memes propagate themselves in the meme pool by leaping from brain to brain via a process which, in the broad sense, can be called imitation*” [36:192]. This kind of imitation is ever more present, and even accelerated, in a networked society through the increased magnitude and reach of digital media. Here cultural ideas, and digital objects which transmit them can be distributed at a far greater rate, at higher speed, and with great reach.

Whilst this is the origin of the term is from Dawkins and the field of memetics; the word has become common parlance to refer to digital objects popular through collective sharing. Dynel provides a definition of memes as: “*an influx of new forms of humor (sic), much of which is contingent on pictures (photographs or drawings) or very short films, with text being reduced in length, Contemporary internet users know these as internet memes or simply memes...*” [45:1]. As above, one of the many forms that a ‘meme’ can take is an ‘image macro’ – which consists of an image which is shared with a caption typically using the Impact font [21].

Through collective sharing, certain memes and image macros have become more significant than others and have shaped online communities and conversations. Dynel notes that “*it is noteworthy that English-speaking (and hence internationally available) website with humor (sic) that rank highest in popularity (see eBizMBA Rank, which indicates websites’ volume of internet traffic) feature primarily memes whilst websites with canned jokes are less*

popular” [45:1]. As such, image-macros have become the predominant medium for humour online; and one which Lankshear and Knobel note in *New Literacies: Everyday Practices and Social Learning* is again shaped through consensus and audience participation [90].

A key part of this participation is the ability to remix and reconfigure the image macro; allowing for the practice to be extremely malleable. Again, Lankshear and Knobel note noted the process of creating and sharing a meme consisted of a meme vehicle which could then be modified, with additional resources (e.g. a staple image featuring new captions of visual elements) [90].

This allows audiences of the meme, to easily participate and create and distribute their own idiosyncratic expression as a means to participate within an online community. For example, the ‘Bad Luck Brian’ image macro vehicle frames the users’ contribution as an unfortunate tale. Within this frame, users contribute their own remix upon the collective premise of the vehicle e.g. Fig 1.11.



Fig. 1.11 Series of “Bad Luck Brian” image macros containing various riffs on the theme

As above, whilst remixing typically takes the form of alterations to the text attached to the image (popular sites such as www.memegenerator.net allow users access to templates where); in other cases, alterations are made to the meme vehicle itself to facilitate new meanings. This is seen in the third variation above (Fig 1.11) where Liam Neeson’s appearance is used as a means to refer to the bad luck his character is subject to in the ‘Taken’ series of films. In this way, image-macros reflect a means of collective expression (the shared community value present within the meme vehicle), as well as an individual expression (in the idiosyncratic elements added to the macro by the individual user).

As a consequence of the anonymity offered by sharing in this way (images are most popularly shared on websites and forums where users are only known outwardly by a username of their choice), it is often unclear whether users draw their contributions from their own experiences; or are simply demonstrating their creativity. Vickery offers a critical analysis of the 'Confession Bear' meme which demonstrates the complexity of unique expression and social cohesion achievable through the use of a specific meme vehicle [137]. Within that particular meme vehicle; anonymous confessions are made which often concede to highly sensitive and even criminal situations - blurring the line between the distribution of the image as a means to be creative and contribute to a community; and more therapeutic motives. Along with instances of digital objects going viral, image macros and memes reflect part of a new landscape within visual culture. This is shaped by exponential, audience-driven, decentralized distribution, and interactive participation which has reshaped users' relationship to information and visual culture at large.

Emergence of citizen journalism

A second example where 'viral' distribution of visual social media by non-famous individuals has significantly impacted the wider world is citizen (or participatory) journalism.

Bowman defines participatory journalism as: *"the act of a citizen, or group of citizens playing an active role in the process of collecting, analyzing and disseminating news and information. The intent of this participation is to provide independent, reliable, accurate, wide-ranging, and relevant information that a democracy requires"* [19]. Thus, through citizen journalism, a society sets out to educate and inform itself of its issues; as a way of bypassing existing media institutions. This is perceived as a means to enact democracy on the basis that information comes from the population themselves, and is unmediated by media institutions.

The ability for citizens to create and distribute their own media in this way, is supported by increasingly sophisticated and connected hardware and software tools. Citizen journalism played a significant role in The Arab Spring in 2011, which was a geo-political event across North Africa and the middle-east region. Over the course of 2010-2011 several civil uprisings occurred across within the Arab world; beginning in Tunisia and then spreading to Egypt, Libya, Jordan and other nearby states. New media was observed to

be critical in communicating both news of inciting incidents, as well the effective organization of large scale peaceful protests.

Khondker notes that “*although new media is one of the factors in the social revolution among others such as social and political factors in the region, it nevertheless plays a critical role especially in light of the absence of open media and civil society*” [82:675]. In this sense the emergence of networked society, its tools and practices (such as participatory journalism) is hard to delineate from wider society in general. This is because the technological aspect of networked computing is embedded to a point wherein it is practically impossible to separate from culture, politics and societies at large.

Khondker however highlights that before the widespread adoption and use of new media (in this case Facebook); reaction to similar inciting incidents in Tunisia were “*crushed in 2008 without a significant backlash*”. The critical difference being substantive communication of the inciting incident (the self-immolation of a man called Mohammed Bouazizi) was unable to occur, nor any organization of protests thereafter.

Whilst the ability for national populations to organize was difficult in reality; new media spaces offered organizers a means to communicate at scale, beyond borders and immediate restrictions within the country. This notably lead to solidarity and the spread of organized protests to Egypt and beyond.

Whilst the role of new media in the Arab Spring encompassed a range of different media (e.g. text, videos) – the viral distribution of certain images played a key role in galvanizing the organization of historically significant protests and resistance groups.

Howard et al. highlight the significance of online coverage and activism around Egyptian blogger Khaled Said being beaten to death on June 6th 2010 by two police officers for possessing evidence of institutional corruption. An image of his face displaying the extent of his disfigurement was prominently shared online following his death alongside with a video interview with the owner of the internet café who witnessed the attack occur. This led to the establishment of a Facebook group *We are all Khaled Said* by an Egyptian Google employee Wael Ghonim – which after initially spreading information about the incident came into prominence as a site of resistance and organization over the course of 6 months before the January 25 Revolution in 2011 [64:15]. This groundswell not only partly a consequence of the Facebook group becoming a popular site where news could be shared

and a community of resistance could be formed – and also the emergence of Wael Ghonim who became a central figure in revolutionary efforts.

Eltantawy notes that a strength of social media as a means of distribution was its capacity for “*swiftly exchanging and disseminating information*” allowing for successful strategies (e.g. those employed in Tunisia) to be reproduced. In other ways, Eltantawy notes, social media was used as a means to “*generate international attention and interest in the revolution*”; by posting “*pictures and videos depicting revolution updates, as well as information about police torture of protesters*”. Crucially, Eltantawy states: “*it was the protesters themselves who disseminated information, pictures, and videos – not just reporters and group leaders. When the government banned reports from Tahir Square to prevent news from spreading... social media technologies enabled protestors to become citizen journalists*” [46:1214]. Thus, networked media in this instance allowed for the viral dissemination of material that would have otherwise been suppressed (in particular images of the brutality dissenters such as Khaled Said were subject to), and also the transcendence of this national concern; to something that reaches across borders and mobilized the world’s support.

Social media “fame” has become a phenomenon in its own right

For everyday users: publicity, notoriety and financial reward possible through social media has permitted a degree of fame to become aspirational and feasible.

Platforms, such as YouTube led to the emergence of online celebrities who, whilst previously unknown, have been able to gain a level of personal success through the production and popularity of videos. Upon becoming a ‘partner’ YouTube offers creators a stipend on the basis of the popularity of their videos, as they are used as a means to deliver advertising to their viewers. For those routinely producing videos which are popularly viewed on YouTube; it is possible to earn a significant amount of money, notoriety and stability to pursue this activity as a full-time career. Thus, widely used platforms such as YouTube have established a precedent wherein the most popular users of the platform are able to become ‘stars’ (e.g. Felix Kjellberg aka ‘PewDiePie’ etc.) with relative wealth and notoriety in their own right.

Notable successes, alongside the emergence of new platforms has led to the concept of the social media celebrity. It is notable, that this is likely the target for those do not achieve the same level of notoriety – but achieve relative success with smaller audiences.

Theresa Senft coined the term “*microcelebrity*” to describe this; referring in 2001 to women who streamed themselves online. She notes that a central aspect of this was that they: “*utilized still images, video, blogging, and crosslinking strategies to present themselves as a coherent, branded packages to their online fans*” [125:346]. This was a form of presentation of the self; conducted by non-celebrity women online who provided audiences access to their appearance and personality. Key to their success and achievement of a degree of notoriety, was a presentation of the self as an authored ‘brand’.

Senft posits that this is a consequence of a “*paradox within late capitalism*”. Specifically: “*at the very same time that job markets appear to be shrinking and exclusionary, cultural notions about notoriety, celebrity and fame were expanding and inclusive, thanks in part to the rise in relatively recent media formats such as reality television, talent-search shows, and personalized broadcast ‘channels; on sites such as YouTube and MySpace*”. Crucially this coincided with the opening up of new spaces online that presented “*opportunities to make and distribute media with capitalist markets... as never before*” [125:349]. Thus, the emergence of online microcelebrity was consistent with broader cultural shifts at the time. It was reflective of a new site of opportunity that had emerged where tested professional practices (e.g. branding and marketing) could be put into practice.

In *Meat, Mask, Burden*, Alison Hearn outlines the way in which branding logic had evolved in contemporary society, stating: “*by constructing a particular ambience, comprised of sensibilities and values, which may then condition consumer behaviour... a brand no longer refers to a simple commodity but to an entire ‘virtual context for consumption’*” [59:199]. In this way, contemporary branding – which then would apply to its application in emerging forms of microcelebrity – had become more than packaging; encompassing a holistic notion of the values it sought to represent.

This holism is then applied to individuals who present themselves online: “*Here we see the self as a commodity for sale in the labour market, which must generate its own rhetorically persuasive packaging, its own promotional skin, within the confines of the dominant corporate imaginary. As such the branded self must be understood as a distinct kind of labour; involving an outer-directed process of highly stylized self-construction, directly tied to the promotional mechanisms of the post-Fordist market*” [59:200].

Thus, a confluence occurs between the individuality of the person on screen; and a controlled, consistent and marketable self-image. What audiences achieve from

subscription to this, Senft notes, is not so much a product, but an association with the values that the brand represents: *“both brand and contemporary celebrity draw their power not from any sort of utility, by rather from their ability to serve as social identifiers”* [126:48]. In this way, active support of online personalities associates the audience with the values attributed to their ‘brand’, reflected by their lifestyle, and the community of interactions that surrounds them.

The success of such individuals presents the same possibility to everyday users of smartphone photography tools; who through similar tactics may themselves be able to achieve a comparable degree of popularity and success – if their following grows significantly. Today, analogous successes have been seen on Instagram, Snapchat, Twitter and Facebook. A key distinction here however is that these platforms do not provide a monetary stipend for higher degrees of notoriety on the platform. This is ostensibly because the images (and videos) which are shared by users of these platforms are not monetized in the same direct way as on YouTube (e.g. targeted pre-roll advertisements).

Instead, marketers often invite and pay those with large audiences for product placement and other forms of embedded and native advertising partnership.

Not only does this present the product to the influencer’s following – but furthermore associates its use with a demographic associated with the influencer; and their presumed aspiration toward the lifestyle of said influencer. As Senft states above, this positions the advertised product (e.g. make-up or clothing for an Instagram fashion blogger, or a computer brand for a Twitch.tv streamer) within the expression of the user’s lifestyle brand – and as substantial component of the social identification that their audience makes with their output. As a consequence, this form of ‘influencer’ based marketing has been proven to be effective.

Whilst many ordinary users do not use these platforms as a means to promote themselves in a professional manner – it is notable that these strategies and practices are widespread upon the same platforms that everyday users use for personal practices. These successful and widely followed and redistributed exemplars (as with memes and visual culture above) have a significant impact upon the platforms and wider culture as a whole.

The extent to which these wider transformations are perceived, and/or influences contemporary smartphone users’ practices of photography is a key concern of this

research. In this way; the creation and distribution of photographic images through social media apps (now prominently utilized through smartphone hardware has played an increasingly significant role in wider visual culture.

Originality of research

The researcher has a background, both as an undergraduate and as an enthusiast, in photography. It was from this perspective, and interest in contemporary photography that led to the development of a research proposal, under the title 'the social camera' was developed and accepted to begin in November 2012.

This proposal proposed that new ways of sharing images (enabled by smartphone hardware and software tools) had significantly impacted practices of personal photography. Through the process of research investigation, this scope broadened – to be able to encompass a larger scope of influences that shape contemporary smartphone personal photography practices. In particular, the research was refocused to ensure that it explores the role design of different software tools play in shaping these emergent practices; and also conduct research utilizing design thinking as a means to produce design research outputs (in this case, design principles for personal photography).

Thusly, the researcher's specific area of interest (the progression of personal photographic practices), combined with the research mode and field (qualitative design research) provides a largely original research terrain.

Research Questions:

The primary research question is:

To what extent is smartphone hardware and software tools transforming personal photography; and how do these transformations inform design principles for the design of personal photography?

The secondary research questions are:

1. What were the broad characteristics of personal photography, prior to the introduction of smartphone hardware and software tools?
2. What are the characteristics of personal photography enacted today, using smartphone hardware and software tools?
3. What key transformations have occurred as a consequence of the introduction of smartphone hardware and software tools?

And;

4. What principles for the design of personal photography can be derived from the transformations that have occurred as a consequence of the introduction of smartphone hardware and software tools?

Research aim and objectives

The aim of the research is to derive a description of transformations that are occurring within personal photography as a result of the use of smartphone hardware and software tools. These transformations are then subsequently to be used to develop a set of design principles for personal photography.

To achieve this overall research aim, the objectives are:

1. To develop a theoretical framework outlining the principles of personal photography broadly describing personal photography leading up to the use of smartphone hardware and software tools; through a literature review
2. To generate a thematised description of personal photography practices as undertaken contemporaneously using smartphone hardware and software tools through the study of contemporary users
3. To identify key transformations by establishing similarities and differences between personal photography before and after use of smartphone hardware and software tools through comparison of (1) and (2)
4. To use (3) to formulate a set of design principles for personal photography

Thesis structure

This thesis is structured into seven chapters, which includes this introductory section. Chapter 2 details the methodology, and selection of methods used to achieve the aims stated above. It describes the research paradigm and justifies and outlines methodological choices. It also contains a section which tracks the progression of formal design practices as a means to situate this research activity within the field of design research.

Chapter 3 contains the literature review concerned with establishing the broad principles of personal photography prior to the use of smartphone hardware and software tools. This chapter is split into two principle sections. The first of the sections approaches personal photography from the perspective of photographic theory - exploring personal photography from the perspective of the ontology of photography and the photograph.

The second section approaches personal photography directly. In conjunction with photographic theory a framework is then developed which provides a characterisation of personal photography prior leading up to the use of smartphone hardware and software tools.

Chapter 4 presents the findings of the qualitative research activity, a set of 6 focus groups undertaken with smartphone users about their use of smartphone hardware and software tools for personal photography; concerning participants': activities, preferences, barriers and enablers, and aspirations. Responses within the focus groups are collected and thematised - resulting in a description of contemporary personal photography undertaken using smartphone hardware and software tools.

Chapter 5 is the discussion chapter. Here the key differences and similarities between personal photography, before and after the use of smartphone hardware and software tools, are explored and analysed in conjunction with the theoretical framework developed in Chapter 3. Through this analysis, key transformations and consistencies to personal photography are explored and identified. Then, in lieu of these insights, a set of design principles for personal photography are generated.

Chapter 6 concludes the thesis by: describing how the research questions and objectives were fulfilled, detailing the extent to which the thesis is a contribution to the wider school of knowledge, providing recommendations for future work in the area, and presenting limitations to the work that has been completed.

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CHAPTER 2: METHODOLOGY

Overview

The research study seeks to ascertain the extent that smartphone hardware and the design of software tools are transforming practices of personal photography. To achieve this in a manner satisfactory at the level of PhD study, an effectively formulated methodology is required. However, within design research (and the wider scope of social sciences), a range of different research styles are possible.

This chapter includes two sections. The first is a broad review of the methodological considerations associated with contemporary social-studies and design research. Then, a description and critique is provided of the methodology used to carry out this research.

Chapter structure

The methodology chapter is structured as follows:

1. Overview: what is research?
2. Research paradigms
3. Ontology and epistemology
4. Data collection methods (qualitative, quantitative, mixed)
5. Overview of design research and methodologies
6. Formulation of the research methodology for this research
7. Methodology summary

Overview: what is research?

Kumar describes research as “*a systematic examination of clinical observations to explain and find answers for what you perceive*” [88:22]. Research undertaken within an institution is the systematic procedure of enquiry, using appropriate methods, through which a researcher contributes to that institution’s body of knowledge.

In the case of this study, the institution which the research seeks to contribute knowledge to, is academia. Within academia, a contribution is achieved through the strategic use of research methods to collect information (through an effective methodology), to confirm the philosophical position of the researcher, and produce an original insight.

Research that seeks to investigate people is known as social, or real-world, research. Dawson defines social research as “*the deliberate study of other people for the purposes of increasing understanding and/or adding to knowledge*” [37:ix]. Real-world research is defined

by Robson as “one seeking answers to problems faced in... people-related fields, rather than being concerned primarily with advancing academic discipline” [118:17]. It is within this field of the research of people, rather than the hard sciences, that the majority social-sciences and design research occurs.

Design in particular, from the Latin “*designare*” to “to mark, mark out, or sign” [133]; tasks itself with making often complex objects or services make sense so that people can understand and use them easily. This is true of this particular research, which seeks to explore the changing relationship between users, a complex technology (in this case the photographic camera) and wider society. However, this may be achieved through a number of different approaches

Research purposes

In the 2nd edition of *Real World Research* Robson provides a table classifying the four core purposes of real world research. These are: 1) exploratory 2) to descriptive, 3) to explanatory; and 4) emancipatory. This table is recreated below (Table 2.1):

Exploratory	<ul style="list-style-type: none"> • To find out what is happening, particularly in little understood situations • To see new insights • To ask questions • To assess phenomena in a new light • To generate ideas and hypothesis for future research • Almost exclusively of flexible design
Descriptive	<ul style="list-style-type: none"> • To portray an accurate profile of persons, events or situations • Requires extensive previous knowledge of the situation etc. to be researched or described, so that you know appropriate aspects on which to gather information • May be of flexible and/or fixed design
Explanatory	<ul style="list-style-type: none"> • Seeks an explanation of a situation or problem, traditionally but not necessarily in the form of causal relationships • To explain patterns relating to the phenomenon being research • To identify relationships between aspects of the phenomenon • May be of flexible and/or fixed design
Emancipatory	<ul style="list-style-type: none"> • To create opportunities and the will to engage in social action • Almost exclusively of flexible design

Table 2.1: Robson's "Classification of the purposes of enquiry" [117:59-60]

Per Robson and McCartan, exploratory research is undertaken in fields where there is a lack of established knowledge. As a result, it is a useful purpose when the concern is to develop foundations for further research.

Descriptive research involves a more rigorous approach to making careful documentation of a phenomenon. Here an existing knowledge base and theory is added to or proven true, by using a set of more precise methods (e.g. this typically involves measurement, and quantitative methods).

Explanatory research concerns itself with why a perceived phenomenon (or set of phenomena) occur (or coincide). Here investigations are typically geared more towards the identification (and isolation) of causal relationships between phenomena.

Finally, emancipatory research is concerned with enacting (through the process of research) positive influence in the field being studied; emancipating, empowering or emboldening those immediately involved during, and following the research activity [118:39-40].

Each of these purposes involve a different approach to research (consisting of formulation of questions, methodology, and the selection of more appropriate data collection methods).

Complexity of purpose

Robson notes however, that a research project is not limited exclusively to a single one of these aims. In fact, the purpose of the research project may itself change in the process of it being conducted. Additionally, Robson states: *“while one purpose will usually be central to a project a particular study may be concerned with more than one purpose”* [118:39]. Thus, a research project may be understood as having a primary purpose – which is achieved through several smaller objectives (e.g. to describe a phenomenon it may first need to be explored and explained, vice versa or any combination of the above.)

Within the literature review (presented in the following chapter) it is established that: research broaching the specific impact of smartphone hardware, and software design in particular, on personal photography is a fledgling area. However; it is also found that a range of theoretical fields can be used as a means to identify and comprehend transformations.

Complexity of purpose and this research project

Thus, whilst the primary research purpose of this study is an exploration of the relationship between smartphone hardware, the design of software tools and changes in personal photography; other aspects (or second-level objectives) of the study require different approaches (e.g. description of personal photography prior to use of smartphone hardware and software).

This practical complexity of research purpose is only a small part of a broader set of larger methodological considerations. This is taken into consideration in the configuration of the methodology and methods used.

Broader considerations in research: from paradigms to methods

Methods alone cannot produce significance in data; they only generate data. It is within the structure of a methodology (itself within a research paradigm), where methods (e.g. surveys, focus groups, workshops etc.) yield meaningful findings that accomplish research objectives.

Before a methodology can be effectively constructed, the researcher must be aware of the larger research paradigm they subscribed to.

Research paradigms

The term paradigm, as cited in this sense, is derived from Thomas Kuhn's *The Structure of Scientific Revolutions*. Here paradigms are described as certain structures of scientific knowledge, which radically transform in "*paradigm shifts*" when scientific breakthroughs occur. Specifically, Kuhn describes a paradigm as "*achievements*" which share two characteristics: being "*sufficiently unprecedented to attach an enduring group of adherents away from competing modes of scientific activity*"; and being: "*sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve*" [87:10]. Throughout *The Structure of Scientific Revolutions*, Kuhn uses the term to refer to specific fields (e.g. the transformation of essential principles in astronomy from Copernican to Galilean models).

Thus to Kuhn, paradigms are widely accepted structures of knowledge (core beliefs, practices, methods of enquiry etc.) which are reinforced through periods of "*normal science*" activity. During these periods, the components and fundamental tenets of a paradigm are better defined and supported through a broad research concern. Crucially however; Kuhn described "*paradigm shifts*", wherein a new discovery (typically emerging

from an anomaly being found in the previous paradigm) becomes a transformative catalyst for and the establishment of an entirely new paradigm of thinking. As such; adherence to a paradigm; is essentially subscription to a set of beliefs which shape the kinds of knowledge seeking activity being undertaken.

However, for the purpose of this review, a research paradigm refers to the fundamental position the researcher places themselves in relation to scientific knowledge – known and unknown. As per Terre Blanche; a research paradigm is comprised of three parts: ontology, epistemology and methodology (comprised of a configuration the methods) [132]. It is of importance that the structure of the research is representative of a coherent logic from its paradigmatic position, to the selection and deployment of the research methods.

Ontology, epistemology and methodology

Guba states that ontology refers to the fundamental and total nature of a phenomenon; or its fundamental underlying truth. This may include aspects of the phenomenon's existence beyond what researchers, or humans in general, understand. Thus, ontology refers to the fundamental truth of a phenomenon including, and beyond, the current limits upon its comprehension.

Furthermore, Guba describes epistemology as the nature of knowing a phenomenon. It is how the ontological nature of a phenomenon becomes understood and then known; through our senses, logic, measurement, cognition and explanation [57].

Methodology refers to the epistemological strategy which through we may bring the ontology of phenomena into knowing. Thus, a methodology is comprised of a set of data collection procedures configured to best achieve the research goal [132:6].

Thus, statement of research paradigm reflects the selection of a set of fundamental beliefs held by researchers. This in turn, shapes their approach to existing knowledge, the new knowledge they uncover through their research, and how best to set about acquiring and describing it.

Throughout history within social and real world research; a number of research paradigms have been established and compete against each other in the field of social science and real-world research (and thus design). What follows is a description of the

most significant of these fundamental positions for the purpose of this research; and their impact upon ontology, epistemology and methodology.

Positivism vs. interpretivism (constructivism)

In the broadest terms, the researcher must take a position between the fundamental theoretical positions of: positivism and interpretivism (also referred to as constructivism). As above, this decision places the researcher in certain relationship to the knowledge they seek to generate.

Positivism

Broad tenets

Positivism focuses on uncovering of objective knowledge. This approach is based upon the philosophy of Auguste Comte, and particularly his book *A General View of Positivism*. The drive of this position is a desire to “*form... a satisfactory synthesis of all human conceptions*” [32:1].

From Comte’s view, the social world (the behaviour of humans alone or together in groups) is exactly as the natural world – subject to fundamental laws of behaviour and external to human perception. Comte thus set out to study the social world of people in the same way the natural world had been previously – through hard scientific observation and measurement. It is noteworthy that when Comte formulated the field of sociology, he had originally wished to call it “*social physics*”.

Thus, to positivists, to acquire knowledge of the social world, one must identify the unifying laws that shape social behaviour. Comte states this is achieved by the completion of two aims: “*to generalize our scientific conceptions, and to systematize the art of social life*” [32:1].

Generalization refers to the extension of already established laws more broadly, where applicable. In doing so, knowledge from proximal fields are brought together to be in service to each other. For example, a historically effective theory of audio media might be extended to television – through generalization based on their similarities.

Systemization, on the other hand, refers to the application of scientific methods and the principles of positivist scientific research to study (and thus “*systematize*”) the social world. Through systemization, positivists approach new phenomena (where generalization is inapplicable) through use of established scientific methods – bringing

the phenomenon in question into a recognised system of knowledge production and criticism [32].

Where either two activities are undertaken, four principles of positivist research are adhered to.

Four principles of positivist research

Cohen et al. state the four principles are: (1) determinism, that a phenomena is generated by other phenomena; (2) empiricism, collection of evidence in order to verify a hypothesis; (3) parsimony, that a phenomena is explained in its simplest terms; and (4) generality, that the local phenomenon may be perceived to reflect upon the wider world [30].

As a consequence of these principles, the positivist process to epistemology begins with a set of theoretical underpinnings; representative of the belief that an underlying system of laws govern the social phenomena being studied. From this, a hypothesis is deduced, positing how the phenomena will follow patterns predicted by previously observed laws. Empirical measurement is then used as a means of determining the extent that the informed hypothesis is proven to be true.

Parsimony, determinism and generality ensure that any phenomena studied is understood: independently (in its simplest form), and in its place with a wider system (both in its deterministic effect upon other parts, and in its general relation to other knowledge).

Whilst the ultimate belief of positivism is that there is a fundamental underlying system of laws which govern all phenomena which occur – the position concedes that no knowledge of this system can be considered complete, or absolute. In *The Logic of Scientific Discovery*, Popper states that this concession is inevitable: “*the old scientific ideal of episteme – of absolutely certain, demonstrable knowledge has proven to be an idol. The demand for scientific objectivity makes it inevitable that every scientific statement must remain tentative for ever. It may indeed be corroborated, but every corroboration is relative to other statements which, again, are tentative*” [112:280].

As a result, positivist theory is never viewed as final – but instead, tentative, quasi-absolute and subject to modification as additional information comes to be known; or new methods of measurement become available.

Key criticisms of positivistic approach

Within social sciences there has been a significant opposition to the application of positivism. Keat notes however, that this is often a consequence of a conflation of critiques against positivism as a singular entity, when these arguments should have been levelled upon several distinct approaches [79].

Despite this, positivism in the social sciences may be primarily criticised for its lack of consideration for the subjective experience of individuals; and their reduction of their input to numerical instances that affirm or contradict a stated hypothesis.

Guba presents several criticisms, the most significant of which are summarised below:

1. *“Exclusion of meaning and purpose”*
Humans, unlikely objects, *“cannot be understood without reference to the meanings attached by human actors to their activities.”* As such, there is a requirement for a qualitative dimension to research with human.
2. *“Disjunction of grand theories with local contexts”*
“The etic (outsider) theory brought to bear on an inquiry by an investigator... may have little or no meaning within the emic (insider) view of studied individuals.” Qualitative study encourages discovery the emic knowledge.
3. *“Inapplicability of general data to individual cases”*
Statistical data has no relevance to the individual experience. Qualitative data collection highlights the disparity between trends and single actors.
4. *“Exclusion of the discovery dimension in inquiry”*
Attempting to just verify an existing hypothesis *“glosses over the source of those hypotheses... the discovery process.”* Here reducing research to verification removes the possibility of uncovering new phenomena.
5. *“The theory-ladenness of facts”*
Positivism’s statement of hypotheses, theory defines the nature of supporting facts the research. This provides no likelihood that supporting evidence is sought that is independent from the a priori theory and hypothesis. This make it difficult for the research to be stated as objective. Qualitative research casts the net wider for the kinds of evidence may support a hypothesis.
6. *“The underdetermination of theory”*

“Known as the problem of induction...”; Guba notes that not only may theory shape the kinds of supporting evidence that is found – but that certain kinds of evidence may be supported by different theory windows. In this case; selection of the most applicable theory is arbitrary.

7. *“The value-ladenness of facts”*

“Just as theories and facts are not independent, neither are values and facts. Indeed, it can be argued that theories are themselves value statements. Thus putative ‘facts’ are viewed not only through a theory window but through a value window as well...”

8. *“The interactive nature of the inquirer-inquired into dyad”*

Positivism places the researcher in an observing relationship with the phenomena studied. With human subjects especially, it is impossible not to interact; and thus influence findings through research in practice [57:107]

As above, positivist research operates on the basis of a pre-determined hypothesis being proven to be true or false – to a varying degree. This encourages a narrower focus compared to other research paradigms – in which all suspected variables are accounted for before the hypothesis is made; and controlled for during the research activity itself.

Guba’s criticisms highlight key drawbacks. These are particularly concerned with: 1) a loss of reference to the individual’s experience; 2) an over extension of a priori general rules to dynamic and subjective phenomena; and, 3) the unwieldiness of a priori theory and its determination of findings.

This is also reflected in criticism of research methods typically employed for positivist research; wherein the data sought is that which proves, or disproves (typically through quantitative measurement) the research hypothesis; with little concern for peripheral research outcomes. In doing so, emergent variables or insights are secondary to the identification and validation of an expected effect.

As design research, this research tasks itself with understanding and accommodating the needs users as best possible; who may have many uniquely individual and emergent needs. As such, holding a pre-existing theory of a phenomenon and focusing on confirmation is problematic. Thus, contemporary research in social science, typically involves interpretivist approaches.

Interpretivism (or “constructivism”)

Broad tenets

Interpretivism (or constructivism, anti-positivism) is focused on the development of subjective knowledge. This perspective emerged as thinkers separated the natural world from social world. This is derived from Weberian sociology and Max Weber’s *Verstehen* approach which placed emphasis on empathy and understanding as key research aims within the social sciences [113:42].

The paradigmatic distinction between interpretivism and positivism is one of objective versus subjective reality. To an interpretivist, social reality does not exist externally to an individual as seen in positivism. Instead, emphasis is placed upon the concept that knowledge of reality and reality are one in the same; and are generated through a person’s perception of the outside world and their inner psychological experience. In this way, the paradigm subscribes to the notion that reality as it is experienced by humans is uniquely subjective to each individual. Chowdhury notes that it utilizes “*methods of the research which adopt the position that people’s knowledge of reality is a social construction by human actors, and so it distinctively rules out the methods of social science*” [28:433] referring to the application of methods of scientific measurement within the field.

Thus, interpretivism challenges the idea that social sciences can be studied through positivistic methods, as man-made phenomena have a crucial internal constituent (human psychology including; motives, ideas, beliefs etc.) unique to each individual who is studied. As such, subjectivity is actively sought after in interpretivist research, as a means to offer a more complete understanding of social phenomena being studied.

As a result; interpretivist studies avoid highly generalizable claims and objectives; focusing instead on generating as much varied insight from its participants as is possible. Furthermore, research outcomes are stated as non-definitive, contextual and limited in scope.

As a consequence, (and unlike positivism) verification as a research objective in interpretivist studies is only sought when study of a phenomenon has achieved a state where only peripheral knowledge is being gathered. At this point the principles of the phenomena being studied have been established through previous research. As above in

research purposes; this means that interpretivist research is typically suited toward exploratory research.

Knowledge is generated by engaging with and understanding, from those directly involved with a phenomenon – to uncover how and why it happens. In such cases, qualitative methods (e.g. interviews, ethnographies and focus groups) are typically used as they are more effective than quantitative methods in uncovering broader information about a phenomenon.

Sarantakos notes that the selection of a paradigm generally predisposes a research activity toward certain purposes; stating: “*positivist research, for example, is thought to have the aim of explaining and predicting social events, while interpretive research is more interested in understanding people...*” [121:16].

As the field of study concerns a fledgling area (especially where the investigation approaches the impact of different software tools upon personal photography). As such, a diversity of experiences is required through exploratory activity. Therefore, this research takes an interpretivist approach. With subscription to this paradigm, however, comes weaknesses that need to be addressed as best as possible within the methodology.

Criticism of interpretivism

As an inverse of positivism, interpretivist research is weaker where positivism is stronger; specifically, in the generalizability of the findings it produces. As such, within the social sciences, research tends to avoid making claims of universality.

The emphasis on the subjectivity of individuals, Sarantakos notes, equates to a “*failure to acknowledge the contribution of social and cultural mechanisms*” [121:41]. In this way; whilst individuals are viewed as reacting uniquely to the social world – the influence of broader “*mechanisms*”, as above, upon many individuals may result in similar outcomes. By focusing on the individual and their subjectivity alone, emphasis is taken away from the pervasive nature of broader effects which may be significant.

Furthermore; by championing the subjectivity of the individual, the interpretivist also invests into the perceived accuracy of their perceptions. Schutz notes in *Das Problem der Relevanz* (cited from his *Collected Papers*) [122] that the credibility of people’s conceptions of phenomena cannot be tested effectively – and must be viewed as potentially unreliable. Sarantakos presents other key criticisms which will have to be addressed in this research:

1. *“Adherence to the central elements of interpretivist inquiry (intention, reason, motives) is quite difficult to police, reflective monitoring is not always present”*
2. *“It is not possible to know whether researchers gain a true account of the respondents’ meanings, Accounts of the researcher and respondents may vary and be competing”*
3. *“Interpretivist cannot address the factors and conditions that lead to meanings and interpretations, actions, rules, beliefs and the like”*
4. *“Interpretivism is conservatism in that it does not take into account structures of conflicts and hence the possible sources of change” [121]*

Thus; core criticisms of interpretivist approaches centre around: 1) the difficulty interpreting respondents’; both through the difficulty of communication of subjective meanings, and their correct interpretation; and 2) primacy of focus on the individual meaning that broader effects that affect populations of respondents, are secondary to their unique experiences. As such; whilst this research is poised to take an interpretivist position; these several concerns must be addressed within the research. This both in terms of: optimizing the research; as well as not overstating the scope of the findings.

Deduction versus induction (linking research paradigm to methods)

The typical processes of deduction and induction can be seen below. These broadly coincide with the selection of either a positivist or interpretivist paradigm:

Deduction: Theory -> Hypothesis -> Observation -> Confirmation

Induction: Observation -> Pattern -> Hypothesis -> Theory

As above; in deductive logic, an existing theoretical logic is configured which leads to a hypothesis. The research methods measure the extent to which the hypothesis is true, by ascertaining the extent that the theory applies to the phenomena in question. Verification (and measurement) here allows for a phenomenon to be generalized to an existing body of knowledge. Use of qualitative methods is typically important; as not only may they confirm the hypothesis – they may also describe the strength of the experimental effect.

In inductive logic the theory largely emerges through the process of the research (observations are then correlated into patterns, which then form a hypothesis and theory). This, more open-ended approach to data collection, allows for the generation of a richer data set – encompassing a broader scope of the phenomena (e.g. including emic discovery) in question than through positivist deduction.

Thus, in the formulation of the methodology, it is critical to decide whether a positivist or interpretivist ontological position is taken in the form of a research paradigm. From this, the epistemology naturally follows; which then informs the selection of methods, and the structure of the enquiry.

In this case, an interpretivist paradigm has been selected.

Data collection methods (qualitative or quantitative)

As suggested above, use of certain data collection methods are more suitable than others under the umbrella of certain research paradigms. This short section provides further detail to this effect. Generally speaking, a research strategy may be comprised of quantitative or qualitative, or a combination of the two.

Quantitative methods are preferable where a large quantity of data is present beforehand, easily captured. Here, knowledge concerning a phenomenon, or coinciding variables is deduced from data via measurement and statistical inference. Data is thus sought which may be captured numerically (e.g. via surveys, through scientific measurement using sensors etc.) In this sense, quantitative methods are most appropriate within the positivist paradigm as an established theory base and a priori hypothesis allow for the measurement, and verification of a research claim.

Qualitative methods are preferable where an existing pool of knowledge in the research area does not exist. Here as above, a theory of the phenomena is thus induced through engagement with the phenomenon, and those directly involved. These methods produce textual data that is oral – both in terms of various forms of testimony from research participants, and themes which emerge. Data is thus sought which is captured in the form of text (e.g. via interviews, focus groups, case study, observation, ethnography.)

In the next section of the methodology chapter, the field of design research is reviewed historically. The purpose of this section is to establish the field of design research, methods and thinking, prior to the formulation of the methodology.

Positivism and interpretivism and the formal practice of design

The next section provides a history of formal approaches of design; and a brief outline of two contemporary models of design. The purpose of this section is to align formal design practice with the broader research paradigm this research will take.

Overview

Design as a practice is characteristic in that it evades definition. Today, 'design' essentially refers to formal approaches broadly employed to configure a product or service in order to create an optimal relationship with an end user. In this research it is significant that, historically, the ways design has been formally pursued – both academically and in industry practice – draw relevant comparisons to tensions between positivist and interpretivist practices within the social sciences (as discussed in the prior section).

Debates surrounding the design of products or services have been informed by either primarily subjective or object forms of evidence collection and development – focusing either on: catering for individual users, or meeting the demands of large populations through automated processes. Whilst the onus between these two approaches has shifted over the course of time; this section concludes that there remains a requirement in design to address the individual user's needs as best possible. This is reflected in contemporary methods.

Industrial revolution, modernism and "design science"

The first critical transformation in object creation came with the industrial revolution. Before, craft objects were created for users on a one-off basis and tailored to their needs. Mass production led to large amounts of identical objects being created in factories which needed to cater for populations of users en masse. From this, objectively informed methods of design were sought after. This resulted in a wider cultural zeitgeist seen in modernism in painting such as De Stijl, which sought to reach the "*logical conclusion of every artistic concept*" [3] and architecture; where proponents such as Buckminster Fuller began to seek a "*design science revolution*" [53]. In this climate; design methods emerged; with the first *Conference for Design Methods* taking place in London in 1962 [69]. This marked the beginning of work that sought to unify scientific methods with design. Examples included: Gordon Pask who sought to use early cybernetics as a means to objectively design shapes, noting: *the procedural aspect of design, can, incidentally, be fully mechanized*" [110:154]; then later Christopher Alexander's notion that as: "*the intuitive resolution of contemporary design problems simply lies beyond a single individual's integrative grasp*" [1:5], objective logic and the administration of design by computers (in the form of task optimization) was gravely required. Five years later, in *The Sciences of the Artificial*, Herbert Simon noted that design was distinct from the natural sciences – which are "*concerned with how things are*" – as it was an "*artificial science*" ... "*concerned with how things*

ought to be" [128:16]. Like Alexander, Simon's conclusion by this time was that the best use of automatic methods was not to replace the designer entirely – instead presenting options to select from.

The turn against design as positivistic science: wicked problems

It was soon argued that design could never be fully automatically administered. John Christopher Jones, founder of the Conference for Design methods took exception to "the continual attempt to fix the whole of life into a logical framework" [70]; Alexander also abandoned the field stating: "there is so little in what is called 'design methods' that has anything useful to say about how to design buildings ... I would say forget it, forget the whole thing" [2]. This consensus was characterised by Rittel and Webber in *Dilemmas in a General Theory of Planning*, wherein they described problems based in the social world as "wicked" in that they have "no solutions in the sense of definitive and objective answers"; instead being characteristic in their vagueness: "social problems are never solved. At best they are re-solved – over and over again" [115:160].

As such, the classification of design problems as "wicked" and embedded within society aligned formal approaches to design with interpretivism in the social sciences – in that it needed to seek out as much information about users as possible and cater for a diverse and continually changing set of needs. It was within this paradigm that familiar methods began to emerge (e.g. McKim's ETC and "design thinking" process [101:127]) – that utilize systematic science-like activity, whilst also encouraging subjective inputs from designer and user alike.

The zeitgeist: meaning, contemporary design practices, HCD and MCD

With renewed emphasis on the user, it became more important to engage with meanings (rather than ergonomics alone) when determining the efficacy of the design object. Kazmierczak proposed changing the goal of design "from focusing on designing things to ... designing thoughts or inferences" [78:48]. Semiotics had a precedent for use in interrogating meaning in this way [38, 62, 108, 124]; despite this Almquist and Lupton proposed generating pleasant contexts of use, by balancing affordances and meaning – as they argued manipulation of behaviour via cognitive semiotics was unethical. Crucially, "meaning" had become the zeitgeist within design, forming the basis of two contemporary approaches: Krippendorff's human-centred design (HCD) and Verganti's meaning-centred design (MCD).

A. *Human-centered design (HCD)*

Klaus Krippendorff defines design as “*making sense of things*” and sees design as “*interfaces*” from which meaning is drawn [84, 85:32]. Within HCD Krippendorff broadens design to a holistic systemic activity – drawing away from product and user-centric interventions. For the purpose of interrogating meaning, Krippendorff opts for product semantics over semiotics - which he viewed as limited in its abstraction for use in understanding stakeholders needs.

To Krippendorff, the stakeholders of a design include more than the user and their interface with the product, noting: “*designers are surrounded by intelligent professionals who have an interest in the outcome of a design process: clients, engineers, CEOs, financiers, sales people, and the members of institutions that provide data in preparations for a design or do research after prototypes are available*”) [85:63]. In *The Semantic Turn* Krippendorff proposed three primary design activities to undertake with these stakeholders: 1) Redesign the character of an artefact; 2) Make the internal workings of the product visible; and 3) produce original work from metaphors from narratives related (but external to) the existing device [84].

In each case designs are developed through grounded and iterative work to secure preferred outcomes, across the entirety of the network of stakeholders. Thus HCD is a comprehensive approach to design that addresses the generation of a product, at the granular level of subjective and interpreted meaning, but across macro-level systems of relevant actors.

B. *Meaning-centered design (MCD)*

MCD is the second of two models that is currently prominent in contemporary design culture. Like HCD, the aim of MCD is to transform meanings that underpin the user’s experience. Verganti’s proposition however, focuses on the potential for meaning to be the key of lucrative innovation activity (that is usually driven by radical technological change).

Prior to meaning becoming a core focus of design activity, designers were inherently involved in two types of design and innovation activity: market pull, and technology push. These occur over two axes of change: technology and meaning. This allows for four theoretical positions within design innovation activity within a product category (e.g. games consoles).

1. Low technological change, low meaning change (market pull)
2. Radical technological change, low meaning change (technology push)
3. Radical technological change, radical meaning change (technology push)
4. Low technological change, radical meaning change (*design driven*)

The first activity, represents a user-centred design activity, wherein Verganti notes “*user centred innovation [...] aims not to question and redefine dominant meanings but rather to better understand and satisfy them*” [136:83]. This emerges from Verganti’s held belief that the user’s lack of insight into the larger issues surrounding a product, typically results in incremental change.

The second kind of innovation activity (2 and 3 above) is pushed by technology change, which may or may not result in a radical change in meaning to the product. Each require technological progression, which cannot be summoned at the will of the designer – and rely upon costly research and development efforts. Dosi’s paper *Technological Paradigms and Technological Trajectories* provides insight into the complexity of summoning profound technological change [43]. Verganti’s aim is to encourage *design-driven innovation* (4) where design *alone* changes meaning, resulting in new products and positive market disruption.

Verganti offers the example of the Nintendo Wii, released in 2006. The console did not compete with Sony and Microsoft’s computing power; instead offering motion controls and simple games using pre-existing hardware. The Wii vastly outsold its competitors. Verganti notes: “*the design-driven innovations introduced by these firms have not come from the market but have created huge markets.*” [136:23]. This was certainly true of the Nintendo Wii – as focus on motion games opened up gaming to women and older players previously not catered for.

Verganti’s method is not as clearly articulated as Krippendorff’s. He splits the activity into four parts: 1) gaining a privileged perspective by immersing oneself amongst ‘interpreters’; 2) conducting forms of listening to these ‘interpreters’; 3) analysing the collected insights from the expert perspective of a designer; and 4) taking the required steps to bring the product to market. Whilst this does not offer as resolute a methodology as HCD; its strength lies in design’s role as the lone catalyst for profound change as a consequence of the activity.

Summary and significance

This brief section has reviewed the genesis of the formal practice of design ('design methods'). It has specifically focused on the extent to which design practice has historically operates within the tenets of interpretivism. In particular, the current zeitgeist within design concerns the significance of "*meaning*" in design artefacts; and the way in which users and other stakeholders draw upon this in their relationship with the artefact. This places importance upon the emic knowledge of the subject in the conception of designs - thus requiring knowledge and evidence gathering practices that directly involve users and wider systems of stakeholders. For the purpose of this research, this is doubly significant - in that personal photography (and its prospective design in the form of smartphone hardware and software tools) is itself a meaning-driven activity, driven by the emic psychological activity of technology users and their perception of their activities. This much is explored and confirmed in increased detail within the literature review chapter that follows this one.

Regardless; this section aligns design research with the wider paradigm of interpretivist research activity in the social sciences, wherein this research is placed. In addition; the findings of this research activity (design principles for personal photography identified through contemporaneous transformations) may then be utilized in a formalized design activity such as those above. This may take the form of a HCD approach within an existing company (e.g. working with experts to augment an existing smartphone photography tool); or through the generating new concepts utilizing MCD. This activity is slated for further work.

Formulating the research methodology, and selecting methods

Research questions, ontological and epistemological perspective

The first task required to establish the methodology for this research activity is confirming the ontological and epistemological perspective from which the research will take place.

To do so, it is useful to restate the research questions, and identify the most suitable ontological and epistemological perspective to take.

The primary research objective is to answer the question:

To what extent is smartphone hardware and software tools transforming personal photography; and how do these transformations inform design principles the design of personal photography?

The secondary research questions are:

1. What were the broad characteristics of personal photography, prior to the introduction of smartphone hardware and software tools?
2. What are the characteristics of personal photography enacted today, using smartphone hardware and software tools?
3. What key transformations have occurred as a consequence of the introduction of smartphone hardware and software tools?

And;

4. What principles for the design of personal photography can be derived from the transformations that have occurred as a consequence of the introduction of smartphone hardware and software tools?

This would suggest that an interpretivist approach is the most appropriate position to take (thus primarily drawing upon qualitative methods, and the process of inducing a theory of smartphone photography through the research activity). This decision is informed by the notion that (1) the research area is fledgling, therefore an exploration is required collecting information from a range and depth of smartphone photography experience; (2) smartphone photography is an expressive practice, and thus highly likely to be subjectively motivated; (3) as a piece of design research there is a latent bias toward exploration rather than verification. Despite this, the purposes of the research complicate this approach slightly – as they draw upon a desire to compare historic practices of personal photography to those undertaken using smartphones. This complexity, and its consideration in formulating the methodology from the stated purpose of the research is discussed in the following section.

Link between research purposes and data collection methods

Certain data collection methods are more suitable than others for achieving each research purpose (as per Robson and McCartan above).

For example, to achieve a description, it is more suitable to use quantitative means of measurement. This is because quantitative data and analyses provide the researcher with

a means to report the strength of the experimental effect. Thus findings, analyses and discussions necessarily involve the reporting of how strongly the research hypothesis has been proven true. In this way, quantitative approaches are, by their nature more precise means of description; utilizing methods which generate numerical data (e.g. numerical surveys, rating scales, experimental measurement etc.).

To explore a phenomenon is more of an open-ended purpose. Here qualitative methods surveys (unless designed to be open-ended) may constrain the potential for the research to uncover unanticipated facets of the phenomenon being studied. Thusly, in-depth interviews, ethnographies, observation and focus groups are used to gather as much data around the phenomena being studied as possible. This may be done before a theoretical framework is strictly applied – in order to develop a more general understanding of the phenomena being studied.

Similarly, to explain; methods are needed which focus on isolating (and measuring) the perceived causality of two coinciding phenomena from any other external influences. As such, depending on the nature of the phenomena being studied – a mixture of the above may be used. For example, the relatedness of two phenomena may first be explored through observation, ethnography and focus groups. Then the extent of their relationship may then be measured through experimental means.

To emancipate; methods are required which embed the research within the context of the phenomena and empower relevant stakeholders; both as the research takes place – and thereafter. As such, there is an additional rationale to record and measure the extent to which these stakeholders have been emboldened by the research. Establishing the overall purpose of this research activity, and the secondary purposes (which might be considered research objectives) can be helpful informing the optimal methodological design beyond the fundamentally interpretivist epistemology it will take.

Notably, the purpose of this research is not emancipatory. However, the logical structure of the research enterprise does touch upon the three other core purposes of real-world research.

These purposes can be derived from the primary research question (and sub-questions):

The primary research question:

To what extent is smartphone hardware and software tools transforming personal photography; and how do these transformations inform design principles the design of personal photography?

(**Description** of transformations in personal photography as a result of profound technological and design change; and an **exploration** of how these can inform new design principles.)

The sub-questions:

1. What were the broad characteristics of personal photography, prior to the introduction of smartphone hardware and software tools?

(**Description** of core principles of personal photography – prior to the usage of smartphone hardware and software tools.)

2. What are the characteristics of personal photography enacted today, using smartphone hardware and software tools?

(**Exploration** of contemporary practices of personal photography achieved through use of smartphone hardware and software tools.)

3. What key transformations have occurred as a consequence of the introduction of smartphone hardware and software tools?

(**Description** of key differences between personal photography practices; prior and post the usage of smartphone hardware and software tools.)

4. What principles for the design of personal photography can be derived from the transformations that have occurred as a consequence of the introduction of smartphone hardware and software tools?

(**Exploration** of how the above findings can inform the design of software tools.

Answering each of the above questions requires its own section of the research activity.

1. The core principles of personal photography, prior to use of smartphone hardware and software tools, will be **described** through literature review.
2. The characteristics of personal photography enacted today, using smartphone hardware and software tools will be **explored** through a suitable qualitative data collection process with smartphone users.
3. A **description** of the key transformations consequent of the introduction of smartphone hardware and software tools will be achieved through an analytical comparison of (1) and (2).
4. An **exploration** of how transformations identified through (3) can inform the design of personal photography will be achieved through discussing how they might be applied in new designs.

Prospective qualitative data collection methods

The next section of this review covers a requirement to establish the most appropriate method for qualitative data collection, (between focus groups, observation and digital ethnography) in the case of this research activity.

Each of these sections is split into two sub-sections; concerning formal concerns surrounding those methods, and those relevant to this specific research activity.

C. Focus groups

Focus groups are a form of interview; wherein a social phenomenon is studied through asking groups of participants about their experiences with it. These interviews can be structured, semi-structured or entirely unstructured. Typically; the more structured the interview is, the less “depth” or digression is allowed in responses. This links directly to the extent to which the research activity seeks explore the potential diversity of responses around the phenomena.

It is noted by Robson and McCartan that interviews (individual or in groups): *“can be used as the primary or only approach in a study... however, they lend themselves well to use in combination with other methods, in a multimethod approach [117:270].*

King offer a set of criteria wherein interviews (including focus groups) are most appropriate. These are recreated in Table 2.3 below. These aspects are discussed in the following sections of this review.

Robson and McCartan note that a significant aspect of interviews is “*question focus*”. This refers to the optimal design of the questionnaire in order to achieve the most useful responses. They state: “*the best responses are obtained to specific... as opposed to general questions about important things, in the present or recent past*” [117:272]. As such, depending on the desired outcome, interviews require planning to produce optimal data.

As stated above, focus groups are a certain kind of group interview, which have emerged from the tradition of market research in the 1920s. Advantages of this approach include: the ability to follow up on responses and thus explore previously unidentified and emergent areas relating to the phenomena being studied (this is akin to the “discovery” component of research highlighted as a strength in the interpretivist paradigm).

1. Where a study focuses on the meaning of particular phenomena to participants
2. Where individual’s perceptions of processes within a social unit – such as a word-group, department of whole organization – are to be studied prospectively, using a series of interviews
3. Where individual historical accounts are required of how a particular phenomenon developed – for instance a new shift system
4. Where exploratory work is required before a quantitative study can be carried out. For example, researchers examining the impact of new technology or social relationships in a workplace might use qualitative interviews to identify the range of different types of experience which subsequent study should address
5. Where a quantitative study has been carried out, and qualitative data are required to validate particular measures or to clarify or illustrate the meaning of the findings

Table 2.3: King’s circumstances in which interviews are the most appropriate method [83:16-17]

Focus groups are noted as advantageous because: 1) they collect a volume of data from people about a phenomenon at the same time (and are thus, more efficient than interviews); 2) multiple participants tend to focus each other on important topics, and limit deviation; 3) participants are likely to be encouraged to contribution by group participation, and provoked by others’ responses.

Focus groups: formal concerns

Robson and McCartan “*interview and questionnaire responses are notorious for discrepancies between what people say that they have done, or will do and what they actually did, or will do*”

[117:310]. Issues arise from “*deficiencies in memory*” and the desire to present oneself positively within the research activity.

Unlike observation (see below), focus groups do not directly study a phenomenon; instead it is approached through the accounts of respondents (which may be inarticulate or subject to bias).

There is a requirement from the interviewer to effectively moderate the activity in order to encourage responses from less forthcoming respondents; keep responses on topic. Furthermore, because of the degree of subjectivity in play, and the relatively small amount of participants, it is difficult to generalize the findings to the wider population. Finally, it is noted that it is often the case that the researcher may often overstate their findings [117:285].

Focus groups: concerns relevant to this research

- There is a concern relating to the potential for significant discrepancy between how participants describe their activities – and the actual nature of their relationship to smartphone photography.
- Furthermore, even if responses are accurate; the researcher is only able to comment upon participants’ perceptions and attitudes toward their behaviour – as it has collected no direct data about the actual phenomenon itself.
- The interviews themselves would have to be managed effectively to ensure that participants are comfortable and engaged with the activity. Furthermore, the focus would require attention to ensure that the structure of the interview is effectively adhered to.

D. Observation

Observation is a qualitative method which gathers data about a social phenomenon by looking directly at participants’ interaction with it. In the case of this research; an observational approach would require observing and recording information about participants conducting personal photography practices through use of their smartphones.

It is noted that observation is particularly useful in that it studies the phenomena directly; therefore, there is no need to ask respondents about their conception of the phenomenon.

Observation is also notable in its potential for use as a means of substantiating other methods (particularly those in which participants provide their own account of phenomena) [117:310].

Observation: disadvantages

1. A major issue with observation are “observation effects” that the act of observing participants may alter the kinds of behaviour that they exhibit on account of being watched. Robson and McCartan note that this may be alleviated by ensuring that the participants being observed in their activity are unaware of this taking place [117:311].
2. Robson and McCartan note that a second concern with observation is that is extremely time-consuming: “*the classical participant observation study, deriving from social anthropology, demands the immersion in the ‘tribe’ for two or three years*” [117:311]. This typically limits the research to a long-term, costly case study with few participants.

Observation: concerns relevant to this research

- Observation of personal photography undertaken through use of smartphones is possible. However much of the activity which this research is concerned with occurs online. Despite this; whilst some of the outcomes of the practices are observable (whether in person or by tracking online behaviour) – aspects of the practice (e.g. motivations, procedural decisions) are not – and are only accessible through discussion with respondents.
- In order to generate the required amount of qualitative data; the research would have to observe participants conducting personal photography practices for an extended period of time. The time, and economic commitment associated with this prospective activity is beyond the scope of a PhD study.
- Ethically speaking; there is a requirement for informed consent in observational studies. However, if observed, participants within studies are known to alter their behaviour for various reasons (e.g. to present themselves positively, to fulfill the research criteria). As a consequence, this induces a Schrodinger’s Cat-style problem – where it is difficult to ascertain whether the research is actually observing unaltered behaviour.

E. *Digital ethnography*

Observation is a form of ethnography which refers to following and studying participants as they interact with a phenomenon in the real world. Forms of ethnography have emerged in recent times which study people in online spaces. This is referred to as digital ethnography, but is otherwise known as cyber, virtual or online; ethnography. For the purpose of this thesis however the prefix digital will be utilized.

Digital ethnography thus accounts for a series of different methods that may be used in order to explore the behaviour of human participants within digital contexts. This is reflective of the emergence of many new forms of technology which have provided people with social contexts online which they are able to interact in (e.g. social networks etc.) In this sense there are as many potential methods as there are contexts and activities to study.

As such, it is clear that this data collection method could be effective within this research. Wherein a digital ethnography would involve the observation of a set of people's personal photography practices online. Such a method might include recording their images, annotations, across several photography and social platforms for review.

As above with observation, a strength of this approach is that what is being studied is 'the thing itself' rather than its interpretation by participants (who again may alter their responses due to social pressures, lack of articulation or biases).

Digital ethnography: formal concerns

Whilst it appears that things that occur online are contained there, it's noted that: "*virtual reality' is not a reality separate from other aspects of human action and experience, but rather a part of it*" [60:160]. As such, digital ethnographies often ignore the aspect of behaviour which occur in the real world. Though, as above it is notable that different methods may involve differing degrees of interaction with the participants' behaviour in real world contexts.

Furthermore, Robinson and Schulz note that digital ethnographies are characterized by a requirement for advanced knowledge of the sites they wish to study as well as relevant analytical tools. Furthermore complicating this is the likelihood that these technologies change at a rate that is often faster than the methodology used to study them [116].

Digital ethnography: concerns relevant to this research

- Digital ethnography has similar drawbacks as an approach as observation. However, the focus would instead be upon participant activities as they occur in online spaces. Whilst a focus is upon the 'thing itself' rather than participant interpretation of their activities - limitations exist in discounting participants' real world actions and discussing their motivations with them.
- As with observation, conducting a digital ethnography is a resource heavy activity. Whilst cost is cheaper (as the participants can instead be studied online; there is still a large investment in time and expertise in order to generate a depth and quality of data. Within the scope of this PhD research activity it would be difficult to commit the requisite time and resources for digital ethnography to be the primary method of data collection.
- Ethical concerns also impact digital ethnography (in the same way that it affects observational study). Participants would have to provide informed consent; which would alert them to the scope of the study. This would potentially result in observer effects that would put into question the reliability of the data being collected.

F. Summary

This section has briefly reviewed the potential data collection methods for this research activity. Each are shown to have advantages and weaknesses for the purposes of this research.

Given the limitations time and resources; observation and digital ethnography are discarded as the primary data collection methods. This is primarily a consequence of the commitments required to produce the quantity of data required to fulfill the research objectives.

In addition; it has been noted that observation only take into account participants' activities; and not their motivations and thoughts surrounding the activity itself. As personal photography is itself a subjective activity completed for a number of different reasons - the capture of participants' testimonies is of heightened importance. This is reinforced by the stated research objective to "*explore*" contemporary personal photography - which infers a broader scope of information being captured.

As such, this research will utilize a set of focus groups as a means to collect the data. These focus groups will take a semi-structured format. This is to ensure that whilst the scope of

the data collected explores, with as much depth as possible, the nature of respondents' experiences – there is an underlying structure which frames the kinds of findings being sought after. As per McCartan and Robson: *“interviewers have their shopping list of topics and want to get responses to them, but they have considerable freedom in the sequencing of questions, in their exact wording, and in the amount of time and attention given to different topics”* [117:278]. This will allow for the research to maintain a broad enough scope for participants to offer unexpected insights in relation to their practices; whilst providing a rationale to the questions that provides adequate structure to the activity.

Methodology Summary

This chapter of the thesis has provided an overview of the relevant considerations for formulating a methodology within contemporary social science research (from paradigm, ontology, epistemology, methodology and methods). In addition to this an account was given of the historic progression of design methods, as well exploring relevant contemporary design methods. Following this, a set of different methods were considered and reviewed for data collection.

This research takes an interpretivist perspective, and will use a set of semi-structured focus groups with users to explore photographic practices they undertake using smartphone hardware and software tools. The findings of these groups will be subject to a comparison with the framework established through the literature review. Through comparison, significant deviations from the established framework will be highlighted. In term these will inform a set of design principles as one of the outcomes of the thesis.

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CHAPTER 3: LITERATURE REVIEW

Purpose of literature review

The purpose of this literature review is to address the first of the main research questions and objectives. Thus, the literature review must provide a theoretical framework outlining the salient principles of personal photography, prior to the use of smartphone hardware and software tools.

In order to achieve this, the literature review is split into five sections.

- 1) Photography theory
- 2) Personal photography
- 3) The extended self in the digital world
- 4) Summary of personal photography; theoretical framework

These sections address: 1) the fundamental ontology of photography and photographic images; 2) its use in personal practices by non-professional users; 3) the role of photography in self-concept within digital life; and 4) relevant theories relating to the emergence of networked communications.

Key themes within these literature bases will be used to provide an overview and framework of the fundamental principles of personal photography; prior to the use of smartphone hardware and software tools (including earlier digital photography technologies).

The framework will then be used to interrogate the findings of the focus group activity; providing a means of comparison. Here, the transformation, or stability of these categories through the review of the focus group material will provide insight into significant changes that have occurred in contemporary practices through use of smartphone hardware and software tools.

Photographic theory

Prior to approaching an understanding of personal photography before use of smartphone cameras (that is the use of photography by everyday non-professional users), it is important to establish the fundamental ontological principles of photography. These underlying principles account for the unique nature of the photographic image; and its uses within visual culture.

As such, this section of the literature review is split into two parts.

The first section details the emergence of photography and digital image and their impact upon visual culture as a whole. It places emphasis on the unique traits of the photograph over other forms of visual representation. It then provides a brief overview of the introduction of digital imaging, the foundation of digital photography. The purpose of this first section of the photography theory review is to provide a historical overview through which the theoretical arguments of the second section may be understood. Throughout, where applicable, points in the timeline where theoretical aspects of photography are significant are signposted.

The second section reviews a host of theoretical positions surrounding photography; creating an overview of the ontology of photography and the photograph.

The emergence and impact of photography on visual culture

Etymology and clarification of “photography” and the “photograph”

The words photograph and photography are derived from the Greek terms: “*photo*” and “*graphos*” which translates to “*light*” “*drawing*” [93]. Photography was also initially known as heliography for a time (derived from ‘*Helios*’, meaning ‘*sun*’). In both cases, the etymology directly describes the unique method that photographs are made – drawn (or marked) by light itself.

The Merriam-Webster dictionary expands upon this, defining photography as: “*the art or process of producing images by the action of radiant energy and especially light on a sensitive surface (as film or an optical sensor)*” [103].

Thus, any kind of photograph (including film or digital) is the product of this process. It is a kind of image produced as a consequence of light (or other radiant energy) interacting with a photosensitive surface. Furthermore, a photographer is a person who creates images using this method.

The word camera today refers to the device a photographer uses to complete this process. It is derived from the Latin term “camera” meaning “vaulted room”. This term was later used when describing the “camera obscura” “dark chamber”; a technical precursor to the earliest devices used to create photographs (see below).

It is important that we understand this as the precise definition of “photography” (and by extension, the “photograph” as an image produced thusly); as a distinct physical process. Therefore, its use to describe practices that involve photography is an overextension which often results in a range of concepts being attached to the terms imprecisely. Crucially, however the photograph is a unique kind of light-produced image; which upon its advent, transformed visual culture.

The emergence of photography: the camera obscura

The precursor to photography was the camera obscura, a tool used in draftsmanship. The earliest surviving description of this was written by Leonardo da Vinci in 1490 [61]. The camera obscura consists of a large dark room which the artist physically enters with a small hole in one side. Light entering the hole, projects a horizontally and vertically inverted image of what the aperture is facing on the opposite wall. This projection is then traced by an artist (Fig.3.1). This design was refined with a further mirror to normalize the perspective of the projected image and demonstrated in 1553 by Giovanni Battista della Porta [109].

The apparatus allowed artists to draw the subject using realistic proportions and perspective, helping them to achieve greater accuracy than drawing by eye where errors and subjectivity would result in less precision. However, the camera obscura (and later the portable ‘camera lucida’) were different from cameras today as they did not automatically fix the impression of light onto the page. Instead they only acted as a guide for the artist to draw from. Automatic fixing of images would not be achieved until the mid-1800s.

A desire for increased realism in painting leading to desire to fix projections

Realism became an active concern in painting during the 19th century. Realist movements emerged that reacted to the perceived extravagance of Romanticism by representing unromanticised depictions of the working class and rural life in painting. In addition, this commitment to realism extended beyond image subject matter, to a desire to for greater accuracy and detail in representation [48].



Fig. 3.1: representation of the camera obscura from *De radio astronomico et geometrico* [51:39]

In parallel with this ambition, the increased use of the camera obscura and camera lucida in representational practices led to the idea that its projection could be fixed given the correct circumstances.

Crucially this would remove the need for the artist to intervene between a subject and its recorded image at all – thus, eliminating unavoidable subjectivities, biases and errors associated with the manual recording and rendering of realistic images. The attribute of veracity and perceived objectivity is significant and explored in depth in the theoretical section of this review.

Technical precursors leading to deliberate attempts at photographic fixing

The Focal Encyclopaedia of Photography notes that earlier research had discovered the sensitivity of silver nitrate to light (e.g. Johan Heinrich Schulze in 1725) and that unexposed silver chloride can be dissolved using ammonia (Carl Willhelm Scheele in

1777). These discoveries underpinned photography as they would become the basis to both: expose, and fix images [111]. These experiments however were not deliberate attempts at achieving fixed photographic images.

Whilst the exact dates of his experimentation are unknown; Thomas Wedgwood was the first person who purposely tried to create photographs, exposing images on leather and paper using silver nitrate. However, he did not know how to fix them (which could have been achieved using Schulze's process; and the still sensitive images were deteriorated when exposed to additional light [109:13].

Thus, up until this point photographic images were not permanent or persistent depictions of the past; but would deteriorate exposed further to light, and thus, upon being seen. The attribute of permanence is significant, and is discussed later in the theoretical section of this review.

Joseph Niepce (in 1826) and Louis Daguerre (in 1835), in turn, were responsible for the creation of the first lasting photographic images. Critically, both processes included a step which washed away unexposed silver compounds after the initial exposure, preventing subsequent change to the image.

Several other discoveries followed, including a process developed by William Henry Fox Talbot in 1835 achieving stabilized "*photogenic drawings*" on paper. Soon, Fox Talbot and Daguerre (who became an apprentice of the Niepce, who later died) competed for credit for the invention of photography. Daguerre achieved this first, receiving recognition and a pension for the discovery from the French government in 1839. Despite this, Fox Talbot's "*calotype*" process closer corresponds to how photographic technology would go on to develop.

Daguerre's daguerreotypes were exposed as positive images upon individual silver plates. As a result, each daguerreotype was a one of a kind image.

In contrast, Talbot's calotypes, involved the creation of a negative image; which then subjected to further processes, could be used to create multiple positive images [111:27-29]. Thus; Talbot's process (and those which would follow) offered a crucial attribute to photographic images – reproducibility. The significance of this is discussed later in the theoretical section of this review.

Impact of photography on existing representational practices in art

The invention of photography had a significant impact on existing representational practices. Upon seeing Daguerreotype images, it is widely said that realist painter Paul Delaroche infamously proclaimed: “*from this day, painting is dead*” [29:15]. This quote is oft cited as an exemplar of the reaction painters had to photography achieving realism beyond the capability of manual rendering.

The significance and tone of this statement is bolstered when it is considered that the photographic camera would have likely been seen as a refinement of tools used by artists for centuries prior – albeit one which now removed the manual role of the artist from an age old process of image creation. Instead the image recorded and is then rendered through an automatic and objective physical process. This autonomy of rendering is a significant attribute of photography which is explored further in the theoretical review.

Despite this, in reality McCouat notes that others were sceptical of the new medium’s threat to painting. In particular, there were doubts concerning photography’s inability to reproduce colour and action at the time, due to various technical limitations (e.g. exposure time, optical clarity etc.) McCouat also notes other artists, including Gustave Courbet, welcomed photography it as an “*ally in his reaction against the classical academic style*” of painting which had become restrictive and too formally based upon achieving realism through prolonged study of a subject [100], In this way; whilst photographic images are often taken at face value as accurate representation of an instance in past reality; they can, in some instances, be technically limited in their scope. This idea is explored further in the theoretical section of this review.

Following the invention of photography, movements in painting focused upon more abstract and expressive forms of representation. The first of these was impressionism, led by Monet. This movement tasked itself with representing colour and action which had not previously been the emphasis of painting (and were weaknesses of photography at the time). The latter is noted in *The Painter of Modern Life* by Charles Baudelaire in which he says: “*there is a rapidity of movement which calls for an equal speed of execution from the artist*” [9:4]; thus, focus in painting shifted onto representing transitory subjects (such as sunsets and bodies of water which rapidly change in form and colour), exemplified by a speedier and less studious painting.

Early impact within non-artistic representational practices

Photography also began to significantly impact broader representational practices in society. Two notable examples are outlined below.

The first photographs within newspapers were seen in the *Illustrated London News* in 1842 [61:6]. These photographs replaced images which were hand illustrated; and then reproduced using printing presses.

Furthermore, Mnookin states in *The Image of Truth: Photographic Evidence and the Power of Analogy* that photographic evidence had also begun to be used in American courtrooms during the latter half of the 19th century. In doing so, Mnookin notes that this was evidentiary of two perspectives, that: “*the photograph was viewed as an especially privileged kind of evidence*”; (where evidence is a single fact which supports a case) and: “*the photograph was seen as a potentially misleading form of proof*” (where proof is seen as sufficient argument to claim truth) [106:4].

Within both examples the photographic image was valued as a privileged kind of visual representation which could be taken as a true depiction of a moment in space and time. In each case, the photographic image is thus seen to improve upon weaknesses in manual representation (e.g. improving upon illustrations; and providing true to life representation in the courtroom).

As such, this the emergence of photography was not only significant in art practice; but perhaps more so in other contexts such as the above; where objective visual representation and distribution of facts were sought after. Aside from the above examples, McCouat notes it is difficult to isolate the impact of photography upon prior forms of visual representation (and vice versa) [100]. Despite this, it can be concluded that photography and photographs were embedded in, and significantly impacted pre-existing ways of seeing and representing the world.

This research is more predominantly concerned with the impact of photography upon populations of every day users. In the 19th century however, photography was not available to everyday users; and largely remained a hobby for enthusiasts and entrepreneurs. As such, personal photography as a large-scale social phenomenon, did not exist; and the photography that did was firmly based within the tradition of the

representational arts. This would change in 1900 upon the release of the Kodak Brownie, and the widespread emergence of populist photographic practices.

Photography for all: the success of the Eastman Kodak Brownie

The Kodak Brownie is widely regarded as the first camera to place photography in the hands of everyday users. Prior to the Brownie's release, George Eastman (founder of Eastman Kodak of Rochester, New York) made a series of innovations that would make smaller, cheaper and more convenient cameras possible. This included the creation of flexible film in 1888, a winding mechanism that allowed the camera to be primed automatically after each exposure. These innovations had been put into place prior to the Brownie for Eastman's range of more expensive "Kodak" cameras. Eastman simplified the process even further though providing a development service [94]. To promote this idea, the slogan was introduced: "*You push the button we do the rest*". Despite this, the Kodak camera was, for the most part, still too expensive for the general population to widely adopt it.

The Brownie however was designed as an iteration of these cameras for children; with a more affordable price of \$1. As a consequence of being for children the Brownie's marketing placed increased emphasis on the development service where images would be printed, and their camera recharged with 100 more exposures for \$2. This led to incredible popularity from children and adults alike - with subsequent Brownie models being marketed to all ages. This breakthrough highlights the significance of simplification and decrease in cost of photographic technology in its successful uptake by the general public.

Upon the release of the Brownie, George Eastman stated: "*Photography is thus brought within reach of every human being who desires to preserve a record of what he sees. Such a photographic notebook is an enduring record of many things seen only once in a lifetime and enables the fortunate possessor to go back by the light of his own fireside to scenes which would otherwise fade from memory and be lost.*" Thus to Eastman, photography and persistent photography represented a revolutionary tool of memory - which, with the release of the Brownie, he had made available to all [120:21]. Memory would become an important function of photography thereafter. This concept is explored in greater detail in the theoretical section of the review.

The success of Brownie cameras established Kodak the company as the industry leader in consumer photography until the emergence of digital imaging. The camera featured a simple single-element meniscus lens – as a consequence, *The Focal Encyclopaedia of Photography* notes that the 6cm images produced had: “a relatively wide and fairly flat field of view, but not without significant and immediately apparent flaws [111]. Whilst the Brownie’s image-quality produced was poor by today’s standards, the handheld camera allowed anyone to capture subjects from a distance of 8ft. at the flick of a switch. Furthermore, the brownie did not have a viewfinder; and was generally held and used at the waist level.

The sudden ubiquity of cameras such as the Brownie combined with an informal and untrained style of usage resulted in a transformation in photographic practices as a whole – establishing the significance of ‘snapshot photography’ in representational practices and visual culture.

Snapshot photography: untrained users and rapid exposures

Whilst it employed the same fundamental process as photography before it – in *A Social History of Photography* Robert Hirsch notes that the snapshot: “is based on vernacular (colloquial) attitudes rather than the trained sensibilities of Western European art.” Thus, Hirsch notes: “the attitude if the snaphooter was direct, spontaneous, and matter of fact, casually exploring the pleasures of everyday life rather than the subject of photography” [61:138-139]. These practices contrasted greatly from precedent; but were supported by the widespread photographic technology that everyday users had suddenly gained access to.

Prior to the Brownie and its ilk, cameras had small apertures, and low photosensitivity – as such, the time required to create an image could extend beyond 30 seconds. As a result, early photography was technologically restricted to static subjects (e.g. landscapes, still-life and portraits in long sittings). This was consistent with previous practices in visual representation (particularly in the academic realist tradition where photography had, in part, displaced painting and drawing in the 19th century).

However, with the Brownie and cameras like it at the turn of the 20th century; required exposure time had decreased significantly. In tandem with more sensitive chemical processes, the progression of lens capability over the 19th century was important in helping to achieve this. Significant improvement was limited by the inherent physical properties of glass and the light, until 1880 when Ernest Abbe (whilst working for Carl Zeiss) was able to develop new types of glass. This resulted in both greater image-clarity

as well as the ability to increase aperture size on lenses – allowing more light through the lens, decreasing the time needed to expose an image [111:191].

The widespread novel ability to capture subjects more informally and candidly threatened the initial conception of what a photograph was, and should be. The underlying nature of the photograph had seemingly changed, with the static photograph accounting for an imperceptible slice of time rather than an extended duration (between 1/35 and 1/50th of a second in the Kodak Brownie). In practice, this meant that images could be captured at speeds fast enough to record subjects in rapid motion without significant distortion.

This technical achievement was most famously demonstrated by Eadward Muybridge in 1877 (using methods developed by Étienne-Jules Marey). Muybridge used a series of synchronized exposures of approximately 1/1000-1/2000th of a second to capture a series of images of a subject in motion. This also established the basis for motion pictures, where series' of images are played rapidly, representing motion to an audience [109:119-120]. Infamously, a horse was depicted in one of Muybridge's recordings - allowing human eyes for the first time to see whether all of its hooves left the ground at any point while galloping. At that particular moment, photography surpassed a limitation of human sight, making viewable something previously undetectable to the human eye.

This was one example of the manner in which photography also allows humans to extend their vision beyond its natural limitations. The concept of photographic seeing in this way is explored in the theoretical section of the review.

Thus, images produced in the snapshot tradition were completely at odds with the photographic tradition that had preceded it; simply because sub-second exposures were physically impossible to achieve; and the explosion of snapshotters meant this new style was shaped by widespread vernacular, untrained practices.

Formal resistance to colour photography

Over the course of the 20th century consumer cameras would develop on a largely incremental technological basis (see Verganti [136] above). However; one demand placed upon the technology was the development of colour photography. It took a significant amount of time for colour photography to be developed; as the chemical technology required to do so was a magnitude more complex than that of black and white photography.

Unlike black and white photography, colour would have to discriminate between different wavelengths of light to expose the gamut of colours in place before the camera, to then reproduce them accurately in print. Furthermore, the increased complexity of the colour process often meant that the film was less sensitive, increasing the length of exposure times significantly above what photographers had grown used to.

Despite these technical challenges, Kodak's dominant position in the market meant that when they introduced their refined Kodachrome, Kodacolor film in 1942, it was successfully adopted [111:345]. Crucially the uptake of colour film was something that initially occurred within advertising, magazines and then the general public in the 1960s, before it was accepted by formal practitioners of photography – including Henri Cartier-Bresson who in an interview with Sheila Turner-Seed stated:

“It's disgusting. I hate it... the reason is that you have been shooting what you see. But then there are printing ink and all sorts of different things over which you have no control whatsoever. There is all the interference of heaps of people, and what has it got to do with true colour?” [134].

Whilst the refinement of colour film, would eventually lead to its widespread acceptance; the resistance by Cartier-Bresson and others in the formal practice is notable. It demonstrates that certain formal values in photography (within certain practices) can conventionally override acceptance of technological progression. In this case, the concept and value of photography's formal aesthetic, based on tone and existing processes was challenged by colour. Furthermore, it is notable, the use of colour photography within advertising was viewed as a rallying point.

This section however illustrates that within cultural practices of photography; certain attributes of photography and the photograph can be arbitrarily and conventionally valued over others. As such, within society, and individual practices certain ideas prescribed to photography and photographic images are autonomous from the fundamental process itself. The next section provides a short overview of the next major transformation in photographic technology, the invention of digital imaging technology.

Digital imaging revolution

As with snapshot photography, the emergence and popularity of digital imaging technology in the late 20th century was fundamentally transformative to conventional understandings of the photography and photographic images. It may be argued, that the

displacement of chemical photography by digital imaging was more impactful to photography than any of the changes that preceded it.

Digital imaging technology was first created in Bell Laboratories in 1969 - where research resulted in the creation of the charge-coupled device (or CCD). Steve Sasson at Kodak in 1975 used a CCD to create the first known electronic still image camera, with a 100-by-100-pixel resolution in monochrome. Initially the technology was only being used commercially for video cameras (as the technology was an idea derived from televisual technology). This changed in 1981 with Sony's presentation of the "Mavica"; which was the first digital camera available to consumers offering still photography [111:49].

The CCD was the first mechanism which allowed images to be created electronically. The core components of the CCD are: photo-diodes, *"a charge transfer gate, and a vertical CCD shift register"*. The photo diodes register light information, processing them into electrical charges, this allows them to then be transferred and then stored as digital information *"by means of the transistor gate"* [111:403].

Thus the digital photograph exists as data rather than as a physical recording of light. As such, a data value is recorded for each pixel on the sensor that describes the nature of the light striking it during the time of exposure. This digital data can thus be used to reproduce the image on digital displays (e.g. computer monitors) or through printing. Notably, colour imaging was achieved in digital imaging shortly after through the use of a set of RGB filters over adjacent pixels - computing values for the presence of each hue [111:364].

Digital imaging is a fundamentally different technology from the various forms of analogue photography that came before it; switching from chemical to electronic production of photographs. As with colour photography the invention of digital imaging resulted in a cultural backlash within photography (this is explored in the theoretical section of this review). Despite this, when revisiting the original definition and etymology of photography at the beginning of this chapter, it is still a process that is encompassed by the definition.

As such, it is notable that photography as a cultural concept can be resistant to significant technological transformation. Criticisms of digital imaging, and the significance of the above explored in the theoretical section of this review.

Summary of points emerging from development of photographic technology

From the historical overview given above; a number of significant attributes of photography and photographic images can be surmised as a useful foundation for theoretical review.

These include, stemming from the above review of photographic history (including a summary of points):

The perceived veracity and autonomy of photographic rendering

Photographs are a unique kind of image because they are rendered by a quick automatic process. Because of this automation; they are taken at face value as accurate recordings of a specific time and place.

The significance of reproducibility

Photographs (from negative-positive process to digital imaging) are an innately reproducible kind of image. This is significant as it allows for a single moment in space and time to be dislocated and represented in many different spatiotemporal contexts simultaneously.

The role of permanence, persistence in photography and memory

Photographs are perceived as objective recordings of a time and space. These recordings are practically permanent; allowing photographers to use them as visual mementoes for things they wish to remember. This has largely become a core function of photography in society.

Limitations of photographs as a rendering of external reality

Whilst photographs represent, and are taken as an automatically rendered depiction of what was placed in front of the camera; there are a number of way in which photographs are limited as renderings of external reality. For example, they are a moment, or framing which are privileged above an infinite amount of others.

Photographic seeing as extension beyond human phenomenology

In other ways, photography extends the ways that photographers are able to see the world. As with Muybridge (and Marey), fast exposures have allowed for imperceptible moments to be captured. Equally the scale of the world can be altered through images, with large objects being reduced to a small scale, or small (or even microscopic) objects being “blown up” to larger proportions.

Importance of simplification in popular uptake of photography

Popular uptake of photography has relied on cameras and photographic services which reduce the complexity and cost of processes. There is thus a requirement in everyday photography to forego formal, technical and aesthetic concerns – to create images for differing purposes.

Vernacular practices and cultures of photography

Because popular photography consists of largely untrained users who forego the complexity of technical photography – the development of personal photography is mostly isolated from these concerns.

Resistance to technological change (digital photography)

Over the course of history photography has been conducted through use many different technologies. Whilst various criticisms have been levelled at significant changes (e.g. colour and digital) – these critiques evince that certain attributes and ideas about photography are valued over others; and that this cultural conception of photography is separate and autonomous from its technological progression.

Key relevant themes in photography theory

What follows is an expansion of some of the key theories within photography; based upon key areas highlighted in the historical review of photography above.

The issue of objectivity and subjectivity of photography

The photograph is a form of visual representation made through the use of a camera, a mechanical apparatus that controls the exposure of photosensitive material (e.g. film or digital sensor) to light. As with the camera obscura, the light that enters the camera and is projected upon the photosensitive surface; emanates from the object in front of the lens during the length of exposure.

This projection of light bouncing from the object in front of the camera at the duration of exposure is inverted, both horizontally and vertically – but results in a recording which analogous in proportion (and in tone/colour) to what was placed in front of the camera during exposure. Once this recording is captured (resulting in a chemical negative or digital data), this light information is typically subjected to a second process (chemical or digital) that results in the production of an observable (and typically realistic) image, which looks like what was in front of the camera at the time and duration of exposure.

Thus, what distinguishes the photographic image from other types of realistic image is the shared understanding that the image originates from a physical reality; it is in effect, a physical trace, by way of automatic light recording, of the object placed in front of the camera at the time (and for the duration of) exposure. The process of 'developing' or rendering the image digitally from this information is also automatic, and thus is also distinct from the subjective influence of the photographer (though they may configure the automatic process in certain ways).

The first significant implication of this, as above in the historical review, is that photographic images are viewed as more objective recordings of the world than those made manually in the plastic arts (e.g. realistic painting or drawing); because they are created from an automatic and analogous recording of light information.

However, this seemingly autonomous means of recording and rendering does not mean that photographic images are completely objective representations of the world. In fact, there are a range of ways a photographer can still intervene, and subjectively influence the photographic process.

In *Ways of Seeing* John Berger states: "... photographs are not as often assumed, a mechanical record. Every time we look at a photograph, we are aware, however slightly, of the photographer selecting that sight from an infinity of other possible sights" [15:9]. Sontag corroborates this, stating: "nevertheless, the camera's rendering of reality must always hide more than it discloses" [130:23]; further stating: "most subjects photographed are, just by virtue of being photographed, touched with pathos. An ugly or grotesque subject may be moving because it has been dignified by the attention of the photographer" [130:15]. In this way the act of photographing something is implicitly an act of conferring significance upon what is captured.

Therefore, the intent and thus subjectivity of the photographer is still influential to the photographic image. Most notably in the selection of one moment to capture over an infinite number of others; but furthermore as highly complicated techniques or manipulations of the camera are used to capture the 'perfect' or preferred image.

Subjective influence may be seen in: the selection of the moment to capture (as Berger suggests) but furthermore: the configuration of the camera at the moment of capture, edits to the image afterwards, re-contextualisation of the image, annotation etc. As such; whilst the image is perceived as an unmediated representation of the world, many deviations

are possible. Sontag notes this saying: “...despite the presumption of veracity that gives all photographs authority, interest, seductiveness, the work that photographers do is no generic exception to the usually shady commerce between art and truth” [130:6]. However, in the case of the photograph, this commerce exists not in the image per se, but in the various influences that surrounds its presentation as unmediated reality. As such, Sontag states that: “this very passivity – and ubiquity – of the photographic record is photography’s ‘message,’ it’s aggression” [130:6]. This particularly refers to photographs which present themselves as “straight” or unmediated expressions of reality. In all instances, the photograph is a paradox, a subjective objectivity - a statement of the world, but as the photographer sees it.

However, whilst photographic images offer potential for human intervention – it remains, that each photograph was captured by an objective apparatus and is perceived as such. As a result, in *On Photography* Susan Sontag says of photographic images: “there is always a presumption that something exists, or did exist, which is like what’s in the picture” [130]. The raw material upon which the photograph is based is always a consequence of light bouncing from an object exposing photosensitive material at a certain time and place.

Barthes supports this idea in *Camera Lucida*, stating: “Photography’s Referent (sic) is not the same as the referent of other systems of representation. I call the ‘photographic referent’ not the optionally real thing to which an image or a sign refers but the necessarily real thing which has been placed before the lens, without which there would be no photograph... in Photography I can never deny that the thing has been there” [5:76]

Nuance in semiotics

This nuance may be explored through semiotics, the study of signs. Within Peircian semiotics a sign is constituted of a triad of parts. These are the representamen, the interpretant and an object. These are described in table 3.1:

Representamen	<i>“the form which the sign takes”</i>
Interpretant	<i>“the sense made of the sign, by its audience”</i>
Object	<i>“something beyond the sign to which it refers”</i>

Table 3.1: the three components of a sign in Peircian semiotics [27:29]

As such, when considering a photograph; the representamen is the image itself (form, colour, tone, physicality, arrangement of visual elements); the interpretant is the meaning that is taken from the image by its audience; and the object is the external reality (a certain moment in space and time) to which it refers.

Peirce also states that there are three modes of sign: symbolic, iconic, and indexical. Chandler notes that these different kinds of sign describe: “relationships between a representamen and its object or its interpretant” [27:29].

These are also described in table 3.2 below:

Symbolic	<i>“a mode in which the signifier does not resemble the signified but which is fundamentally arbitrary or purely conventional”</i>
Iconic	<i>“a mode in which the signifier is perceived as <u>resembling</u> or imitating the signified... being similar in possessing some of its qualities”</i>
Indexical	<i>“a mode in which the signifier is <u>not arbitrary</u> but is <u>directly connected</u> in some way to the signified”</i>

Table 3.2: the three components of a sign in Peircian semiotics [27:36-37]

A symbolic sign has an arbitrary, or learned relationship to the thing it refers. An example of this might be a road sign referring to a certain directive, or flags referring to a certain country.

An iconic sign is like the thing it represents (by sharing some of its characteristics). Painting (realistic or otherwise) is an iconic mode of sign; as its relationship to what it refers to is only a resemblance.

An indexical sign is derived from the thing it refers to. An example of this might be a footprint in the snow (referring to someone having stood there), or smoke (referring to the existence of a fire).

Within this model of signification; the photograph is a unique kind of sign. For many – as a consequence of its automatic recording and rendering as an image – it is taken as an indexical kind of sign; as it appears to be directly derived from the thing that it represents. Key to this is the notion that the image’s meaning is derived from an actual connection to what is depicted. This is supported by the pervasive idea that the camera objectively captures reality.

Despite this, the photography may also be seen as an iconic kind of sign; in that what it refers to (e.g. the Eiffel tower) is also signified through its resemblance.

Significance of automatic creation over manual arts

Thus, where a painting could realistically depict an event that has not happened, a photograph – however manipulated or distorted – always contains some objective information about its content. Furthermore, where a painter seeks to achieve perfect realism, they are unable to surpass photographs, as error and bias are unavoidable.

In *The Ontology of the Photographic Image*, Andre Bazin describes this as the “psychological fact” of the photographic image, when compared to the plastic arts: *no matter how skilful the painter, his work was always in fee to an inescapable subjectivity. The fact that a human hand intervened cast a shadow of doubt over the image.*” Instead in photography, Bazin highlights: *“for the first time, between the originating object and its reproduction there intervenes only the instrumentality of a non-living agent... all the arts are based on the presence of man, only photography derives an advantage from his absence”* [11:7]. Thus, photographs cannot be ‘made up’ from imagination in the way that constructed images can; and therefore, to Bazin, the pursuit of perfecting realism in painting is obsolete, as the most realistic image may never claim the same level of authenticity to a previous moment, as a photograph of it.

Walter Benjamin in *The Work of Art in the Age of Mechanical Reproduction* suggested that the consequence of this was that photography’s mechanical basis, *“freed the hand from the most important artistic functions which henceforth only upon the eye looking upon a lens”* [14:1].

Thus, the “advantage” that Bazin speaks of the phenomenology of the photographic image – that upon looking at it, our senses implicitly take what is seen as real, objective information about the world. Furthermore, Bazin like Benjamin, notes this immediate reaction to photographic images is then consciously reinforced by knowledge of the way that the image was recorded; without manual intervention but through an automatic recording and rendering of something that was seen through a camera.

In other forms of visual representation, the image contains the artist’s interpretation of a moment rendered over the entire length of time it took to create. In photography, what is depicted *is* the moment (consisting of the duration of light emanating from the objects of representation recorded automatically). In this way in photography: the recording and the

moment recorded are one-in-the-same. As such, the realism of the photographic image is not simply its realistic recording of objects and spatial relationships – but furthermore – temporal relationships too.

Benjamin states thus, that photography brought image creation closer to how we naturally perceive the world. This may be considered especially true when we consider the similarity between cameras and human vision – which both contain a lens, aperture (iris) and photosensitive material (retina).

Photographs taken as pieces of the world; appropriation and power

Because the photograph strikes the viewer as not an interpretation of the world – they are commonly perceived as a kind of presence of the object captured and sometimes even, in some sense, as the objects they represent.

John Szarkowski noted this in the introduction to his seminal MoMA exhibition *The Photographer's Eye* where he stated that whereas “*paintings were made [...] photographs [...] were taken*” [131:1]. In this way, the nomenclature that surrounds the practice photography implies that a photograph of an object, originates from it, and is “*taken*” from it. As above, this implies an indexical reading of the photograph.

Thus, in some way the photograph is perceived as a part or pseudo-presence of the object recorded, which has been dislocated from its point of origin in space and time. In this way, the Mona Lisa in Paris in 1987 can be seen anywhere else in the world; but also at any other time.

Similarly, Susan Sontag states in *On Photography* that: “*photographic images do not seem to be statements of the world so much as pieces of it, miniatures of reality anyone can create or acquire*” [130:4]. Crucially, taking a photograph of something or someone, Sontag notes, is a political act. “*To photograph is to appropriate the thing photographed. It means putting oneself into a certain relation to the world that feels like knowledge and therefore, like power*” [130:4]. As such, the act of photography is a way for the photographer to secure a version of the world; its objects, people, places and events – albeit one comprised of images captured from their perspective.

This perception placed upon photography, Sontag believes, has led to several different practices; wherein it serves as a “*defense (sic) against anxiety*” as “*photographs give people an*

imaginary possession of a past that is unreal, they also help people take possession of space in which they are insecure” [130:8-9].

Sontag states this leads to the desire to fix in the form of photographs important experiences, (e.g. rites of passage and holidays). By doing so, the act of photography preserves these privileged experiences or subjects as they were, so that they can be experienced again later. As such, the use of photography to freeze visual representation of significant subjects as ‘memories’ has been a historically significant driver of photographic practices. Notably this motivation was proffered by George Eastman upon the release of the Brownie camera range, as above.

Where this power comes to images of people Sontag notes: “...*there is something predatory in the act of taking a picture. To photograph people is to violate them, by seeing them as they never see themselves, by having knowledge of them they can never have; it turns people in to objects that can be symbolically possessed” [130:14].* Thus, creating an image of a person is a political act; as the photographer exerts power over the subject (at least as they then perceivably own a pseudo-presence of them).

Barthes compounds this, stating that those in images “*When we define the Photograph as a motionless image, this does not mean only that the figures it represents do not move; it means that they do not emerge, do not leave: they are anesthetized and fastened down, like butterflies” [5].* In this way, photography involving people is ostensibly a practice that involves trust.

Limitations of photography as “pieces of the world”, or akin to human sight

Despite the above, a photograph of an object, person, place or event is not the thing it depicts – it is only a representation of it. Therefore, the power the photographer takes over the subject of the image is limited in reality.

Furthermore, the reduction that takes place between the object and its image is significant. Photography flattens physical three dimensional objects into a two-dimensional surface.

This ‘flattening’ also reflects reduction of the object existent across time to a representation of it, at a single moment in time. As such, the photographic medium may be considered one which reduces the world to surfaces. Herein lies the power of the photographer over their subject – as they select how this reduction occurs; but also their impotence, as the image, whilst “*seductive”*, is an inadequate, incomplete copy of the original (person, place, event etc.).

Whilst we perceive that the camera records the world in an analogous way to the manner which we perceive it (as above in Benjamin's statement); there are stark differences between cameras and human sight. In *Five Notes for A Phenomenology of the Photographic*, Hubert Damisch notes that the configuration of camera lenses has more to do with conventions from formal art practice. He states: "*The lens itself, which has been carefully corrected for "distortions" and adjusted for "errors," is scarcely as objective as it seems.*". In its structure and in the ordered image of the world it achieves, it complies with an especially familiar though very old and dilapidated (sic) system of spatial construction, to which photography belatedly brought an unexpected revival of current interest" [35:71]. In this case; Damisch notes that the basis of optics within photography are more akin to systems of representation than objective recording. Furthermore, whilst photographs strike viewers as similar to how we see the world; photography is different in a number of significant ways (e.g. stereoscopic sight, focal range of the eye, etc.)

Furthermore, the reduction of the world which occurs in the camera is married with, Sontag notes, a number of deviations before the image is then seen by audiences: "*Photographs, which fiddle with the scale of the world, themselves get reduced, blown up, cropped, retouched, doctored, tricked out*" [130:4]. In this way; photography, whilst resembling the world in a manner akin to our own sight, deviates in many implicit ways from the world as it is, and how we perceive it.

As such, photographs are both phenomenologically "*pieces of the world*" after Sontag; as much as they are a subjective packaging of that world by the photographer, shaped by their own motivations.

The role of permanence in photography and memory

One of the main uses of photographs in society has been to use them as a keepsake for the purposes of memory. Through its perception as an indexical sign recording objects and their spatio-temporal relationships; the photograph appears to be able to secure (as an appearance in an image) the people, places, events and objects photographers value. It is significant that the photography is viewed as an index by some – this allows the photograph to function as a surrogate object for things photographers' value.

As above, (1) Sontag notes that photography allows people to fix what is insecure. (2) Photography has also been shown to be an act of selecting, as stated by Berger, one sight from a number of other sights.

In the case of photographic memory; what is fixed is the object (people, place, event, etc.) in a state privileged by the photographer as important. The image thus preserves the object (in the form of a photographic appearance), from the object's inevitable change as time passes.

Sontag notes that as time passes the image is "*swallowed up in the generalized pathos of time past... aesthetic distance seems built into the very experience of looking at photographs... time eventually positions most photographs, even the most amateurish, at the level of art*" [130:16]. Thus, Sontag notes that the passing of time changes the view of the photographic image. Here, "*aesthetic distance*" refers to the gap between the spatio-temporal reality as recorded within the image, and that which the viewer themselves is in. This distance increases as we become more remote from the object - e.g. viewing a picture of the Statue of Liberty on a computer screen in London, compared to in New York. Crucially, this distance also increases as time passes - as it is impossible to return to the moment depicted. The effect of this is that photographs, as time passes, become nostalgic and the subject of reverie.

With human subjects, photography allows the user to capture themselves or others in a moment, and preserve their appearance (e.g. a youthful expression) indefinitely; where aging would deteriorate it as time passes. This is reflected in Cartier-Bresson's own words: "*we photographers deal in things that are constantly vanishing, and when they have vanished, there is no contrivance on earth which can bring them back again*" [23]. Thus, all that can be saved from the effects of time, are appearances and images of the world as it was.

As such, Barthes states, when considering an image of himself: "*Death is the eidos of that Photograph... For me, the Photographer's organ is not his eye (which terrifies me) but his finger: what is linked to the trigger of the lens, to the metallic shifting of the plates (when the camera still has such things)*" [5:14-15]. To Barthes, the creation of an image is an existential action and statement saying what was captured "*has been*" and will never be the same thereafter. In this way; Barthes perceives the photographer as participating in the death of what is being photographed, in that it is a tacit acknowledgement of the idea that what is being captured needs to be recorded because it will change, and eventually cease to exist.

Barthes also concludes that photographs are detrimental to memory partly because of its limitations compared to lived experience (see above). On this he states: "*not only is the Photograph never, in essence, a memory, but it actually blocks memory, quickly becomes a counter-memory*" [5:91]. Thus, the "flattening" of an object into a photographic appearance also

reduces the sensory world to a wholly visual surface – furthermore reducing memory to sight alone (whereas in human psychology, memories can be comprised of a larger array of sensory experiences).

The significance of reproducibility

Another significant characteristic of photography and the photographic image is its latent reproducibility. Damisch saw this as a latent characteristic that has shaped the technology: *“the retention of the image, its development and multiplication, form an ordered succession of steps which composed the photographic act, taken as a whole. History determined, however, that this act would find its goal in reproduction, much the way the point of film as spectacle was established from the start”* [35:72].

This is perhaps best approached by Benjamin in *The Work of Art in the Age of Mechanical Reproduction*. The thesis of *The Work* is that methods of reproduction widely pervasive at the turn of the 19th century (and particularly photography) threatened the object of art. Specifically, methods of accurate mechanical reproduction were seen to undermine the *“aura”* of the unique art object (e.g. The Mona Lisa); derived from its unique history. Benjamin continues, that this singular instance of the object contains a latent history which *“includes changes to the physical structure of the work over time, together with any changes in its ownership”* [14:21]. Thus the notion of *“aura”* is associated with authenticity and originality. Benjamin also associates this *“aura”* of the one-off original, with *“cult value”*, referring to the analogous practice of worshipping one-off religious idols.

The emergence of means of perfect mechanical reproduction however, Benjamin posits, results in a loss of originality – in that the reproduction (or many reproductions) threaten the original through a lack of origin: *“in even the most perfect reproduction, one thing is lacking: the here and now of the work of art, its unique existence in a particular place. It is this unique existence and nothing else that bears the mark of the history to which the work has been subject.”* Furthermore, the proliferation of reproductions means that the original exists within the world amongst a collection of reproductions, in their own time and places and each with their own unique histories. Benjamin refers to this shift as a switch from *“cult value”* (as above) to *“exhibition value”* [14:21-25]. This refers to a greater ability to share the existence of an art object through limitless reproduction (in this way we can see and study The Mona Lisa, without having to review the original in the Louvre). Berger also notes this: *“When*

the camera reproduces a painting, it destroys the uniqueness of its image. As a result its meaning changes. Or, more exactly. It's meaning multiplies and fragments into many meanings" [15:19].

The photograph, is viewed by Benjamin as a unique kind of reproduction. Unlike the work of art, it may be used to reproduce, Benjamin sees the photograph as having no original (from this perspective no photograph created from an exposure can be viewed as having more authenticity than any other; all are copies). In this sense it is seen to "*drive back cult value on all fronts" [14:27].*

Jean Baudrillard extends this logic further in *Simulacra and Simulation* stating that as a consequence of the increased exposure to representation ("*simulacra*") in culture including photography; that societies of have become more familiar with copies of things than their originals.

The effect of this mass production of copies and representations of our world is thus (as in Baudrillard) that the meanings we surround ourselves with, are indistinguishable from base reality, and hyperreal: "*today abstraction is no longer that of the map, the double, the mirror or the concept. Simulation is no longer that of a territory, a referential being, or a substance. It is the generation by models of a real without origin or reality: a hyperreal" [10:1].*

Despite this concern, this allows photography to function in a profound manner, multiplying perceived indexes of reality. In *Camera Lucida* Barthes notes: "*What the photograph reproduces to infinity has occurred only once: the Photography mechanically repeats what could never be repeated existentially" [5:4].* Thus, whilst what in real life may only be experienced once; the "*exhibition value*" of the photographic image and its limitless latent reproducibility (especially in digital imaging) allow photographers to share a perceptibly indexical visual record of their experiences with few limits.

Notably; this also results in the greater existence (in the form of a larger and more widely spread collection of images) of significant: events, people, places, objects; such as famous celebrities, or significant news events. It is also significant that the production of images (and their own copies) has increased exponentially as a consequence of digital imaging; wherein the distribution of digital photographs results in an electronic copy being produced and held by the recipient. This is explored further in a later section of this review.

The performance of photography and photographic seeing

Photography understood as a practice (the typical actions of a photographer capturing external reality in the form of photographs) has its own significant implications. Through the act of photography, it may be considered as a certain way of seeing; and place themselves within a certain relation to the things they record as photographic images.

Sontag describes photography as “*essentially an act of non-intervention*”; in that when someone photographs an occurring event; they place themselves as a viewer: “*it is a way of at least tacitly, often explicitly, encouraging whatever is going on to keep happening*” [130:12]. To capture a photograph; the photographer typically places themselves at a certain distance from what is being recorded; thus performing the role of a spectator. As above, it is notable that there is a certain passivity to this action – especially when this insight is combined with the notion (as above) that photographs are used to secure the insecure.

Despite this; Sontag notes that photographs give the appearance of participation are used to certify experiences we have had: “*photography has become one of the principle devices for experiencing something, for giving an appearance of participation*” [130:10]. This may be seen in common photographic practices surrounding activities such as holidays, rites of passage. It is significant that whilst photographs give the appearance of participation; they in fact limit such experience to certifying a look upon something: “*A way of certifying experience, taking photographs is also a way of refusing it – by limiting experience to a search for the photogenic, by converting experience into an image, a souvenir*” [130:9]. Crucially – as Sontag notes, this also reduces the relationship between photographers and reality, to a voyeurism which is shaped by the notion of the photogenic (e.g. holidays become a search for landmarks etc.)

When viewing photographs, we take on, or embody the gaze of the photographer. Barthes notes that there are three separate relationships a person may have to a photograph: 1) “*operator*” (photographer), 2) “*spectator*” (audience), and 3) “*spectrum*” (person photographed) Whereas the operator (photographer), present at the time of capture, views the image in relation to their experience of “*the vision framed by the keyhole of the camera obscura*”; to the spectator, the photograph is an expression of “*the chemical revelation of the object*” [5:9-10].

Here, Barthes posits that the meaning of the photograph is distinct between the photographer and the audience – as to the photographer it refers to the moment they

created the image. Crucially, to the spectator, there is no prior moment in their experience that the image refers to – as such they experience a revelation (being able to experience the object from the view of a different person) through embodying the sight of the operator. This insight has been most substantially explored by Laura Mulvey in relation to the encoded male perspective (particularly upon women) in cinema [107].

Though Sontag does note, however, that whilst audiences embody the perspective of the photographer through the self-evident image; their interpretation of the image is not guaranteed: “*photographs, which cannot themselves explain anything, are inexhaustible invitation to deduction, speculation, and fantasy*” [130:23]. Thus, whilst we embody the perspective of Barthes’ operator, we do not occupy their psychological terrain; and the interpretation of the image is entirely subject to the audience’s own experiences, concepts and psychology.

Summary of points emerging from photography theory

The above review of photographic theory has highlighted several areas of interest for this research. These include:

The issue of objectivity and subjectivity of photography

Whilst photographs are trusted as a true mechanical record of a time and space. There are many ways they can be subjective. Photographers select what moment and subject is shown. Bearing this in mind, that images are presented, and perceived as truth is testament to the photograph’s unique subjective potential. Despite this; photographs cannot be wholly made up; and must contain some iota of relation to a certain time and space. The photograph is thus both an index (mark), and iconic (resemblance) of what it represents.

Photographs taken as pieces of the world; appropriation and power

The persuasiveness of photographic images has led to the concept that they are not “made”, but “taken” (from reality) – and are akin to “pieces of the world”. This allows photographer to exert power over things (objects, people, places, and events) in the world by appropriating and owning them – in the form of an image. This has led to practices wherein photography is used to secure the secure the flow of time and unfamiliar places in the form of images.

Limitations of photography as “pieces of the world”, or akin to human sight

Whilst a photograph is perceived as a piece of the world; it is an imperfect copy of reality. Much is lost when the world is transferred into the form of an image. Three dimensional objects are flattened onto a 2D plane, and its existence across time is replaced with a privileged moment. Within photographs objects are also optically distorted, reduced, or expanded in size; and thereafter as processed images. This further reflects the subjective motivations that can influence photographic practices.

The role of permanence in photography and memory

Photography is traditionally valued for its ability to preserve the appearance of a subject; where in reality it changes over time (e.g. a person aging). As such; as time passes audiences experience greater aesthetic distance from the image, as the reality it refers to becomes increasingly harder to recollect. The existential implication of this, is that photography is thus a motivated intervention the mortality of the subject, wherein the photographer captures the object as it “has been”. Through flattening (as above) and reduction of history to instances of motivated visual recording is also seen to block full memory, and then counter memory.

The significance of reproducibility

Photography is a form of representation which is innately reproducible. Where an art object is reproduced however, it is seen to lose its aura as a unique object that has a history of: physical change, ownership, and place. This cult value is replaced with exhibition value; wherein the value of uniqueness is replaced with multiple copies, fragmented from the original with their own meanings. The photograph (as a type of art object) is seen to have no definitive original. No copy of a photograph has an innate claim to authenticity over any other. Photography exhibition value however, allows for the infinite reproduction of something that happened only once in reality.

The performance of photography and photographic seeing

The performance of photography is largely conventional and has its own implications. To photograph something is to become a non-intervening spectator to it, tacitly encouraging it to continue. It is a means of placing distance between oneself and what is being captured – whilst conversely giving the appearance of participation. Whilst used to certify important experiences it also is a way of “denying it” as it motivates and reduces the

experience to an image souvenir, and place the photographer at viewing distance. When we view images we taken on the perspective of the photographer; the results in a different interpretation between the photographer and audience. Though it is noted that photographs, whilst appearing self-evident, invite audience interpretation.

The next section addresses the theoretical backlash resulting from digital imaging; which updates the critical position of photographic theory prior to the use of smartphone hardware and software.

Digital imaging and photography theory

Critics saw digital imaging as fundamentally different from forms of photography that had gone before it. One of the first of these critics was William T Mitchell, who pronounced digital imaging as the "*death of photography*" in his book, *The Reconfigured Eye*.

"Loss of the original"

Mitchell's main concern lay with substitution of the exposed photographic surface: from an object that has a physical and chemical causal relationship to what it depicts; to a rapidly reusable sensor made of pixels which generates an electronic image. In this way, there are no negatives in digital photography that exist as a physical testament to the original moment of exposure. This may be understood as a loss of originality. In semiotic terms; can be viewed as the loss of the indexical link between image and reality in the form of the film negative.

In this way, chemically produced photographs were seen by Mitchell as "*causally generated truthful reports about things in the real world*" which maintained the spatial and temporal relations within the objects. This was not something Mitchell believed was inherently certain in digital images. Mitchell stated: "*we must face once again the ineradicable fragility of our ontological distinctions between the imaginary and the real...*" [105:255].

"Loss of the real"

An additional issue in digital imaging for critics was a perceived "*loss of the real*". This refers to the ability to generate images that have no reference to a specific moment in space and time. Because digital images have no physical origin (as above) it can be difficult to distinguish between a digital photography and other digital images (e.g. those created using digital graphics; or by manipulating or combining existing photos). This concern was exacerbated by the increased availability and capability of digital imaging software tools (e.g. Adobe Photoshop) and their increased use within highly visible contexts (e.g. fashion, marketing, magazines etc.).

"Meta-image"

Fred Ritcher's concern was that the photographic image had become a discrete recording of visual information; rather than a continuous tonal map. In this way he viewed the digital image as a "*meta-image*"; which was, in its fundamental nature, configured towards the distortion of reality.

In 2009's "After Photography", he notes the: "*digital photograph, unlike the analog (sic), is based not on an initial static recording of continuous tones to be viewed as a whole, or teased out in the darkroom, but on creating discrete and malleable records of the visible that can and will be linked, transmitted, recontextualised, and fabricated.*" [114:141].

Key to Ritchen's complaint was the view that as a form of discrete data, the digital image was predisposed not only toward visual distortion; but furthermore dislocated through increased affordance (relative to film photography) towards: distribution, attribution and contextualisation.

Ritchen states that the consequence of this is a transformation of photography into "*hyper-photography*" - jeopardizing held truths about images including: (1) the photograph's temporality (it is more instantaneously shared as it is not restricted by physicality); (2) multi-media (it can now appear alongside other kinds of media); (3) recontextualisation (the image being easily shared in a variety of different contexts); (4) the ability to generate "future" imagery (creating images "*with enough realism to elicit responses before the depicted future occurs*"); and (5) the opportunity for those who appear within images to interact with them.

Emphasis on epistemological transformations

Geoffrey Batchen's critique broaches these dual crises as at the same time: "*one technological (the introduction of computerized images) and one epistemological (having to do with broader changes in ethics, knowledge and culture*" [7].

Batchen notes that photography had always had a questionable relationship with reality. However, as with Mitchel, he concludes that ontologically the critical difference introduced by digital images is a loss of originality. Whereas a photograph created chemically has an "*indexical relation to the world it images... as a footprint to a foot, so is a photograph to its referent*"; "*computer visualization... allows photographic-style images to be made in which there is no direct referent in an outside world*" [7:18].

Batchen notes that whilst photochemical images may distort the truth this was far less easy to achieve and that digital imaging was part of a more general shift into computing reconfiguring people's fundamental relationship with reality. Notably, Batchen argues that in a world which is primarily digital; chemically produced images are subsumed by (and viewed through) the mind-set and practices of digital imaging.

This logic is extended by Ritchen who, closer to the context of this research states: "*The multitudes of photographers now intensely staring not at the surrounding world, nor at their loved ones being wed or graduating, but at their camera backs or cellphones searching for an image on the small screens, or summoning the past as an archival image on these same screens, is symptomatic of the image's primacy over the existence it is supposed to depict*" [114].

Thus whilst Ritchen argued that "*photographs are privileged over digital images because they are indexical signs, images inscribed by the very objects to which they refer*"; this greater shift means that such a distinction becomes moot, as all photographs become comprehended by audiences through the mind-set of digital reproduction and within contexts where they are reproduced digitally anyway (e.g. a digital image of a photo online).

Exposing attachment to old technological modes

Batchen also notes that photography prior to digital imaging was technologically heterogeneous: "*even if we continue to identify photography with certain archaic technologies, such as camera and film, those technologies are themselves the embodiment of the idea of photography or, more accurately, of a persistent economy of photographic desires and concepts*" [7:140]. Thus, Batchen crucially notes that photography as it is conceived within society is not so much a technology - but a cultural concept and practice conducted through certain technology to achieve conventional outcomes.

Crucially, whilst digital imaging, and paradigmatic changes resulting from the proliferation of computers at the turn of the millennium encouraged deviation from conventions by making it more intuitive - this was a transformation of the role of photography within society; as society changed along with it.

This highlights the extent to which the technology of photography is largely autonomous from conventional ideas around its practice. Furthermore, the widespread adoption of digital imaging despite "the loss of origin" (absence of the film negative) - only highlights the fact that film negatives were rarely put to any significant use within display practices, as it was mourned mostly by theorists within the area - rather than everyday users. For most, the new possibilities afforded by the digital image were embraced; challenging established boundaries and conventions in the prior photographic tradition.

Paradoxes (underestimation of digital imaging)

Lev Manovich explicitly notes of hypocrisies in *The Paradoxes of Digital Photography*. In the work he notes that distinctions made between digital and photographic images, fail to draw accurate comparisons between the technologies. The primary target of Manovich's critique was Mitchell, and particularly the distinctions made between photography and digital imaging in *The Reconfigured Eye*.

Where Mitchell condemns digital imaging for its loss of attributes critical to photography, Manovich proposes that in most cases this does not truly constitute a genuine loss; and indeed, in some cases the digital image is reasoned to actually surpass the photochemical image in many ways. In the first instance, Manovich critiques Mitchell's position in relation to "*the relationship between the original and the copy in analog and digital cultures*" [97:6].

Rebuttal to Mitchell's assertion of lack of loss when copying digital images

Mitchell's position is that (unlike the photograph) the digital image when copied loses no information. This was seen to be a crisis of originality within the image - with Mitchell noting that "*a digital image that is a thousand generations away from the original is indistinguishable in quality from one of its progenitors*" [105:6]. Manovich rebutted: stating: "*in reality, there is actually more degradation and loss of information between copies of digital images than between copies of photographs*" [97:6]. To corroborate this point Manovich cites the widespread reliance of compression in digital image management.

Rebuttal to Mitchell's assertion of finite information limit to digital images

Secondly, Manovich addresses Mitchell's concern that digital images contained a finite amount of information within a map of pixels, in comparison to the continuous gradients of tone found in analogue images. Manovich notes, that whilst this concern is correctly founded; in practice it was flawed as digital images of the time were capable of producing images of "*very high resolution*" and had "*reached the point where a digital image can easily contain much more information than anybody would ever want*" (e.g. where digital images "blown up" surpass the functional quality of 35mm images) [97:8-9].

Rebuttal to Mitchell's criticism of the digital image as inherently mutable

Manovich then addresses Mitchell's third primary concern - the "*mutability of a digital image*" as a threat to the correct practice of photography [97:9-10]. Manovich notes that

Mitchell conflates "correct" photography with "straight" photography - wherein an image is created and used without any manipulation being made to it.

It is notable that above, the passive claim of these kinds of images were flagged up by Sontag as part of photography's "aggression" - in that some types of images are seen to be more real than others, where in fact all are an unreal reduction of reality to a flat plane [130:6]. In this way, even "straight" photographs are unreal, and subjectively privileged representations of the world.

Mitchell suggests that in analogue photography such "transformations and combinations is technically difficult, time-consuming, and outside the mainstream of photographic practice" [105:7]. Thus to Mitchell, the reshaping of the photograph made available through digital tools (e.g. combination, omission of elements, editing etc.) was a profound crisis.

Manovich criticises this position, stating that it is a conflation of the "pictorial tradition of realism with the essence of photographic technology" clarifying that: "straight photography can hardly be claimed to dominate the modern uses of photography" [97:5]. He then cites the infamous practices of Stalinist photography as contrary to this overreach. Furthermore, as per Sontag above, it would be difficult to claim any image within society was not subjectively motivated in some sense (by selection, framing, annotation, contextualization etc.); is a problematic claim.

Rehabilitating photographic reality after digital imaging

Within the final sections of Paradoxes Manovich explains an important distinction; not considered in Mitchell, Batchen and Ritchen's arguments.

Conceptualising synthetic imaging he states that digital images do not emulate reality: "but photographic reality... not realism, but photorealism - the ability to fake not our perceptual and bodily experience of reality but only its photographic image" [97:14].

Indeed, any photograph, chemical or digital, cannot be considered "real" when engaged with critically; as reality (even when limited to the visual sensorium) is far more complicated than simply the registration of light on the retinas. As a consequence of this Manovich states: "The reason we think that computer graphics has succeeded in faking reality is that we, over the course of the last hundred and fifty years, has [sic] come to accept the image of photography and film as reality" [97:14]. Thus digital image does not threaten the reality of

photographic images - as there was no such thing in the first instance. Instead the notion that is challenged is the conception of the photograph as being what it depicts.

Others, such as Sarah Kember criticise the position taken by Mitchell et al, as a fundamental over investment in the concept of photorealism. In *The Shadow of the Object: Photography and Realism*, Kember states: "*Computer manipulated and simulated imagery threatens the truth status of photography even though this has already been undermined by decades of semiotic analysis*"; continuing: "*any representation, even a photographic one only constructs an image-idea of the real; it does not capture it, even though it might seem to do so. A photograph of the pyramids is an image-idea of the pyramids; it is not the pyramids*" [81:17].

In this way Kember suggests that the furore over digital imaging "*is actually a displacement ... of a panic over the potential loss of our dominant and as yet unsuccessfully challenged investments in the photographic real*" [81]. This over-reach is understandable as photography represented a significant improvement compared to prior forms of visual representation (e.g. photorealistic painting); and one that closely imitated the human eye in the manner in which it functioned.

Kember later notes that: "*the authority of photographic realism is founded on the principle of Euclidean geometry (the cone of vision) and on the application of scientific methods to forms of social life. When light is reflected through the lens of a camera the cone of vision is inverted - just as it is through the lens of the human eye*"; expanding: "*the focused image is geometrically and therefore optically 'true'*" [81:25]. Thus the photograph is proven to be phenomenologically similar to sight, albeit in the analogous workings of the camera and the human eye and a singular perspective, at first glance (though it is notable above that this similarity is challenged by Damisch above).

Kember then targets the tenuous association between photographic realism and straight photography: "*If a completed simulated, or even digitally manipulated photograph can masquerade effectively as a straight photography, then surely the authority and integrity of photography are always going to be in question.*" Thus like Manovich, Kember questions the premise of a "*prior existence of straight photography and an unmediated real*"; continuing: "*photography is clearly much more than a particular technology of image-making, it is also a social and cultural practice embedded in history and human agency*" [81:22]. Thus, that photography has been used and understood as realistically representing (or reproducing) the image

subject - is more to do with how society has come to comprehend and use photography, than the images themselves and how they are made.

The prior section of the literature review, whilst not exhaustive, has established a broad understanding of photography and the photographic image. This review has encompassed photography over the course of history - including concerns which emerged as a consequence of digital imaging.

The purpose of this review is to establish the principles of personal photography prior to the widespread use of smartphone hardware and software tools. As such, many of the core principles uncovered above will provide critical insight into the fundamental attributes of photography which form the basis of these activities. The next section of this review establishes the contours of personal photography.

Summary of points emerging from digital imaging and photography theory

The above review of digital imaging and photographic theory has highlighted several areas of interest for this research. These include:

Loss of the original

A big theoretical concern with the emergence and acceptance of digital imaging was the replacement of the film strip negative with the digital sensor. To Mitchell this constituted a "loss of the original" as there was no physical trace of the exposure. This was because, unlike the film negative, the digital sensor captures image information as electronic data, transfers this to memory, and then is reused. This was seen to threaten the notion that photographs were definitively "causally generated truthful reports about things in the real world".

Loss of the real

Because of the loss of the original; digital images were also seen to have no intrinsic link to a certain space and time. This was compounded by the arrival of other forms of realistic visual imaging e.g. computer-generated imagery (CGI).

The meta-image and epistemological transformations

The digital image was also seen to be vulnerable as a "meta-image". Comprised of discrete data (rather than an analogue of tones) the image was seen to be predisposed toward deviation from truth. Not only through image manipulation; but distribution and

recontextualisation. This implied a transformation from photography, into “hyper photography”; detailing profound new possibilities in the photograph’s temporality; potential for multimedia use, recontextualisation, fabrication and audience interaction.

Emphasis on epistemological transformations

Batchen foresaw two profound changes in photography: a technological one, and an epistemological one. The latter emphasized changes in the knowledge, culture and ethics surrounding new practices afforded by digital imaging technology. Part of this epistemological shift is the assimilation of the previous paradigm of analogue photography into digital imaging (e.g. printing photographs and then scanning them into a computer, and a general change in the perception and familiarity with photographs defaulting to values surrounding digital images).

Exposing attachments to old modes

Profound changes in the epistemology of photography only served to highlight the association of photography to archaic technology and a culturally determined paradigm of values, beliefs, behaviours and practices. Widespread adoption of digital imaging (especially at the consumer level), in spite of these changes highlight the autonomy that personal and vernacular photographs have from formal thought and critique in the area.

Rebuttals

As a consequence of sentimentality several false comparisons are made against digital imaging which are rebutted by Manovich. Rebuttals refer to: 1) the claim that there is no degradation in generations of digital copies; 2) the limited finiteness of quality in digital images; 3) the inherent mutability of digital images.

Rehabilitating photographic reality after digital imaging

Digital images do not emulate reality, but instead, photographic reality. As such, the inherent mutability (and potential for deviation) seen in digital images does not threaten reality; but the commonplace investment in photographic images as real. As such; rising scepticism, and fluency provoked by the emergent popularity of digital images dispels common myths between the photograph and the reality they signify.

Personal photography practices

The next section of the literature review concerns personal photography. The purpose of this section is to establish formal knowledge on the various ways that the general population have made use of photography for everyday use.

Focus here is drawn upon literature which outlines the demands populations of everyday users have placed upon photography over the course of time; as well as recent transformations which have occurred as a consequence of digital technologies.

An important distinction is made by Van House who states that a majority of the research into personal photography in the past focuses on lower-level activities (e.g. use in tourism, in the home etc.). Here Van House describes the study of specific instances and practices as low-level, because they have not been abstracted to high-level motives [135].

This research is focused upon uncovering the transformations in personal photography, and as such is more concerned with transformations at the higher-level. To paraphrase this may be best understood as the 'whys' of personal photography practices, rather than the 'what'.

Broadly speaking by the end of this review the three principle higher-level motives behind personal photography are uncovered which form the basis of the categories taken into the focus group activity and analysis; which account for the gamut of personal photography.

These include: 1) memory work, 2) creating and maintaining social relationships; and, 3) identity work and self-expression.

Towards the end of this review; the theory of the extended self is introduced as a means of adding additional theoretical coverage about identity work – as this is the least prominent pillar in the review of personal photography. Over the course of the review, attention is also paid, in particular towards, changes resulting from digital photography. This highlights an ongoing trajectory of change within personal photography (epistemology activities) which is relevant to this research.

Following this, a summary and framework is provided characterising the broad principles of personal photography; prior to widespread use of smartphone hardware and software tools.

History and anthropology of personal photography

As in the earlier historical literature review; one of the key activities to occur when photography first became available to the wider public was a concerted effort, on the part of incumbent stakeholders in the medium (e.g. artists and the aesthetic and the commercial avant-garde), to differentiate its formal practice from the sensibilities of everyday photographers.

Thus, from the outset there was a distinction made between the amateur and professional. Schwartz notes that, between fine art practice and camera clubs this led to the development of an “*elite aesthetic*” over the course of time [123]. This insulation of the formal practice from everyday citizens gave rise to vernacular and untrained practices which would begin to shape personal photography as we know it today. This was perhaps crucial in the development of personal photography – in that it allowed the population of untrained “*snapshooters*” mentioned by Hirsch above, to develop practices based on their own motivations away from the attention of formal study and appreciation.

Batchen calls for re-evaluation of vernacular photographs

Notably, it would only be at the turn of the millennium that these forms of everyday, ‘ordinary’ image would be reconsidered aesthetically and artistically. Geoffrey Batchen’s essay in 2010, *Vernacular Photographies*, is a key voice in this reassessment – particularly criticising the exclusion of ordinary photographs from its historical understanding [8]. This reconsideration has led to exhibitions of vernacular photography alongside the formal aesthetic practitioners in the Museums of Modern Art [141]. Batchen notes that vernacular photography “*resists... (formal) classification*” as it is made by large numbers of anonymous photographers, devoid of “*intellectual content beyond sentimental cliché*”; furthermore, defying and disinterested in the progression of styles and techniques in the formal practice. As such vernacular photographs are characterised by their lack of stated intent compared to formal practices – where certain credos and manifestos are adhered to (e.g. when we view Cartier-Bresson images we know to look for ‘the decisive moment’).

Whilst Batchen notes there were many historical accounts of vernacular practices, these were piecemeal – and that at the time in 2000 the field was “*yet to see a vernacular theory of photography being advanced*” [8:262-263]. It is this overarching conception of personal photography that this research seeks to ascertain for comparison with contemporary smartphone practices.

It was from this perspective that Batchen set out to generate a rationale for a theory of vernacular photography; suggesting the most appropriate means of doing so would be to trace: “*common themes (death, memory, family, desire, childhood, etc.) or social functions (exchange, memorialization, confirmation, certification*” [8:268]. Broadly speaking this offered an effective basis for this concern moving forwards.

Significantly; the prior focus within photographic study on formal photographic practices (and thus conventional framings) left the theoretical study of vernacular photographs limited prior to the digital age. This was especially so, as personal photography was more difficult to access for study than photography today; as it was situated physically in the homes of individual photographers, rather than in public caches online. As such early research into this area takes an anthropological perspective, and focuses broadly on images within the home.

Despite this, there are several areas and studies that offer insight and can help in the construction of a model for this research activity.

Batchen: the family album and photographs in the home

Within *Vernacular Photographies*; Batchen highlights several ritual practices of personal photography that emerged within the home including: photographic jewellery as a means to “*display one’s affections in public*”; as “*indexical weight*” being added to marriage certificates; and most notably the family photo album [8:265]. Thus the photographic image is seen to supplement the signatures on the marriage certificate by providing visual evidence of the couple at the time of their betrothal).

Within these practices Batchen notes that key to the appeal of the image was its tactility as a means of enacting connection between people. 1) In the case of photographic jewellery the image on display or is kept close to the body, physically enacting social attachment via a surrogate object; 2) photographic poses with more than a one person often expressed connection through physical touching (e.g. embraces), 3) ritualistic interactions of arranging photos into albums allowed for photographers to touch and interact with their family (albeit with images rather than the people themselves).

As such, the role of photography in the home is significant and photographic albums in particular, Batchen notes, invite this tactility and expression of the proximity of familial relations. On this Batchen states that the family album “*came to be regarded as an essential*

confirmation of the family unit, as a substitute, perhaps, for the children or relatives not otherwise present" [8:265]. Thusly, within the activity, the photographic image of family and their relations could be seen to act as a surrogate for absent members of the family; allowing for practices of familial solidarity to still be expressed through arrangement and interaction with the images.

Batchen further notes, albums invited a practices of: review, arrangement and annotation through which the family story would be put together in "*autobiographies of artful combinations of words, lines and pictures*" [6:266]. Thus whilst the images on their own may stand as substitute tokens of presence or solidarity (where persons are shown together) they may also function as components that can be configured in various ways in storytelling practices.

Crucially, to Batchen, these practices of photography were emergent, and insulated from the formal conventions of aesthetic practice: "*...creative efforts of ordinary people who, by exploring the possibilities of 'demystified photography', are able to express the intricacies of their own social rituals in a tangible visual form*" [6:266]. In 1987, Richard Chalfen supported this notion stating: "*there is an important difference between what we can do and what we do do; a difference between potential for occurrence and actual occurrence; between hypothetical freedom of choice and culturally preferred, or even determined, patterns of choice*" [26:17]. Thus whilst these practices seem ordinary, expected and banal; the fact they are widespread and highly conventionally adhered to (e.g. the uncomfortable idea of having a wedding without photos) impresses upon their significance.

As such, Batchen posits that photography was a means for ordinary people to manifest in the form of physical images (and then subsequently arrange in the home or in album); expressions of family solidarity, and collective identity – without, a priori, formal aesthetic concerns. It was from this position that Batchen was hopeful that vernacular photographies could be studied as a means to access anthropological histories of ordinary people – not only through the kinds of images that they capture; but also the practices surrounding them.

A substantive review of the photographic album as a site of interest in vernacular photography is offered by Martha Langford's *Suspended Conversations*, in which she posits that photographic images not only function as memory props; but also within albums and collections as components in narratives in the oral tradition [89:175]. Thus, to Langford

the meanings behind images arranged in albums were not static; but building blocks for the construction of more dynamic stories that would be told about the family unit. It remains however that album building (and particularly those surrounding family) constitutes an enactment of social bonds, in form as well as function, within the social unit.

Outside of the photographic album, the placement of images around the home Batchen saw as "*pieces of domestic architecture*" [8:267]. Batchen also noted that often within these settings some kinds of images (particularly wedding images) were more prominent than others. This hinted at an established hierarchy of importance to images put on display to others. Batchen noted that images such as these would be placed alongside others which presented an idealised "*fantasy image*" of reality. An example of is images of well-behaved young children posing for an image. Often, Batchen states: the images function to certify conventional family experiences and bonds; others presented an exhibition of the family as they saw, or wished to see, themselves.

Chalfen: "home mode", tourism, photography as social communication

In *Snapshot Versions of Life*, visual anthropologist Richard Chalfen used the term "*home mode*" to refer to "*how ordinary people do ordinary photography*"; encompassing: snapshots, slide shows, family albums; as well as video media in the home. Here Chalfen also stated that this activity (he used the term "*Kodak Culture*") largely "*captures a certain kind of information and presents a particular version of reality*" [26:12]. To Chalfen this activity is completed in a "*process of social communication*" through the exclusive circulation of images and other media, to an audience of people who have close ties to the family.

Therefore, photography is an act of selective recording; and the presentation of images (either in the home or the various configurations prominent in "*home mode*" photography e.g. albums, slideshows etc.) is a separate reconfiguration of these messages into an authored story. This compliments the notion put forward by Langford above about the photo album as an oral narrative.

Prior to this, Chalfen provided his entry point in to studying personal photography in 1975 with *Introduction to the study of non-professional photography as visual communication*. Here Chalfen made the distinction that home mode photography was concerned with the creation of images for intimately known audiences: "*in the home mode, images are indeed important in an intimate context, and these images are valued by small groups of biologically and*

socially related people" [26:20]. Drazin also notes that these images "*materialize memories*"; and: "*through framing people flag their collective good intentions to conduct relationships appropriately over time*" [44:51]. This perhaps reflects the technology of the time; where fewer images and copies would be created; and where the few copies that did exist, would be kept in the proximity of the home (furthermore, limiting the study of vernacular and personal photography to images on display in this manner).

As such; Chalfen notes, the values around "home mode" differed from the majority of formal thought around photography; as this was centred in forms of mass media and communication: "*we are not talking about picture making or filmmaking as mass communication. Characteristic such as the need for complex formal organization, the need for large audiences of heterogeneous composition, and an impersonal relationship between communicator and audience are clearly absent from the home-mode process of visual communication...*" [26:20]. Thusly, images that were made within home-mode were not made for mass audiences; and predicated upon a pre-existing relationship between image-creator and audience. This is significant; in that it changed the mode, and motive of photography from something that was created for mass appeal and exhibition, to a trusted intimate disclosure. Thus, "*home mode*" in the chemical age is a means of communicating the family values and story to immediate friends and relatives.

As above, Chalfen established a model of approaching home mode: "*... as 1) expressive behaviour, 2) visual communication, and 3) social activity.*" Crucially, Chalfen's model includes not simply the photograph itself; but behaviours and social activity surrounding it: "*not only the study of the communicative product, such as snapshots and home movies, but also the process of activity that surrounds the production, use and display of these products*" [26:21].

In this way, Chalfen brings the interest of personal photography and home-mode away from the image itself and: "*in a larger context, namely in the sequence of social events that surround 'communicators' and 'audiences'*" [26:21]. Thusly, central to the intrigue in "home-mode" photography, was perhaps not the images themselves – but rather the interactions between family members either through representation in the image; or centred on practices concerning the physical images themselves. As such, and as previously established, tactility was an important component of the image, as it allowed for physical interactions with valued images within the home; and thus, significance placed upon the exhibition of these images to those outside the family unit.

Chalfen: photography and tourism

Later, in 1979's *Photography's Role in Tourism*, Chalfen also provides an outline for understanding the close relationship between the two activities; which is largely separate from the mode of family photography that this review has largely focused on thus far.

First, Chalfen begins by noting that there are several different types of tourist; typically ranging from experienced travellers to mass tourists. Crucially he states: "*each tourist type may be characterized by taking different kinds of photographs, which, in turn, 'illustrate' different host-tourist relationships*" [25:438]. In each case; this seemed to alter the photographic practices of the tourist.

To Chalfen, the motivations of the tourist largely surround the expression of experiencing a new place through displaying authentic experiences: "*regarding the motivations of tourist photographers, it is uncertain how much they rely on their cameras to document or 'prove' that they have experienced some degree of authentic native life*" [25:428]. Thus; the use of the camera in tourism was not simply as a means of providing proof of authentic experiences.

Chalfen notes that Boorstin [17] and Carpenter [22] identified that often a "*staged authenticity*" of events (e.g. photo opportunities, landmarks, attractions etc.) put into place for tourists to express their experience visually are significant. Though Chalfen also cites MacCannell [96]; who rebukes Boorstin and Carpenter stating that expressions of authenticity remains a key motivating factor. Chalfen states that this is most likely a consequence of the typology of tourists; where one demographic would likely seek more adventurous experiences. As such; different tourists were motivated by different experiences. More experienced tourists or travellers were seen to seek more authentic experiences; whereas mass tourists were happy to partake "*staged authenticity*".

Whilst Chalfen offers no explanation it may be posited that despite their diversity; tourist images, staged or otherwise, fulfil the self-determined criteria of their creators. Inasmuch that the photographs may then form part of a narrative which they subscribe to about themselves; which they are then able to authenticate and share. Thus, the consumer leisure tourist uses photography to visualise a completed checklist of landmarks as this is their conception of a successful trip. Whereas the explorer or traveller would seek to capture and communicate experiences 'off the beaten track' to align with their motives. In each case; the act of tourist photography is a means of projecting oneself and one's motives on the place visited and activities completed.

Within *On Photography* Susan Sontag also provides an insight into why tourism and photography coincide. Firstly, there is an evidential function; “*photography develops in tandem with one of the most characteristic of modern activities: tourism... It seems positively unnatural to travel for pleasure without taking a camera along. Photographs will offer indisputable evidence that the trip was made...*” [130:9]. As such, to take a trip is an activity that can be seen to unavoidably require evidence. This may be a consequence of the significance of holidays and trips in self-concept (as above); where images form a key part of narrative shared about memories and identity. Again, whilst this practice is banal and obvious; that it is so widely adhered to (like wedding photos) suggests that it has a high degree of significance.

But furthermore, there is a psychological dimension to the activity. Taking photographs is a familiar activity; which (as Sontag notes in the previous section of this review) allows the photographer a degree of power over what they record. Sontag notes: “*Travel becomes a strategy for accumulating photographs. The very activity of taking pictures is soothing, and assuages feelings of disorientation that are likely to be exacerbated by travel*” [130:10]. Here, the inherent unease that comes with unfamiliar surroundings is abated through an act of appropriation. The camera is also seen to act as a means of creating a safe distance between the photographer and their unease: “*most tourists feel compelled to put the camera between themselves and whatever is remarkable that they encounter. Unsure of other responses, they take a picture. This gives shape to the experience: stop, take a photograph, and move on... Using a camera appease the anxiety which the work-driven feel about not working when they are on vacation and supposed to be having fun. They have something to do that is like a friendly imitation of work: the can take pictures*” c. Thus, photography also offers a structure to the kinds of interaction that take place in unfamiliar surroundings. Interaction with an experience can be achieved at a distance (without participation or interference with what is being recorded). Furthermore, the successful capture of a photograph (e.g. of a landmark or event) punctuates the interaction; providing a sense of completion to the interaction with what is captured (it is notable that the objective activity at many tourist landmarks is to simply “see them”). It is at this point where the photograph is then used as evidence of this interaction, and the catalyst for interpretation of that experience.

Kuhn: “memory work” and photography

Annette Kuhn’s *Photography and cultural memory: a methodological exploration* offers additional avenues, proving and account of the vernacular field of photographic “memory

work". Kuhn had previously defined "memory work" in *A Journey Through Memory* as: "...an active practice of remembering which takes an inquiring attitude towards the past and the activity of its (re)construction through memory. Memory work undercuts assumptions about the authenticity of what is remembered, taking it not as 'truth' but as evidence of a particular sort: material for interpretation, to be interrogated, mined, for its meanings and its possibilities. Memory work is a conscious and purposeful staging of memory" [86:186].

In this way, memory work is the deliberate act of remembering and making sense of the past. It may include the use of objects as a focal point of interrogating the past. As above, these documents from the past are viewed not as true, but as a form of evidence that may be scrutinized for meanings to construct a broader narrative. Photography is a uniquely useful tool for this purpose as it can capture the appearance of significant objects, people, place and events in a portable, tangible form. This removes the emphasis upon keep physical souvenirs (e.g. mementoes from holidays and family events). Notably, as above, photographs can be placed into configurations within albums which allow for more complicated stories to be constructed around them. In addition, as noted above; the appearance of other people within these images allow to enactment of solidarity between people.

Photographs; Kuhn notes; offer unique attributes for this purpose: "*from the ways photography and photographs figure in most people's daily lives and figure in the apparently ordinary stories we tell about ourselves and those closest to us*". Thus, the way photography is naturally embedded within ordinary everyday activities; (and the way photographs as flat representation, can stand in for any object); means that photographic images function as a powerful and versatile tool in memory work. The versatility of the photograph (in that it can reduce almost anything to a visual memento – is useful in this purpose.

As above, Kuhn notes that: "*family photographs and albums contain meanings, and also seem infinitely capable of generating new ones at the point at which photography and memory work meet*" [86:285]. Thus; as above; whilst images in family albums certify experience (and the relationships between those within the images as a unit); as Batchen and Langford note; they also function as components in a constantly renewing story about the family.

Bourdieu: photographic solidarity, photography and the family

In *Photography, A Middle Brow Art*, Pierre Bourdieu dedicates a chapter of his examination of photography for "*family function... solemnizing and immortalizing the high points of family*

life, in short of reinforcing the integration of the family group by reasserting (sic) the sense that it has both of itself and of its unity [18:19]. As such; Bourdieu highlights “family function” as an established mode in itself.

Bourdieu notes that only certain kinds of images are viewed as implicitly significant enough to be displayed prominently within the home; specifically, those which are reinforced by established rituals [18:24] Furthermore, Bourdieu notes that within this practice everyday users are not concerned with the act of photography; but rather the output, and practices that surround the activity. As such, when creating such images (or instructing the professionals who create them) there is little emphasis placed upon creativity or aesthetics – but rather utility and conventionality.

Another example of a ritualistic practice concerning images within the home involves the recording of a new child’s aging and progression. Bourdieu states that this is because *“arrival of the child reinforces the integration of the group, and at the same time reinforces its inclination to capture the image of this integration, an image which, in turn, serves to reinforce the integration”* [18:30]. This provides an insight into a previously introduced aspect of this practice. Namely that the introduction of a new family member into the family unit requires a reconfiguration of the family narrative. As such, conventional behaviours include creating pictures of the child (as well as familial relationships) and integrating them into the existing configuration; through presence within the album and thus the stories told around the images.

In the next part of this review of personal photography; the research approaches literature useful in comprehending the emergence of digital imaging and its impact upon personal photography.

Summary of early personal photography research

Re-evaluation of vernacular photographs

Within this short section of the review it has been established that personal photography (or vernacular photographs) was initially an understudied area. Much of the research prior to digital photography focused upon individual practices, typically in the home; without establishing broader themes at play. Despite this, key aspects of personal photography were uncovered; focusing in particular on photographic practices in the home.

Crucially; within the confines of “*home-mode*” and family photography (and tourism to a degree); it has been established that personal photography, served two key purposes:

1. Memory work – photographs were created as a means to provide evidence of past experiences involving: people, places, events and objects of importance. Here the images would provide evidence of significant moments in the photographer’s life that would, through various practices of display (frames, jewellery, and albums) and would be used to substantiate and tell a story about the photographer’s past experiences.
2. Social integration – photographs were created as a means of enacting social relationships with important others. Images would be used to display important relationships between people (e.g. family). This would be achieved not only through depiction (e.g. family albums, wedding certificates, photographic jewellery); but also through interaction with images thereafter (e.g. interacting with family photos as a surrogate means of family work, displaying images to close friends). This was also reflected in the requirement for new arrivals in the family (e.g. a new sibling) to be integrated into the photographic narrative. Here it was noted that photography as a means of representing connection to others was reflective of a good intention for this relationship to continue.

Notably, each of these in turn fed into work concerning the photographer’s sense of self-identity – whether through how they conceive themselves through their past actions (e.g. the different kinds of tourist photography); or how they conceive themselves as part of a group (in the case of the above literature, the nuclear family). Thusly; these practices also demonstrate a significance to 3) self-identity (whether individually, or part of a larger group such as family.)

Key to this was a tactile materiality to photographic images: whether through wearing photographs on the body, proximity to images placed in the home, or tangible practices of arrangement in albums. Storytelling practices (e.g. creation of albums, collections and their display) then made use of photographs as evidence; wherein the creator and audience would interpret the meaning of the images as stories in the oral tradition. These meanings and narratives are seen to be subject to change over time, as time passes or new elements are added to the story (e.g. arrival of a new family member or a new experience). Thusly, personal photography both the practice of selectively recording images; but also

selectively presenting them (and combining, annotating them) as a story about the self and valued others to an audience.

Thus, this early review establishes that, broadly speaking, vernacular photography has been concerned with three principle activities: 1. memory work, 2. social interaction, and 3. identity work (individual and collective); and that furthermore, these activities within the above examples are inter-linked.

The impact of digital imaging and networks on personal photography

As above, digital imaging and networked computing has had a transformative impact upon photography. Within the theory section, it has been made clear that with profound technological change; came seismic transformations in epistemology (i.e. the knowledge and practices surrounding digital photography) – which need to be taken into account when approaching this research.

Part of the transposition of personal photography to online spaces was that it became easier to access and study personal photography as it is undertaken in accessible and public spaces.

Whilst these new spaces presented users with new contexts and opportunities to conduct their personal photography practices; they also allowed for pre-existing motivations and practices to be transposed into digital space.

Updating the concept of personal photography in lieu of digital imaging

Nancy Van House's research into contemporary personal photography offers a range of insight into the transforming relationship between photographers, photographic images and their practices in the digital age.

In 2004s *The Social Uses of Personal Photography: Methods for Projecting Future Imaging Applications*, Van House et al. present a review of the potential methods for anticipating emerging practices; and how best to serve them with technological innovation [135].

In the first instance, Van House introduces the term “*social uses*” to describe the higher level motives as expressed in the introduction to this section. She stresses that prior research did not abstract behaviours to higher level motives in this regard. Van House identified three higher level motives: “*constructing personal and group memory, creating and maintaining social relationships; and self-expression and self-presentation*” [135]. As above this

broadly fits the characterisation of personal photography seen in *“home mode”* and family photography prior to the use of digital technology.

Frohlich et al. classified what people did with their photos along spatial and temporal dimensions— *“here”* versus *“there”* and *“now”* versus *“later”*—creating four categories: *“remote sharing”*, *“sending”*, *“archiving”*, and *“co-present sharing”* [52]. This proposition by Frohlich was exemplary of the broader dimensions that personal photography could then take; unrestricted from physical space. This reflected both a greater fluidity of space and time, because images could be distributed (read: copied), between people instantly through electronic sharing. This allowed for instantaneous practices of sharing wherein (e.g. through an instant desktop messenger) a bundle of images could be shared and discussed by a global group. At this point; personal photography which would be displayed in the home; now found itself in various spaces online.

A key finding of Van House’s inquiry was the photographs have both *“content”* and *“materiality”*. In particular: *“the material of photos increases the ease with which they can be torn loose from their original context and take on new meanings”*. Thus, in the case of the digital photograph, regardless of its content, materiality is significant as the image may be used in various different practices in digital or printed form. What is most critical to meaning, Van House notes, is the way in which the image comes to be used.

As such, Van House also states that photos have *“multiple meanings”* and that these may differ in *“public”* and *“private”*. In this way, Van House notes: *“meanings are socially-constructed by both the maker and viewer, and, some say, the subject, in the context of larger issues and practices of meaning-making”* [135:3]. Here; the exchange of images, as a form of meaning making between parties, is entirely subject to the nature of the interaction taking place between the audience and the image creator (e.g. an online exchange may result in a different interpretation from the creator and audience to the image’s meaning to an offline exchange).

Here, a distinction is made between the image content (which is unaffected by the technological shift to digital); and its changing materiality allowing for a profoundly new uses, configurations, and meaning making practices. This relates to Manovich’s critique of Mitchell in the earlier chapters of this literature review.

Van House's research identified two interesting "resistances" – attachment to physical images and aversion to metadata. This was viewed by Van House to reflect the importance of "materiality of photographs" and "orality of photo sharing" as image collections are explained by the users [135:5]. Thus, in 2004, evidence suggested that participants still valued the physical image. Van House notes that certain practices surrounded these printed images (e.g. annotation, precious care and album work) which users valued at the time. In addition to this, Van House posits that the resistance to metadata was a consequence of attaching definitive meanings to images; where their interpretation by the image creator and flexibility for use in storytelling was still perceived as a critical practice at the time [135:4-5].

Personal photography in a newly digital world: information acts

As much as digital photography could be seen to revolutionize personal photography; this was only one aspect of a wider transformation of society from an analogue to digital society. Cox's paper *Information in Social Practice*, highlights this transformation providing an updated definition for the concept of "practice"; and as result personal photography.

Cox notes that, as a consequence of the changing media scape, and the need to comprehend information as part of behaviour; "the common strengths of research adopting the practice approach lie in the focus on social expectation and social identity, on materiality and embodiment and on routine and change..." [34:61]. Key to this conception is an understanding that photographic practices involve both physical and information activities.

This concept of epistemological change is supposed by Martin Lister in *A Sack in the Sand*. He notes that what was expected as some as the "death of photography" (see Mitchell above) "digital technology, far from being implicated in photography's demise, was being harnessed to the production of more, not less, 'photography'" [95:252]. Lister highlights the emergent dimension to photography that is: "information". Here the practice of digital photography is seen to produce a range of information which was previously not present (i.e. the digital traces produced through the transactional nature of photography); albeit, through a divorce of photography from a physical form. As such, personal photography may now be seen as an information practice; within a wider reconfigured information society. Lister notes: "this is information as a new kind of abstract and generic substance that is 'at large' in the world... a commodity to be traded and moved around the world at high speed via electronic media and telecommunication technologies" [95:263].

This separation of the image from its physical form, whilst limiting the possibility of certain practices, has given rise to others. One of the most notable of these is the ubiquitous photography seen through use of smartphones. In *New Visualities and the Digital Wayfarer*, Hjorth discusses second generation locomotive media, including smartphone photography software tools such as Instagram. Hjorth concludes that the practices of use surrounding this 2nd generation locomotive media; are expressions of co-presence [63]. This specifically refers to the extent to which these tools are used as a means to achieve solidarity with groups of others through image creation and sharing activities.

In addition to this, the greater portability and directness of the technology appears to have allowed for the emergence of new practices of social intimacy. Richard Chalfen [24] and Deborah Gordan-Messer [54] note this in reference to the emergent phenomena of “sexting” wherein nude or semi-nude images self-representations are sent directly between individuals. This reflects an extreme and intimate progression of co-presence (itself an aspect of the social solidarity component of photographic practices) made possible by instantaneous peer-to-peer transmission. This may reflect a version of bodily proximity where the audience is presented an image that allows them to enact intimate closeness with the image creator made possible through new direct photography technologies.

Spatial and performative reconfiguration

Digital imaging, through new processes and action has also transformed the performative nature of personal practices. Lee notes, in *Digital cameras, personal photography and the reconfiguration of spatial experiences*, that this has changed established notions of “framing, taking, displaying, compiling, and reviewing photographs [92:266]. In particular Lee notes that: “while the altered materiality of photography has transformed the nature of photographic performance, the digital network has recontextualised the oral condition that usually shapes the conventional processes of remembering and interpreting snapshots [92:268]. Thus, not only have personal photography practices become situated online; but so too has the oral tradition that surrounds “home mode” photography. In effect, this dislocated the album (and all of its associated stories) from the home; and allows it to become accessible from anywhere. Of emergent practices Lee notes the most important feature was: “their close connection with communication activities on wired or wireless networks. The moments captured by our photographic eyes can be shared and interpreted in a present conversation or later in an individual’s social space on the web” [92:270]. In this way; the fundamental capability of personal

photography in practice has changed; as the immateriality of the image allows for an image to be used in many different practices and photographic conversation (e.g. public distribution, direct private sending, etc.).

Lasen and Cruz note in *Digital photography and picture sharing* that this transformation also significantly transformed the nature of the space in which photographic practices occurred. “*Home mode*” and family photography practices, as outlined in the previous section of this review, took place within the home. The digitization of these practices has led largely to a shift towards public display (e.g. on social networks) where “*solitary pleasures become collective and shared*” [91:210]. This, Lasen et al. state, is reflective of a greater overall disinhibition in interactions with members of the public occurring online.

In relation to memory work, Keightley’s paper *Technologies of memory: practices of remembering in analogue and digital photography* explores key transformations (and continuities that have occurred as a result of the shift to digital. Significant transformations are perceived in four categories of photographic practices: photo-taking, storing, viewing and sharing [80]. In regards to photo-taking Keightley notes, “*greater frequency of camera use, larger volume of photographs, higher level of discards, cheaper cost of production*” along with an “*expansion of photography into everyday life*” where before it was focused on particular events of note [80:6]. When storing photos, digital photos are seen as more “*immediate and disposable*” than analogue images; which were often viewed as precious possessions. This disposability is supported by the increased volume of image production, and the ability to easily capture and reproduce multiple versions [80:7].

In addition, Keightley notes: “*with vernacular photography, technological change is in tension with earlier social and cultural practices and rituals, and at present what is most clearly observable is the awkward coexistence of different modes and uses, purposes and practices, in varying configurations*” [80:15]. As such; whilst new technology is seen to encourage new practices; equally, the cultural significance of certain practices exert influence over practices within digital spaces.

The lack of materiality in the physical sense is seen to alter the viewing activity. Digital images were seen to offer a less personal way of interaction, encouraging the printing of more significant images, to place into books and material narratives. The ability to come to digital images through accidental viewing (e.g. through screensavers and distracted scrolling, was viewed positively. Keightley states: “*this may be seen in some ways to be quite*

unlike remembering through the family album because of the viewing of these images 'many time a day' along with the everydayness of some of the scenes depicted, but in others it is not so dissimilar. The images continue to carry a good deal of emotional freight even though they can be viewed more immediately and regularly" [80:10].

Keightley notes, digital technology was perhaps most observably impactful in photographic sharing practices. Where before sharing was a physical exchange or exhibition, typically in the home, this is widely seen to have shifted a personal practice conducted in private, to a public distribution. Despite this, Keightley notes that users "*feel that they are sharing with a connected rather than anonymous (public) audience*" [80:11]. As such; the shift from "private" to "public", may instead reflect the extension of intimacy in general to public online space. In this sense, the sense of intimacy.

Summary of digital personal photography research

As above in the review of photographic theory; many of these changes are were not significantly transformative to the image itself as a means of communication – but rather the epistemology associated with personal photographic practices. Digital imaging offered photographers a range of new technological possibility which changed the nature of: capturing, storing, viewing and sharing images. This impacted both the kinds of actions available to photographers, as well as the nature of the space in which activities take place.

Personal photography as a practice now takes place in both physical reality, as well as in digital spaces. Within the digital plane; personal photography becomes a part of a larger social configuration of information practices. Here interactions are now completed through the distribution, accumulation and copying of information about users' online activity. The shift towards digital space is seen to coincide with a shift in personal photography from private space (e.g. the home, with small sets of friends) to public spaces online. Though it is noted that in many cases, users perceive their interactions online to still be personal and not public.

Personal photography remains concerned with the motives of "*home mode*" photography – but its immateriality in digitals space allows for the activity to outside of intimate spatial contexts. Furthermore, a single image may be copied without limit, and used in multiple instances for different purposes. The greater availability of photography, through mobile phones and greater connectivity results in higher use, more images, less concern for

discarded images. This allows for the expansion of personal photography into recording wider everyday life – where before it was reserved for capturing significant activities. This may result in the generation of new genres of image; featuring more ordinary everyday content.

Digital photography (and particularly internet connectivity) allows for locomotive photography wherein the photographer, armed with a mobile phone can capture and share images as they walk around in the world. Here the critical differentiator is not that images are made on the go – but rather than the sharing part of the practice (and thus social closeness) is enacted by inviting audiences to be co-present with an ongoing experience. A further example is sexting – where two consenting parties share nude or semi-nude images with each other through mobile photography. This exchange occurs remotely, but allows for intimate closeness to be enacted directly and synchronously.

Whilst not entirely exhaustive, this summary of changes highlights key characteristics in changes within personal photography as a consequence of digital imaging, most notably in how it alters the use of personal photography as a means of social interaction.

Critical themes here include: 1) the dematerialization of the image (reproducible, instantaneous, intangible); 2) the split between digital and physical activity within photographic practices; 3) the new sharing possibilities made available through digital spaces (and a wider shift toward public sharing). This section of the literature review has broadly covered the transformations that have occurred within personal photography due to the emergence of digital imaging, and a wider shift toward an information society.

Despite this, there is a lack of theoretical understanding of the use of personal photography for identity work (specifically at the individual level). Thusly, the next section provides an overview of Belk's theory of *the extended self*; focusing in particular in the use of photographic images as a means of representing the self.

Following this the literature review concludes with description of personal photography; leading up to the use of smartphone hardware and software tools. Then follows a statement of the theoretical framework for personal photography, based on this review, which will be taken forward.

The extended self

In 1988 Belk proposed the theory of the extended self. The theory posits that the things we own form a part of our process of self-identity. In this way: *“knowingly or unknowingly, we regard our possessions as part of ourselves”* [13].

Belk’s conception of the self consists of two parts: the individual self, and aggregate selves. The individual self refers to a person’s idea of themselves as a singular entity. Aggregate selves refer to the individual’s perception of themselves within communities of others (e.g. family, community, nationality, race etc.).

Crucially, Belk hypothesized that things we own play a role in how we construct and perceive our sense of self. He states: *“enhancing these self-constructions are various possessions, which are regarded as having different degrees of centrality to one or more of their individual or aggregate senses of self”* [13].

In this original proposal, Belk provided categories of possessions which have this effect. These include, the *“body, internal processes, ideas, experiences; and those persons, places and things to which one feels attached”* [13]. Belk notes it is this latter group (*“persons, places and things”*) where the self is most *“extended”*. Thus, possessions not only act as *“marker for individual and collective memory”*; but crucially – also *“cues for others to form impressions about”*. This is because unlike our thoughts, a souvenir of a trip, for example, can be put on display to others and will remain largely the same over time; marking *“prior experiences, linkages to other people, and our previous selves”* [13].

Photographic images and the extended self

One of the most common type of objects used for this function are photographic images. Belk notes that they are *“prominent among the objects anchoring an individual’s or group’s memories”* [12].

Photographic images’ value in this practice is unique, for a number of reasons:

- Photography flattens physical dimensions of things (e.g. a landmark) and preserves their appearance as a uniform object (a photograph). Compared to the objects they depict; photographs are easily stored for self-reflection.
- Photographs are more easily distributed than the things they depict, effectively functioning as an easier means of presenting possessions (and extended self) to others.

- As technology improves, photographic images are more easily created and shared. This means that physical things can increasingly be substituted for their images in identity work.
- As a consequence of all the above, photographs can function effectively in a variety of contexts as a unique and versatile kind of possession – serving individual or aggregate senses of self.

In *The Extended Self in the Digital Age* Belk updates his original theory to account for how “the extended self” functions in digital space. The salient theory relating this to digital personal photography reviewed below.

Extended self in the digital age

Belk’s updates concern five separate issues that arose from the digitization of possessions.

- 1) “*Dematerialization*” concerns the consequences of possessions that have become immaterial.
- 2) “*Re-embodiment*” concerns the loss of constraint when it comes to our physical body when we interact online.
- 3) The section on “*sharing*” concerns how digital spaces have changed how we share with others.
- 4) “*Co-construction of Self*” concerns how online spaces are inherently social; resulting in more collaboration when self is conceived.
- 5) “*Distributed Memory*” concerns how certain digital tools have been used to outsource memory.

Dematerialization

The difference between physical photographs and digital photographs is discussed in further detail above. However, Belk posits a number of important differences between material and immaterial (digital) possessions which are useful areas of enquiry. Belk notes that digital objects object exist as data, and despite appearances they “*are now largely invisible and immaterial until we choose to call them forth*” [12]. Thus: (1) Physical practices associated with tangible images are replaced with those in digital space (e.g. photo album to online album). (2) Dematerialized digital images exist in multiple instances – allowing them to be distributed freely without penalty of cost, time or effort. And, (3) the dematerialized image exists as data, and can be transmitted instantaneously - shifting

emphasis from the photograph as an inevitable recording of the past, to communication of 'the now'.

Despite the dimensions of empowerment digital photographs offer above; dematerialization is also theorized to problematize how digital possessions extend the self. Dematerialized images cannot be used in material reality. As such, Belk notes, *the lack of a tactile interactions with digital possessions stops an "auratic" transference of self, occurring; where we become more psychologically attached to possessions we touch. Instead, this attachment may now be transferred to the smartphone – rather than the photograph.*

Slater (1997) notes: *"even material commodities appear to have a greater non-material component"* [129]. It may be argued that the materiality of the photograph has always been secondary to its non-material message. This perspective problematizes physical photographic images – as what the image depicts may be considered *'immaterial'* before dematerialization into digital data. From this perspective, it is only interaction with the photograph as a physical vehicle for the depicted – that changes with dematerialization.

It likely however, that everyday photographers do not discriminate between the photograph and what it depicts. Therefore, it's likely that increased attachment to a tangible photograph is innately extended to the content it depicts.

Similar to the *"auratic"* transfer mentions above; a greater degree of importance and attachment is generated through prolonged interaction with digital possessions. This may include caches of digital images (e.g. a built up profile) or individual images which have been worked on more.

Siddiqui and Turley [127] note it is harder to maintain control, a sense of ownership and authorship over a digital possession. Physical possessions exist in a single place and time – and thus their unique provenance (how they came to be) can be directly traced. With digital images however, the authorship of the image can be discerned from the image itself (either as a visual depiction of the users' direct experience; or, in the case of 'selfies' through the depiction of the author themselves). Although, ability to remember this perspective may fade over time.

Re-embodiment

'Re-embodiment' refers to the concept that, in addition to the *'dematerialization'* of our possessions, users also are no longer constrained by their own physicality online. This

allows users to do things in digital spaces that would be impossible because of their bodies in real life.

The emergence of a more visual online space in recent years has led to less freedom than was initially perceived. In its earliest iteration, the internet was mostly a text-based space. With a widespread lack of visual self-representation (images, videos or otherwise), users were more anonymous, and thus able to change themselves (through deviation from the self in reality) in a more radical manner.

Belk allows for concept that the combination of images we post generates an '*avatar*' (as in an online game). We may also selectively "*disembody*", and then "*re-embody*" ourselves online through how we represent ourselves digital images.

This allows users to explore different selves (through: selective representation, embellishment e.g. photo editing, or other means. Avatars in identity work can thus "*represent our ideal selves, possible selves, aspirational selves, or a canvas where we can 'try out' various alternative selves*" [12].

Avatars (including those constructed of digital images) are not only influence how audiences see users; but how users see themselves. This is because, unlike real life; (where we are unable to view ourselves when in social interaction); we are audience of our own avatar when social interaction occurs online.

Self-conception through avatars in this way encourage "*Proteus effects*"; where self-representation as an avatar results in analogous real world effects (i.e. the avatar becomes a 'self-fulfilling prophecy'). Users can become attached to digital avatars (in this case, their images and wider social media presence). The avatar is analogous to the "*body*" in its function within the extended self.

The bodily self is noted to be the fulcrum for autobiographical memories. This may also explain the increased frequency of "*selfies*" in personal photography - as it becomes a significant practice to represent the bodily self within autobiographical memories.

Disembodiment allows users to theoretically embody many different avatars; thus exploring many different concepts of self simultaneously. Despite this the similarity of audiences across different social media tools (e.g. a pool of friends and family) creates "*more rather than less self-consistency online that in the pre-digital era of narrower audiences in which the extended self was originally conceived*" [12]. Thus, dramatic deviations from the self

in reality, may not be achieved without suspicion or critique known others. As a result, change may only be achieved incrementally, as life progresses.

Sharing

The fundamental principle of the internet is that it is a place of sharing information. It is a global digital communications network that allows for quick distribution of information (websites, images, music, video, etc.) as digital data.

As posited above, one of the symptoms of this new relationship is that it has become the norm to share more of our own personal information online. Belk notes: *“for those active on Facebook, it is likely that their social media friends no more than their immediate families about their daily activities, connections and thoughts”* [12].

Digital sharing spaces often online arrange posts in a reverse-chronological order. As a consequence of this, Belk notes (in relation to Facebook’s ‘timeline’) that users *“intentionally or automatically create a receding depiction of how they were and the events of importance in their lives* [12]. This helps users look back on themselves and ideal record of self over the course of time. This is seen in users ‘preening’ old images that no longer reflect their self-concept. This also places more emphasis on current updates than those in the past.

These timelines move fast and users are noted to partake in frequent checking behaviours to avoid a ‘fear of missing out’. Thus, keeping up to date with others’ updates, and providing their own; forms a significant part of users’ practices.

Online sharing (instead of face-to-face) has been noted to result in disinhibition. This can have positive and negative consequences. Users express their ‘true selves’; or ennobled find themselves freer to criticise and attack others.

Whilst there is often an explicit audience to sharing; due to the public nature of many online spaces; people often also share with a broader implicit audience.

Feedback plays a large part in validating sharing behaviours online; and is valued both in its quantity (e.g. non-verbal interactions); as well as content in the case of comments.

Belk notes people have less control over sharing in digital spaces. This is because boundaries of sharing are easily managed offline, are more easily traversed in digital

space. In this way, digital sharing is inherently less “secure” than physical sharing and requires greater discrimination.

As above, when digital images are shared it is difficult to ascertain ownership (as they are copied and become a part of caches that others can access). Belk notes that digital possessions are relevant to the “*aggregate level of self – encompassing those with whom they are shared*”. Thus digital sharing submits the image to the larger aggregate self of those who can access the image.

This is also relevant to spaces where sharing occurs. Whilst online sharing spaces may be owned by companies (e.g. Facebook etc.) they are perceived by users as spaces that they “own”.

Co-construction of Self

Co-construction of self refers to the extent to which individual or aggregate selves are generated through collaboration with others. Whilst we share images with large groups of others in digital spaces; in reality, we are typically physically alone - either sat at a computer or giving all of our attention to the smartphone screen. As a result, Belk posits there is an increased desire to interact with others positively online, as it a means to alleviate the physical solitude associated with the activity.

Thus, as with socialization in general, we interact in order to gain favour with others. This may simultaneously: create a demand to change the self (to please others); and limit the ability to do so – as others may be critical of significant deviations from reality. Thus, the online self (as a consequence of its interactions with others) may be considered co-constructed or collaborative.

Feedback may be enacted through comments added to images online; which if continually repeated are referred to as ‘digital patina’. The involvement of the audience in this routine feedback affirm or dissuades certain kinds of sharing.

Digital patina also generates added meaning, and sense of unique provenance to the image; and may also increase the significance of images to aggregate selves (e.g. a group of friends or family). This may be seen to be akin to the oral narratives in “home mode”; but more widely collaborative. Belk notes that digital patina becomes “*less an expression of one person and more a joint expression and possession of the couple or group that has composed them*” [12].

Aside from sharing positive representation of the self; another associated behaviour is self-deprecation. Being self-critical online is often conducted as a means to get reassurance. This has also been noted to be therapeutic; and driven by greater disinhibition online.

Unlike face-to-face reassurance, online reassurance remains visible for all to see. Furthermore, because it is received from others, positive reinforcement appears less egocentric.

Distributed Memory

As above, the expected function of photography has historically been put to use to preserve an appearance of things as time passes and memory fades.

With a wider array of digital technologies came an increased ability to further “outsource” the function of our memories through a number of other electronic tools (e.g. calendars, file browsers, search engines etc.) The increased ubiquity and convenience of these tools (and thus diminished reliance on our own memory); may have changed the role of possessions as cues for memory in the extended self.

This concerns autobiographical memory; which Bluck suggests completes three functions: self, social and directive. “Self” concerns the creation of autobiographic knowledge to develop a consistent sense of self over time [16]. The social function of autobiographical memory helps us connect with others, developing empathy. Notably, sharing autobiographical information is seen to make conversations seem more authentic. Finally, the directive function allows users to review their past experiences as a means to learn lessons and alter future behaviour. Bluck highlighted a shift in emphasis within the production of autobiographical memory from ‘self’, to ‘social’.

In many digital tools; memories are catalogued, organized and easily searchable. Without needing to remember ourselves, we are able to look up old friends, locate pictures from a wedding we attended and continue to interact with people who had attended. In this way, in addition to our “selves”, our memories are also co-created by others who contribute to photo banks online (e.g. Facebook), or offer us different perspectives by tagging us in images.

With material possessions we have a physical limit to the mementoes we’re able to keep. This results in practices of curation and discarding what is no longer seen as important.

This is no longer an issue with digital possessions. Cheap and increasingly limitless storage allow users to keep digital images without discarding old memories – removing the practice of curation. Though, as above, this may be achieved through preening of more widely accessible images instead.

As touched upon in previous sections – the increased production and distribution of digital photos in turn increases the amount of material contributing to individual and collective sense of past. Memory is subject to distortion either through manipulation of the image; or via reframing by others' feedback and interactions.

Summary of the Extended Self

Within the literature review of personal photography; it was identified that personal photography is largely motivated by three key interlinked functions. These are: 1) memory work, 2) creating and maintaining social relationships, and 3) self-expression and identity work. Many of these activities are seen to overlap (e.g. the construction of photographic memory is equally a practice which informs the photographer about themselves).

Belk's theory of the extended self was utilized within this research in order to provide a greater insight into the way that digital personal photography can be seen to function in identity work – however it is noted that the theory also provided insight into the use of digital possessions (including digital photographs) in memory and socialisation.

The key principles were as follows:

Possessions form parts of an extended self; they are collected to function as an external manifestation of our self-concept. Possessions may function as an expression of the individual self; or aggregate selves (e.g. nationalities, fan groups etc.) Photographs are uniquely useful for this purpose; as they can represent any object, person, and experience - and are easily displayed.

The widespread use of the internet has allowed for digital possessions (e.g. digital images) to become important. There have been five key transformations to the nature of possessions as a consequence of a shift towards digital space.

Dematerialization – use of digital images restricts practices associated with physical images, and limits the sense of '*auratic*' transfer to the image. Despite this; this may instead

result in analogous practices in digital space; and attachment to the interface through which interactions take place (e.g. certain spaces online, or the smartphone itself).

Re-embodiment – within digital spaces the “self” is not defined by its own physicality. As such; through digital images, users can create avatars that represent a variety of different selves. Often this results in embellished or aspirational self-representation – which may then later be reflected in real life changes through Proteus effects. In theory this allows for a degree of freedom in self-representation – though audience feedback tends to temper significant deviation from reality (see: co-construction of self).

Sharing – digital sharing has resulted in a greater shift towards publicity – where possessions which would previously be kept private are shared broadly online. There is also an accelerated rate of sharing; which has resulted in the routine checking of (and posting on) sites of sharing to avoid missing out on updates. This pressure has resulted in a higher degree of scrutiny being placed on what is shared; with post-hoc “preening” of online presence commonplace. Accelerated sharing has also resulted in a higher degree of disinhibition online; which allows people to express their true selves, as well as denigrate others – more easily. It is also hard to claim control and authorship over a digital possession – as when it is shared it is copied to others’ devices. As such digital possessions when shared are relevant to the aggregate self, encompassing who they are shared with.

Co-construction of the self – socialisation undertaken online, as with most socialisation is undertaken in order to gain favour from others. As such the feedback that surrounds digital sharing (“digital patina”) can be seen to encourage or dissuade certain kinds of sharing. Often self-deprecation is used to receive support from others. Feedback also is seen to add unique meaning and provenance to digital possessions such as digital images.

Distributed memory – through digitization, memory has been outsourced to various tools, removing the need for memory work (search engines, images banks, etc.). There are three kinds of autobiographic memories than can be embodied within possession: 1. Self, 2. Social, 3. Directive. In digital photography the emergence of shared photo-banks online mean that memory is often co-created and shared between groups of people (as they utilize the same images as their reference points). This has largely resulted in a shift from the use of digital possessions (e.g. digital images) for autobiographical memory of the self, to social memory (and thus aggregate selves). This results in a collective sense of memory; and the ability to shape autobiographical memory at the aggregate level through

interactions (e.g. non-verbal interactions, comments) on digital images that are important in this activity.

The extended self and digital images

Digital images are a kind of possession which function as an expression of the individual self, or an aggregate self (e.g. family, friendship group) [13].

Photographs and digital images are uniquely useful for this purpose as they can capture anything as an appearance (and thus function as a pseudo-presence of any possession). They are also easily often more displayed to others than the things they depict (this even more so through digital sharing).

Digital possessions are different from physical possessions (and digital images from physical photographs) in several relevant ways.

They are dematerialized. They lack a physical form through which “auratic transfer” and attachment can occur. Despite this; practices in digital space allow for a greater perception of attachment to be generated through extended interaction with images (e.g. through the accumulation of a photo bank, or through extended interaction with a single image).

The self can be re-embodied online. Through digital images the photographer is able to construct an avatar of themselves which is not defined by their physical limits. This can result in experimentation and aspirational self-portrayal – which may then manifest in reality. With digital images however, significant deviation from the self in reality is tempered by audience feedback.

The dimension of sharing has changed. There is a greater emphasis on public sharing and an accelerated rate of sharing and routine checking in with others’ updates. This results in greater scrutiny being placed on the identity that is being shared; with people often deleting old images that do not match up with the current self-conception.

Sharing and digital spaces entail that the self is co-created. Socialisation online is undertaken in order to gain favour from others. Feedback that surrounds image-sharing shapes the individual and aggregate self of self.

Memory is now distributed. In the first instance, memory work is outsourced to various tools, removing the need for overt remembering practices. The overlapping and shared nature of digital image photo banks means that memory is often a collaborative and

shared. The kinds of interactions that surround these images (e.g. comments) also allow the individual to influence memory at the aggregate level.

Conclusion: toward a model of personal photography

The next section of this chapter consolidates an account of the key overall findings of the literature review; and then presents this summary in the form of a framework of personal photography.

This framework is then used later in this research as a means to analyse the focus group findings – and thus identify key transformations occurring within personal photography through use of smartphones.

Genesis of the field

Personal photography consists of the creation of photographic images by non-professional users for everyday use. The accurate conception of personal photography practices does not only focus on the image – but all interactions and actions that occur between the image-creator and audience [26:21]. As such; the materiality of images is significant, as they can influence practices through their material form, as well as the content [135:3]. Furthermore; with the emergence of digital imaging; these meaningful activities in personal photography can now take place in physical reality, or in digital online spaces [92:266].

Meaningful activities within photographic practices broadly include: a) image capture, b) image-storing, c) image viewing (and reviewing) and d) sharing actions [80]. The principle motivations behind personal photography practices are threefold, and overlap: 1) memory work (collective and individual), creating and maintaining social connections, and 3) self-expression and identity work. [135] Thus, personal photography should be considered as a holistic activity, wherein photographic images act as a fulcrum for interactions between human actors; conducted in order to achieve the motives above.

Personal photography was an understudied phenomenon prior to the emergence of digital imaging, with no consolidating theory [8]. (This was likely a consequence of the relative difficulty to access practices surrounding physical, when compared to digital). As such, early research into focused largely upon various practices situated in the home [26:20], based around family [18:19], and predicated upon a pre-existing personal relationship between creator and audience [26:20]. As such, “home mode” and similar personal photography practices were characterised by being undertaken within “an intimate context” (e.g. the home) through the sharing of images with small groups of closely related people (e.g. other family members and close friends) [26:20].

Key to the social aspect of personal photography was tactility. Touching (whether in image poses, through wearing photographs as jewellery on the body, or through interactions with physical images) is a means of expressing a connection between human actors within a practice [8:265]. In “home mode” images on display in this setting form pieces of “domestic architecture” [8:267], which confer an importance on the objects, people, places and events depicted within the image. When displaying images of people within the home; this is perceived as a signal of “good intentions” for the relationship [44].

Another key practice within “home-mode” photography was the creation of the family album; viewed as the ultimate expression of family relations [8:265]. Here images would be used to manifest the sense the family has of itself and of its unity [18:19]. This would not only be achieved through the combination of images; but additional material, such as text and visual annotations and combinations of images [6:266].

Photographs and albums function as evidentiary material for oral storytelling practices and memory work where effort is made to consolidate a narrative around the individual [89:175]. These images contain meanings, but encourage free interpretation when overt memory work is undertaken [86:285]. These narratives can be recalibrated, e.g. on the arrival of a new family member; where new images are contributed, changing the meaning of the whole [18]. Ultimately what the photograph, or albums “mean” is subject to a process of social communication and negotiation between the photographer and audience [26:12].

Digital: epistemological transformations to personal photography

As well as resulting in the greater ability to access information about them; the emergence of digital imaging has had a profound impact on personal photography practices.

Digital images; (whilst not fundamental changing the truth claim of photographic images [81, 97]); was an epistemological shift [7] which offered a range of new possible activities within personal photography.

In the first instance, digital imaging encouraged more capturing, more images, more discarded images, less cost; increasingly expanding photography from moments of significance into the recording everyday life [80:6].

Actions within across the entirety of personal photography practices could now take place in digitally, as well as physically. The transposition of many of these actions to digital

space conferred upon them freedom from physical constraints. This resulted in a sea change within practices from private intimate spaces (i.e. in the home with close friends as above), to seamless larger scale distribution public spaces (e.g. social networks) [91:210]; though users still perceive these audiences and spaces as personal [80:11].

This placed new emphasis on the materiality of the photograph, as interaction with digital images, in digital space could generate different meanings from viewing a physical print. These epistemological changes could be seen across the entirety of personal photography behaviours; encompassing: framing, taking, displaying, compiling, and reviewing photographs [92:266].

This allowed for instantaneous transmission; contravening established expectations of photographs as representation of a recent past. Furthermore, connectivity to information networks (Wi-Fi, cellular data networks) has allowed instantaneous sharing to occur on the go – resulting in locomotive photography [63]. Frohlich offers dimensions : “here” “there” “now” and “later”; creating four categories: “remote sharing”, “sending”, “archiving” and “co-present sharing” [52]. Notably, remote sharing was not a possibility before, due to the intrinsic limitations of physical images (that they take time to produce and physically send to someone else.) In tandem with this, the ability to instantaneously share directly saw the rise of new intimate practices (e.g. sexting) [24] [54].

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Memory is now distributed. In the first instance, memory work is outsourced to various tools, removing the need for overt remembering practices. The overlapping and shared nature of digital image photo banks means that memory is often a collaborative and shared. The kinds of interactions that surround these images (e.g. comments) also allow the individual to influence memory at the aggregate level [12].

Framework for analysis of focus groups

The most effective means of developing theoretical framework from this literature review would be to begin with the above description of personal photography; and then use photography theory as a finer set of critical tools.

A. General points about personal photography and its digitization

Personal photography is to be understood as not just the image, but all interactions and associated actions between communicator and audience [26:21].

Images can be influential in practices both through their “*content*” and “*material*” [135:3].

Photographic practices are comprised of four principle activity types [80]: 1) capturing, 2) storing, 3) viewing, and 4) sharing.

The digitization of personal photography has embedded photography within information practices [95:263]. This has transformed the relationship between humans and images:

- Digital personal photography forms part of a wider global trade and movement of digital information [95:263].
- Digital personal photography has transposed some activities (e.g. sharing and viewing) from physical space to digital space [92:266].
- Digital personal photography encourages: more camera use, more images, more discards at cheaper cost; causing an exponential increase in production and sharing [80].
- Increased production results in routine (everyday) practices of production and checking others for fear of missing out (FOMO) [12].
- Physical practices replaced with those in digital space (e.g. photo album to online album); loss of auratic transfer to photo object [12].
- Dematerialized digital images exist in multiple instances, duplicated when distribution, can be copied with little effort, cost. [12].
- Digital personal photography is ubiquitous, and internet connected; allowing for instantaneous practices which were impossible before (locomotive photography) [63] [92:270].
- Whilst digital personal photography offers new possibilities; established conventions continue to shape practices [80:15].

More than one of the above:

B. The three motives of personal photography

Personal photography is motivated by three functions [135] (which overlap).

Under each of these, salient critical points are presented:

1. Memory work

- Interpretation of photograph(s) as evidence in oral storytelling [89:175].
- Dynamic renegotiable meaning as time passes [86:285].
- Curation, annotation and display as key activities [6:266].
- Digital personal photography results in less overt memory-work as memories are encountered incidentally [80:10].
- Digital spaces often present images in reverse chronological order – placing greater emphasis on the present, and resulting in preening of prior self-representation [12].
- Outsourcing of memory to online tools (search engines, photo banks etc.) reduces deliberate photowork [12].
- Unlimited storage of digital images removes need to curate large collections of images, reducing overt photowork [12].
- Collaboration and copying (tagging) of digital images allow for memories to be constructed from shared material [12] (see below).
- Photographic evidence used for collective memory can be unilaterally influenced through digital patina (comments, non-verbal) [12].

2. Creating and maintaining social connections

- Co-presence in depictions as ‘good intentions’ [44:51].
- Focus on immediate family, group solidarity [18:19].
- Use of (interaction with), image as a surrogate presence [8:265].
- Tactility expressing connection between people (content poses, interaction with images) [8:265].
- Sense of intimacy with audience [26:20] and setting [12].
- Digital personal photography is disinhibited resulting in more public sharing [91:210] [12], though users perceive privacy [80:11].
- Digital personal photography conversely allows for intimate sharing through trusted direct sending [24] [54].
- Harder to exert ownership and control over digital images once shared; (they form aggregate sense of self with who they’re shared) [12] [127].

- Digital photography as solitary activity in physical reality; resulting in a greater desire to connect and please in digital spaces [12].
- Digital patina (comments, non-verbal feedback) shape activities; resulting in a co-construction of self (see below) [12].

3. Identity work and self-expression

- Photographs certify a version of experience the creator is motivated to share with others e.g. differing tourist types [25:438].
- Authorship/ownership of digital image becomes vague; though capable of being read through recollection of capture [12] [5:9].
- Images and collections form an avatar representing an aspirational self beyond real limits [12]; consistency maintained by feedback.
- Users develop a perception of proprietariness over the spaces where they share (e.g. their social media profile etc.) [12].

4. All of the above

- Selective capture, and presentation of reality [26: 12] as a positive account of self, others and experiences.
- Focus on practices rather than image itself [18].
- Photographic images as possessions and extension of individual and aggregate senses of self [12]; [12]and marker for individual and collective memory.

C. *Relevant concepts from photography theory*

What follows are the relevant concepts from photography theory that are useful in interrogating participants' practices:

- 1) Descriptions of the photograph as objective or subjective
 - a. Stated objectivity, photography's aggression [130:6].
 - b. Photographs seen as "pieces of the world" [131:1] [130:4].
 - c. Scepticism toward digital images as evidence [105:255], due to digital editing etc. [97:9-10].
 - d. Concern about "meta-image" [114:141] and new epistemology (photo editing etc.) [7:10].
- 2) Semiotic perception and description of the image
 - a. Symbolic, iconic or indexical mode [27:36-37].
 - b. Differentiation of operator and spectator's image [5:9-10].

- c. Semiotic differentiation between analogue, digital images [114].
- 3) Motivation behind framing and capture
 - a. Selection of perspective [15:9].
 - b. Selection of moment[23]
- 4) Photography and phenomenology of seeing
 - a. Awareness of between photographic seeing and human sight [35:71] [130:4] [81:25].
- 5) Photography as power
 - a. Perception of appropriating object [130:4].
 - b. Photographing other in practices [130:14] [5:4].
- 6) Perception of image-reproduction
 - a. Perception of the original, providence, ownership [14:21].
 - b. Perception of exhibition value, copies with different meanings [15:19].
 - c. Loss of ability to comprehend image subject beyond representation (hyperreal) [10:1].
- 7) Photography and time, memory
 - a. Changing perception of images as time pass, pathos [130:16].
 - b. Perception of creating images for later viewing [23].
 - c. Awareness of photography's limitation as memory [5:91] [130:9].
- 8) Photographic performance
 - a. Perception of self as spectator, voyeur [130:12].
 - b. Experiencing something through photography [130:10].
 - c. Perception of embodiment of photographer's gaze [107].

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CHAPTER 4: DATA COLLECTION AND FINDINGS

Review of preparation and planning

Six mini focus groups were conducted in July and August 2014 with smartphone users from three different age groups. In these groups information was collected about participants' smartphone photography practices. Three different cohorts consisting of 13-18 (Cohort A), 18-25 (Cohort B) and 25-35 year olds (Cohort C) were used; with each cohort represented by two separate focus groups. Cohort A and Cohort B (18-25 and 25-35 years) were recruited through a questionnaire ensuring that participants regularly used smartphone photography.

Cohort A (13-18 years) were recruited through gatekeepers and completed the screener following the discussion. Discussions were split into four sections gathering information about:

1. What participants' **smartphone photography practices** were
2. Participants' stated **preferences** surrounding these practices
3. Participants' stated **barriers and enablers** to these practices
4. How participants would use photography if there were no restrictions (**aspirations**)

Each group lasted two hours (with each section lasting half an hour). Responses were captured through audio recording and transcribed. What follows is: (1) a recollection of the focus group activity as it happened, (2) characterization and comparisons between cohorts and groups (3) a description key themes that emerged from each focus group, (4) a short conclusion.

Following the completion of the recruitment and planning phase for the focus groups (see methodology chapter), each participant group was designated a letter combination, as below:

Cohort A (13-18 year olds)

AA (Group 1)

AB (Group 2)

Cohort B (18-25 year olds)

BA (Group 1)

BB (Group 2)

Cohort C (25-35 year olds)

CA (Group 1)

CB (Group 2)

The focus groups were organized for a week in June 2014 and were conducted in the Parkinson Building at the University of Leeds. The first four groups were scheduled to take place on weekday evenings (BA 9th, BB 10th, CA 11th CB 12th) with the final two sessions taking place on Saturday 14th (AA and AB) 14th over the course of the afternoon.

It was predicted that the youngest cohort would be the most difficult focus group to conduct. These groups were organized to take place last as more experience and familiarity with the focus group protocol allowed for greater care to be paid into facilitating the groups as effectively as possible. In the final stages of confirming the activity, a group from Cohort A dropped out ahead of its scheduled time. A replacement was conducted the following month instead (see issues).

The setup of each group consisted of a single large table seating seven (five participants, the primary researcher and research assistant). In front of each participant was: an information sheet and an envelope containing £25 remuneration for taking part, and a receipt form for them to fill in. In addition, Cohort B and C were provided with informed consent forms to complete. For Cohort A, consent forms were sent with gatekeepers before the activity, signed by primary care givers and brought upon attendance. Cohort A were also asked to complete a paper version of the sampling screener used to recruit

participants in Cohort B and C. This is used later in this chapter as a means of establishing the basis of comparison between Cohort A, with B and C.

The information sheet provided was created in accordance with an ethical review of the activity by the University of Leeds Research Ethics Committee. The sheet provided participants with information in relation to: the research purpose, why they were selected to take part, their right to withdraw, what the activity would consist of, disadvantages and benefits of taking part, how their responses would be used, and further contact information. This was also provided to participants before attending, but was available at the time so that it could be confirmed that all participants were able to give informed consent.

Consent forms included a series of statements establishing participants' understanding of the information sheet, and thus what participating in the activity would involve. This also indicated that responses would be anonymised, confidential and subject to University of Leeds Data Protection policy. In the case of the Cohort A – a parental consent form was sent out and completed by primary care givers prior to attendance on the day.

Placed in front of the research assistant was a MacBook computer, which was tethered to a microphone on a stand. This functioned as the primary audio recording device for the activity. Back-up recordings were also made on a Moto G mobile phone as a contingency. Placed in front of the primary researcher was a copy of the research protocol to hand, which was used to guide discussions when needed. Finally, in addition to this, a selection of refreshments was offered to participants to take at will – as a way of putting them at ease before and during the activity.

The focus groups were facilitated entirely by the primary researcher. A research assistant was also present who monitored audio as it was being recorded and illustrated participants' ideas in the final section of discussions.

The focus group activity was shaped by the broad structure of the research protocol (attached in appendices). Upon meeting the group, a short ice-breaking exercise was undertaken to put the participants at ease, and notify them of important information (e.g. toilet facilities and fire evacuation point). The discussion was split into four main sections: (1) how participants use smartphones photography; (2) relevant preferences in these

practices (3) barriers and enablers help or hinder them, and (4) how they would conduct photography if there were no restrictions to their activities.

Throughout the activity, as a consequence of the semi-structured nature of the discussions taking place, many responses were seen to be relevant to other sections in the activity. Despite this, participants were encouraged to respond freely, and where overlaps occurred it was seen as an indication that participants were responding to the discussion assertively and openly.

Responses were captured through audio recording. The files were then transferred onto a password-protected encrypted hard-drive. In the following month password protected transcriptions of the six groups were generated for analysis.

Issues

A number of issues were experienced over the course of conducting the focus groups.

Unanticipated drop-out of three participants

Three of the groups (AA, BA, and BB) were impacted by unavoidable absences on the day. This reduced the amount of attending participants to 4 of 5 in each case. All possible measures were put in place on the day of the groups to ensure complete attendance, including sending out emails and text messages to participants in order to confirm their attendance. Where attendees were known to be unable to attend a group with enough time for action to be taken, replacement participants were sampled using the random number generated in the methodology chapter. Whilst this was not ideal, constituting a 10% drop in the overall participants in the study (27 of a desired total of 30), groups of 4 are still regarded as a suitable number of participants for “mini-groups” as described in the methodology review. An unintended benefit of having four out of five participants was that in these groups participants’ testimonies could be explored in greater detail.

Recruitment of Group CB a month later

As mentioned in the section above – Group CB was unable to participate as originally planned in June. This was a consequence of an inability to confirm the group with the gatekeeper in the final stages of organizing it. This led to the recruitment of a reserve group which took place roughly a month after. There was little impact the focus group discussion or findings – as the group was conducted identically a month after the original series.

Groups of participants known to each other

A consequence of younger groups being recruited through gatekeepers (rather than random sampling as with Cohort B and C) was that they knew each other. Furthermore, many of their responses within the discussion concerned practices conducted with each other. This was also seen in some of the other groups as a result of coincidence in the random sampling process.

Despite acquaintance between participants being a core characteristic Cohort A, this is seen as a benefit to the discussions, allowing practices to be explored from the perspectives of both image-creators and audiences. However, within some groups there was the risk that responses might be impacted by peer pressure within their social relationships, and that responses would differ from groups where participants were strangers. Where this was observed during the activity, care was taken to approach from multiple angles, ensuring that participants were not subjected to stress.

Cohort and group descriptions

The following section of this chapter outlines the composition of each focus group; using information about participants obtained through the screener. This establishes if each group can be considered analogous, and therefore a reliable generalization of a larger population.

In the following description of the focus groups all participants are anonymised. Instead of names, participants are allocated a number (R1, R2, R3, etc.) This is combined with a prefix identifying the group they participated in (e.g. ABR1, CAR4, BBR2, etc.) Below are the reported genders and ages of each participant, as taken from their completed screener surveys. In addition, any relevant observations about the focus group composition are included.

Cohort A

<u>Group AA</u>	<u>Group AB</u>
AAR1 - Female, aged 14	ABR1 - Male, aged 16
AAR2 - Male, aged 14	ABR2 - Male, aged 15 (Sibling of ABR4)
AAR3 - Female, aged 14	ABR3 - Female, aged 14
AAR4 - Female, aged 14	ABR4 - Female, Aged 14 (Sibling of ABR2)
AAR5 - (Absent)	ABR5 - Male, Aged 16

Table 4.1: age and gender description of Cohort A

- *In Group AA, participants disclosed that they were part of the same friendship group, with most being members of the same form group at school. In group AB some of the participants were siblings, with others participants being close friends. This was also observed, to a lesser extent, in some other groups. As a consequence, care was taken to mitigate peer pressure.*
- *Group AA also had a single unannounced absence on the day of running the groups.*

Cohort B

<u>Group BA</u>	<u>Group BB</u>
BAR1 - Female, aged 21	BBR1 - Male, aged 19
BAR2 - Male, aged 22	BBR2 - Male, aged 21
BAR3 - Male, aged 20	BBR3 - Female, aged 20
BAR4 - Female, aged 21	BBR4 - Female, aged 20
BAR5 - (Absent)	BBR5 - (Absent)

Table 4.2: age and gender description of Cohort B

- *Both of Cohort B's focus groups suffered from absences – reducing its participation ratio to 80% of Cohort C and 88.8% of Cohort A. This was not seen as problematic, as it allowed discussions with present participants to be conducted in additional detail within the accepted methodology of “mini” focus groups.*

Cohort C

<u>Group CA</u>	<u>Group CB</u>
CAR1 - Male, aged 31	CBR1 - Male, aged 28
CAR2 - Male, aged 25	CBR2 - Male, aged 25
CAR3 - Female, aged 33	CBR3 - Male, aged 25
CAR4 - Female, aged 26	CBR4 - Male, aged 25
CAR5 - Female, aged 28	CBR5 - Male, aged 30

Table 4.3: age and gender description of Cohort C

- *Group CB was entirely comprised of male participants. This complication was caused by a combination of random sampling, and a reduced pool for Cohort C. Despite this, both groups offered a range of insight, with little impact from the gender skew.*

Cohort A consisted of 5 female (55%) and 4 male (44%) participants. Cohort B consisted of 4 female (50%) and 4 male (50%) participants. Cohort C consisted of 3 female (30%) and 7 male participants (70%), with group CB notable in that it contained entirely male participants. The overall gender split across all focus groups was 12 female (44%), and 15 male (66%). Despite this, gender was not observed to have a significant impact upon participants' reported practices.

The mean age of cohort A was 14.55 recurring. The mean age of cohort B was 20.5. The mean age of cohort C was 27.6. This translates to a difference of 6.0 years (rounded to the nearest decimal place) in the mean ages of cohort A and cohort B; and a difference of 7.1 years in the mean ages of cohort B and C. Variation of 1.1 years in the mean age between cohorts indicates a consistent age difference between the groups. This is encouraging for comparison between cohorts.

Further information was captured about participants through the screener survey. This was completed by cohorts B and C before taking part in the study to ascertain their eligibility to take part; and by cohort A upon attendance of the focus groups. Of interest was the extent to which cohort A could be seen to be analogous to cohort B and C (who were recruited by fulfilling criteria in the survey).

What follows is firstly a brief characterisation of participant responses in the screener survey. This includes responses to questions about: (1) the smartphone they use, (2) the amount of photography apps installed on their device, (3) the name of these apps, (4) whether they use any other cameras to share photographs, (5) and how often they use smartphone photography.

Following this, a short section looks at the responses given by cohort A; determining the extent they deviate from those recruited through the screening activity – and the significance of this upon their inclusion in the activity. The table below shows phone brand used by participants, and apps they reported to be installed on their device:

Cohort A

Group AA	Group AB
AAR1: Nexus 4 (Android), 4 apps, WhatsApp, Snapchat, Kik, Instagram	ABR1: HTC Desire C (iOS), 3 apps, Instagram, Facebook, WhatsApp
AAR2: iPhone 5c (iOS), 3 apps, Snapchat, Instagram, Facebook	ABR2: Samsung (Android), 4 apps, WhatsApp, Instagram, Snapchat, BBM
AAR3: Samsung (Android), 4 apps, Snapchat, Facebook, WhatsApp Instagram	ABR3: iPhone (iOS), 6 apps, Snapchat, Facebook, Instagram, WhatsApp, BBM, Twitter
AAR4: iPhone 4S (iOS), 3 apps, WhatsApp, Instagram, Snapchat	ABR4: Samsung (Android), 2 apps, Instagram, Twitter
AAR5 - (Absent)	ABR5: Samsung Note 3 (Android), 3 apps, Facebook, WhatsApp, Snapchat

5 Android, 4 iOS devices. (Mean avg. of 3.55 recurring apps)

Table 4.4: description of smartphone brand and apps in Cohort A

Cohort B

Group BA	Group BB
BAR1: iPhone (iOS), 2 apps, WhatsApp and Instagram	BBR1: Samsung S3 mini (Android), 2 apps, Facebook and Snapchat
BAR2: Samsung S3 (Android), 8 apps, Snapchat, Instagram, Facebook, BBM, WhatsApp, Tinder, Text, Email	BBR2: Blackberry (BlackBerry OS), 1 app, Twitter
BAR3: iPhone 4S (iOS), 5 apps, Instagram, Facebook, Twitter, WhatsApp, Snapchat	BBR3: Sony Xperia L (Android), 10 apps, Snapchat, Facebook, Instagram, Twitter, WhatsApp, BBM, Hootsuite, Etsy, Mail, Gmail
BAR4: iPhone 4S (iOS), 6 apps, Instagram, Facebook, Twitter, Tumblr, WhatsApp, Email	BBR4: Samsung (Android), 2 apps, WhatsApp and Facebook
BAR5 - (Absent)	BBR5 - (Absent)

4 Android, 3 iOS, and 1 Blackberry OS device. (Mean avg. of 4.5 apps)

Table 4.5: description of smartphone brand and apps in Cohort B

Cohort C

<u>Group CA</u>	<u>Group CB</u>
CAR1: iPhone 4 (iOS), 7 apps, Instagram, Facebook, Tumblr, Twitter, Diptic, Catwang, VSCO	CBR1: Samsung Note 3 (Android), 4 apps WhatsApp, Facebook, Dropbox, Snapchat
CAR2: iPhone 4S (iOS), 3 apps, Facebook, Snapchat, WhatsApp	CBR2: Sony Xperia Z (Android), 3 apps, Facebook, Twitter, Instagram
CAR3: HTC One S (Android), 2 apps, Twitter, Facebook	CBR3: iPhone 4 (iOS), 4 apps, Facebook, Snapchat, Instagram, WhatsApp
CAR4: iPhone 5S (iOS), 7 apps, Instagram, Twitter, Facebook, Snapchat, WhatsApp, Facebook Messenger, Texts	CBR4: iPhone 4 (iOS), 4 apps, Facebook, Twitter, Snapchat, WhatsApp (Previously Instagram and Blogger)
CAR5: Nokia 1020 (Windows Phone), 3 apps, Instagram, Facebook, WhatsApp	CBR5: iPhone 5 (iOS), 3 apps, Facebook, Instagram Snapchat

3 Android, 6 iOS and 1 Windows Phone device. (Mean avg. of 4 apps)

Table 4.6: description of smartphone brand and apps in Cohort C

Within the entirety of the cohort, 13 participants reported using an iOS device, 13 participants reported use of an Android device, 1 participant reported use of a Windows Phone, and 1 further participant reported using a BlackBerry device.

Each of the focus groups included participants who used different smartphone operating systems. Although it is notable that Group BB was the only group in which there were no representative from both Android and iOS camps (3 Android, and 1 BlackBerry device). Despite this, differences between the key smartphone apps on Android and iOS are largely minimal – and the groups could be seen to offer a basis for varied discussions.

Fig. 4.1 displays numerically the population’s response to the question: “Which apps do you use to share images” in the screener questionnaire. Here, responses from each cohort have been entered into a spreadsheet and a graph generated from responses. Apps which had less than two responses have been omitted from the graph for clarity.

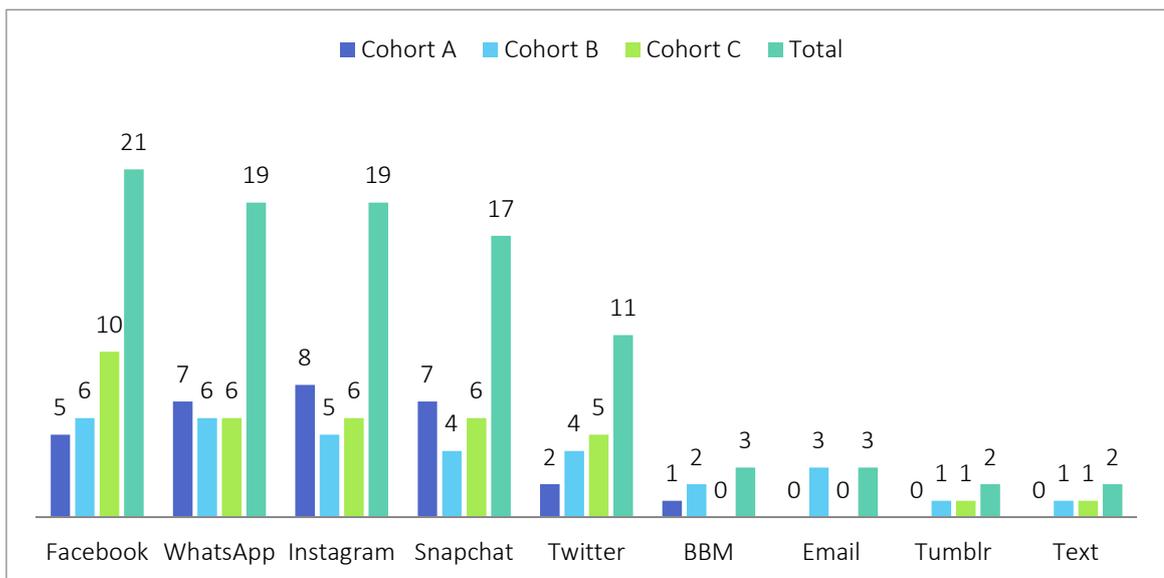


Fig. 4.1: "Which apps do you use to share images?"

The top five reported apps used to share images were Facebook (21 respondents), WhatsApp (19), Instagram (19), Snapchat (17) and Twitter (11). Following this there was a significant drop in the amount which a specific software tool is mentioned, with the next most frequent being BlackBerry Messenger (BBM) and Email with (3); and Tumblr and Text message with (2). Thus it became clear beforehand that the focus group discussions would likely primarily take place around five key tools: Facebook, WhatsApp, Instagram, Snapchat and Twitter.

In regards to the top 5 apps installed, the cohort breakdowns are as follows:

- Facebook: 55.5% of cohort A, 75% of cohort and 100% of cohort C.
- WhatsApp: 77.7% of cohort A, 75% of cohort B and 60% of cohort C.
- Instagram: 88% of cohort A, 62.5% of cohort B and 60% of cohort C.
- Snapchat: 77% of cohort A, 50% of cohort B and 60% of cohort C.
- Twitter: 22% of cohort A, 50% of cohort B, and 50% of cohort C

Whilst the survey was primarily used as a means of examining whether the research participants fulfil basic criteria for participation, the above data offered some interesting early comparisons. Firstly: older age appears as a strong indicator of Facebook use. Secondly, younger age appears as an indicator of WhatsApp, and particularly Instagram use. Finally, the youngest cohort report use of Twitter in the lowest percentage of the top 5 apps: at only 22%. In cohort B and C, these responses established expectations for the focus group discussions.

The primary purpose of the screener however was to both establish a cohesive population of smartphone users in the case of cohort B and C – as well as identify the extent that cohort A deviated from this. What follows as such is a comparison of the participation criteria between cohort B and C, and cohort A (who completed the survey upon attending the group, and was recruited through a gatekeeper).

The answers displayed in the tables below refer to four questions that were key participation criteria in the screener survey. They are:

1. How long have you owned a smartphone?

(Participants were to have at least a year's worth of experience using a smartphone)

2. How often do you take pictures on your smartphone?

(Participants would have to use their smartphone to take images at least on a weekly basis)

3. How many smartphone apps do you have installed which you use to share photos?

(Participants would have at least 3 smartphone apps that they use for photography)

4. In the past year, how many images have you created and shared in anyway using your smartphone?

(Participants would in the past year have created and shared at least 50-100 images)

Cohort A

<u>Group AA</u>	<u>Group AB</u>
<p>AAR1</p> <ol style="list-style-type: none"> 1) 3+ years smartphone exp. 2) Take pictures daily 3) 4 apps installed 4) 20-50 images shared using smartphone 	<p>ABR1</p> <ol style="list-style-type: none"> 1) 1-year smartphone exp. 2) Rarely take pictures 3) 3 apps installed 4) Less than 20 images shared
<p>AAR2</p> <ol style="list-style-type: none"> 1) 3+ years smartphone exp. 2) Take pictures daily 3) 2 smartphone apps installed 4) 200+ images shared using smartphone 	<p>ABR2</p> <ol style="list-style-type: none"> 1) 2 years' smartphone exp. 2) Rarely take pictures 3) No apps (?) 4) 20-50 images shared using smartphone (Sibling of ABR4)
<p>AAR3</p> <ol style="list-style-type: none"> 1) 2 years' smartphone exp. 2) Take pictures daily 3) 4 apps installed 4) 200+ images shared using smartphone 	<p>ABR3</p> <ol style="list-style-type: none"> 1) 2 years' smartphone exp. 2) Takes pictures daily 3) 6 apps 4) 200+ images shared using smartphone
<p>AAR4</p> <ol style="list-style-type: none"> 1) 1-year smartphone exp. 2) Take images daily 3) 3 smartphone apps installed 4) 200+ images shared using smartphone 	<p>ABR4</p> <ol style="list-style-type: none"> 1) 1-year smartphone exp. 2) Rarely take pictures 3) 2 apps 4) 20-50 images shared using smartphones (Sibling of ABR2)
<p>AAR5 - (Absent)</p>	<p>ABR5</p> <ol style="list-style-type: none"> 1) 3+ years smartphone exp. 2) Take pictures weekly 3) 3 apps installed 4) 20-50 images shared using smartphone

Table 4.7: additional screener question responses in Cohort A

Cohort B

<u>Group BA</u>	<u>Group BB</u>
<p>BAR1</p> <ol style="list-style-type: none"> 1) 3+ years smartphone experience, 2) takes pictures daily 3) Less than 3 apps 4) 200+ images shared using smartphone 	<p>BBR1</p> <ol style="list-style-type: none"> 1) 2 years' smartphone exp. 2) takes pictures daily 3) Less than 3 apps 4) 200+ images shared using smartphone
<p>BAR2</p> <ol style="list-style-type: none"> 1) 3+ years smartphone experience 2) takes pictures daily 3) 5 apps installed 4) 100-200 images shared using smartphone 	<p>BBR2</p> <ol style="list-style-type: none"> 1) 3+ years smartphone exp. 2) takes pictures weekly 3) Less than 3 apps 4) 20-50 images shared using smartphone
<p>BAR3</p> <ol style="list-style-type: none"> 1) 3+ years smartphone exp. 2) take pictures weekly 3) 5 apps installed 4) 50-100 images shared using smartphone 	<p>BBR3</p> <ol style="list-style-type: none"> 1) 3+ years smartphone exp. 2) takes pictures daily 3) More than 10 apps installed 4) 200+ images shared using smartphone
<p>BAR4</p> <ol style="list-style-type: none"> 1) 3+ years smartphone exp. 2) takes pictures daily 3) 3 apps installed 4) 100-200 images shared using smartphone 	<p>BBR4</p> <ol style="list-style-type: none"> 1) 2 years' smartphone experience 2) takes pictures weekly 3) 3 apps installed 4) 50-100 images shared using smartphone
<p>BAR5 - (Absent)</p>	<p>BBR5 - (Absent)</p>

Table 4.8: additional screener question responses in Cohort B

Cohort C

<u>Group CA</u>	<u>Group CB</u>
<p>CAR1</p> <ol style="list-style-type: none"> 1) 3+ years smartphone exp. 2) takes pictures daily 3) Less than 3 apps installed 4) 100-200 images shared using smartphone 	<p>CBR1</p> <ol style="list-style-type: none"> 1) 3+years smartphone exp. 2) takes pictures daily 3) 3 apps installed 4) 100-200 images shared using smartphone
<p>CAR2</p> <ol style="list-style-type: none"> 1) ½ year smartphone exp. 2) takes pictures daily 3) 3 apps installed 4) 200+ images shared using smartphone 	<p>CBR2</p> <ol style="list-style-type: none"> 1) 3+ years smartphone exp. 2) takes pictures daily 3) 3 apps installed 4) 50-100 images shared using smartphone
<p>CAR3</p> <ol style="list-style-type: none"> 1) 2 years' smartphone exp. 2) takes pictures daily 3) Less than 3apps installed 4) 100-200 images shared using smartphone 	<p>CBR3</p> <ol style="list-style-type: none"> 1) 3+ years smartphone exp. 2) takes images daily 3) 3 apps installed 4) 100-200 images shared using smartphone
<p>CAR4</p> <ol style="list-style-type: none"> 1) 3+years smartphone exp. 2) takes pictures daily 3) 5 apps 4) 200+ images shared using smartphone 	<p>CBR4</p> <ol style="list-style-type: none"> 1) 2 years' smartphone exp. 2) takes pictures weekly 3) Less than 3 apps 4) 100-200 images shared using smartphone
<p>CAR5</p> <ol style="list-style-type: none"> 1) 3+ years smartphone exp. 2) takes pictures weekly 3) 5 apps installed 4) 200+ images shared using smartphone 	<p>CBR5</p> <ol style="list-style-type: none"> 1) 3+ years smartphone exp. 2) takes pictures weekly 3) Less than 3 apps 4) 50-100 images shared using smartphone

Table 4.9: additional screener question responses in Cohort C

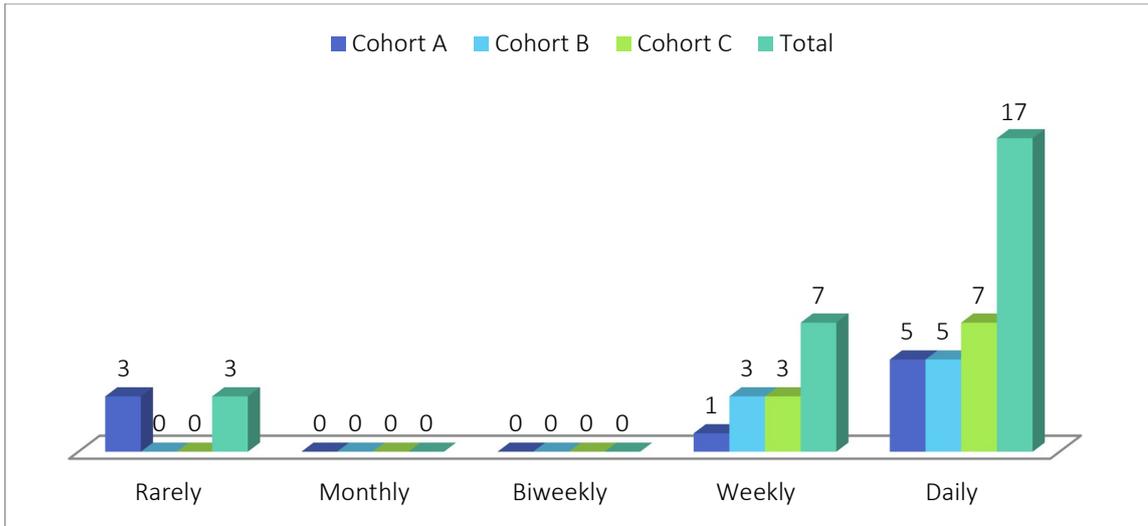


Fig. 4.2: "How often do you use your smartphone to take images?"

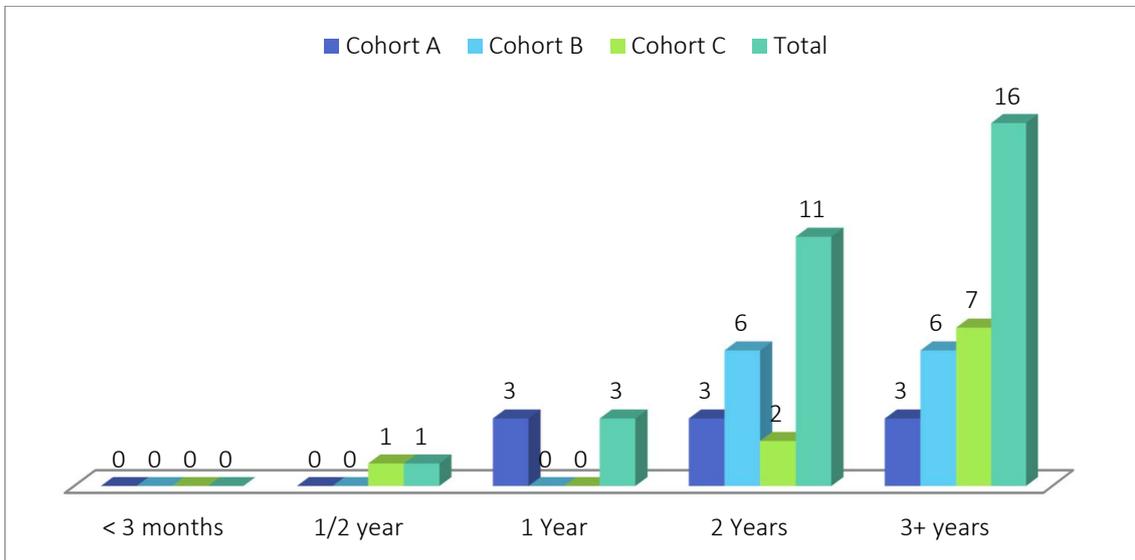


Fig. 4.3: "How long have you owned a smartphone?"

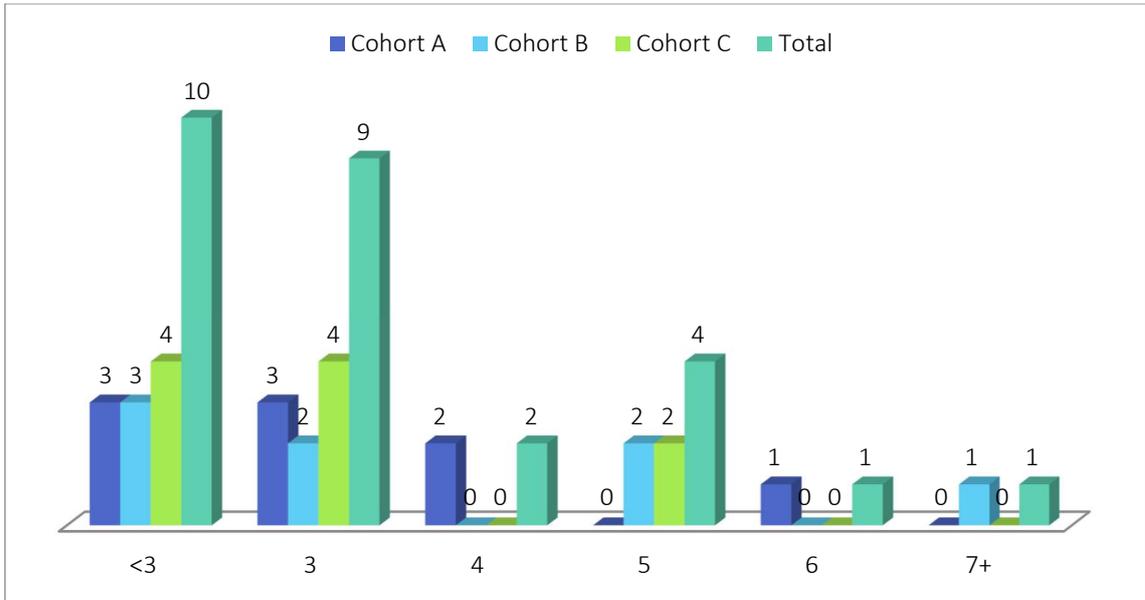


Fig 4.4: "How many apps do you use to create and share images?"

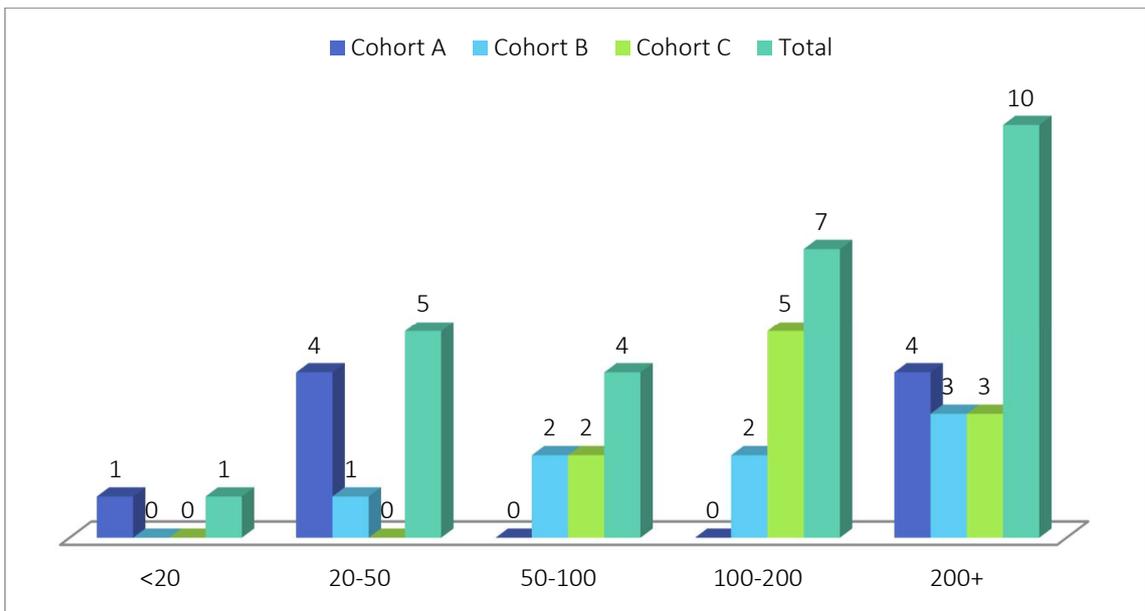


Fig.4.5: "How many images have you created and shared this year?"

The most immediate concern that emerges when comparing the cohort A's answers to the screening questionnaire is that 3 participants within group AB stated that they rarely used their smartphone to create images (shown in Fig. 4.2). Despite this, they do state that they have 3 or more apps installed, indicating a level of experience in smartphone photography. Furthermore, the participants in question contributed freely to the discussions that take place. These participants' responses (ABR1, ABR2, and ABR4) are

viewed critically in the analysis that follows – as they may be a consequence of alienation in their experience of smartphone image-sharing.

Cohort A fulfilled the second important participation criteria, with all participants reporting the ideal minimum of 1 year of smartphone experience (shown in Fig. 4.3). This criterion was relaxed in a single case of in cohort C – where a single participant who reported ½ year of smartphone experience was sampled. This action was taken on account of a muted response from 25-35 year olds in the recruitment phase. In this case CAR2 was deemed suitable as they fulfilled other critical conditions of the screener: (taking pictures daily, having 3 or more apps installed, and estimating that they had shared 200+ images in the previous year).

The third criterion for participation was that participants had experience of, and currently made use of many smartphone apps for photographic practices. However, during the recruitment it was found that a large majority of prospective participants reported using three or less apps. As a consequence, this criterion was relaxed – so that prospective participants' loyalty to a small number of applications could be investigated.

The final criterion for participation was that prospective participants would estimate that they created and shared over 50 images in the past year (as shown in Fig. 4.5). Here again Cohort A deviated from the desired specification of Cohort B and C. 5 participants (4 in Cohort A and 1 in B) reported sharing 20-50 images a year; and one participant in Cohort A stated sharing less than 20.) Four of which failed to meet this criterion populate group AB. As such, the responses offered from this group (except ABR3) are viewed critically, and as a counterpoint to the rest of the participant population. Here in particular there are some interesting comparisons to be made between Group AA who fulfil all criteria and Group AB, who represent less active users.

Data collection

This chapter outlines the findings of six focus groups conducted to collect information about personal photographic practices using smartphones. Two groups of 13-18, 18-25, and 25-35-year-old participants; were organized where participants discussed their activities over the course of two hours. Responses were recorded and transcribed.

This chapter is split into three main sections: 1) an introduction further outlines the focus groups and its goals. 2) Findings are outlined corresponding to each section of the focus group. Key themes that emerged in each section are stated. 3) A short conclusion summarizes the findings and leads into the discussion chapter, where the significance of these themes is developed using the personal photography framework developed in the literature review.

Introduction and goals

The process of generating themes for the discussion chapter is as follows.

Responses taken from the transcripts and assigned to each of the four sections of the discussion. These sections separate questions broadly concerning participants': (1) activities; (2) preferences; (3) barriers and enablers; and, (4) aspirations - when conducting smartphone photography practices.

Responses from each group in an age cohort (e.g. group AA and group AB etc.) are compared with each other to identify common themes within age groups.

Then, themes identified within an age cohort e.g. Cohort A (group AA and group AB) are compared with the other age cohorts e.g. Cohort B (group BA and group BB) and Cohort C (group CA and group CB). Themes which are shared between all three age cohorts (A, B and C); or any two of the three (A and B; B and C; or A and C) are confirmed as key themes.

These key themes are then taken forward into the discussion chapter which follows and analysed in conjunction with the framework developed within the literature review. Responses quoted below are abridged at times, to remove inarticulate phrasing on the part of the recipients.

Section 1

How do participants describe their use of smartphones for photography?

The first section of the focus groups encouraged participants to describe how they conduct smartphone photography. Discussions were semi-structured and loosely followed the research protocol in the appendices. Listed below are themes shared between groups within cohorts (e.g. group AA and group AB) within Section 1 of the discussion.

Following this list are the key themes for this section. These are identified by comparing themes between cohorts (e.g. Cohort A to Cohort B). Themes which are shared between all three cohorts and by two of three cohorts are designated “master themes”. These serve as focal points in the discussion chapter which follows this one.

Cohort A

Cohort Theme S1A1: Use of a core set of apps: “Snapchat”, “WhatsApp”, “Instagram” and “Facebook”

A core set of apps were the focus of discussions that took place in Cohort A. Group AA focused on use of WhatsApp (particularly for large group conversations between a high school form group). Participants from both groups also stated that they also used Instagram and Facebook, but that the majority of their practices were conducted using messaging apps.

Cohort Theme S1A2: Commenting on images on feeds less extensive than feedback in “conversation”

Group AA and AB both suggested that when they see an image in a feed, they feel limited in how they can respond to it. Comparing Instagram to WhatsApp, AAR3 stated: *“I feel like you can’t talk about it as much ... because... everyone can see it”* AA p.6. Thus, AAR3 is wary of when leaving a comment on the image as this would be seen by a wider set of viewers. Thus, comments made on Facebook, are done so with wider audiences in mind; which is seen to restrict the way that AAR3 can respond. This point is raised in Group AB as a difference between comments and conversations: *“Facebook when you’re sharing it’s less for a conversation ... you have private chat for that... you’re not really going to have a conversation with someone in the comments sections...”* ABR2 p.9. Again a distinction is made between private exchanges, which encourage “conversation”; and public exchanges where only a short comment is seen as appropriate.

Cohort Theme S1A3: Different practices emerging from access to images (instant, conversation and memories)

Group AA described an “order” of image sharing apps based upon how easily an image can be accessed after sharing: “it’s like in an order ... Snapchat just goes away straight away. WhatsApp especially if you’re in a busy group, it might be on for like five minutes but it will just kind of move up and you won’t see it... on Instagram it is permanent” AAR1 p.17-18. Here, how an app allows (or limits) access to an image influences AAR1’s perception of the image in the “order”; and how it is used. AAR4 had previously stated “it depends what you’re doing ... if it’s a party you want it to last so you can look back on it... Snapchat is just like a normal conversation” AA p.17. This implies that when “conversation” is a motive, images are not created for the purpose of being looked at again. Group AB similarly described different practices within different apps: “on Facebook you share pictures to share your memories? But Snapchat it’s just there” ABR2 p.7. In this case, ABR2 describes Snapchat in contrast to Facebook, implying that images shared using the platform does not serve a purpose as memories. Thus, Facebook images are described as being created with the purpose of being “memories” in mind – and Snapchat and WhatsApp offer users ways of connecting using images where this preoccupation is largely removed.

Cohort Theme S1A4: Humour as a key motivator behind practices, particularly in instantaneous sharing

Within Cohort A, humour was cited as a motivator behind smartphone photography. AAR4 in Group AA implied humour based image-sharing was motivated by peer-to-peer acknowledgement: “...it’s like if you see something funny, if someone sends that to you like: ‘this is funny’” AA p.5. In group AB, humorous exchanges involve “funny pictures from the internet” AB p.9 as well as “memes” both found online – and made by participants themselves. In the case of discussions within Cohort A – jokes seem largely borrowed from secondary sources, and are used as a means of connecting with others through consensus and shared enjoyment.

Cohort Theme S1A5: Apps encourage (and restrict) audience reactions, this influences image content

In Cohort A, a link was made between use of certain apps and desired audience responses. This was observed to influence participants’ practices and image-content. In Group AA, image-creation was motivated by how participants wanted audiences to interact with it.

Talking of Instagram, AAR3 stated: “...when you do something ... if you go out for a day you put a photo on and then people can comment on it and like it – it shows that people have seen it” AA p.5. This is stated to be different from WhatsApp where AAR2 states “you talk about a specific topic” AA p.6. In this way, the image captured is understood by participants as a mechanism to generate a social interaction that takes place through the app after sharing (e.g. comments, likes, conversation etc.) Group AA then stated that image content is ultimately decided by the individual. AAR1 said: “certain people post certain types of photos... for me its dogs”. AAR1 later explains this: “I post lots of photos of my dog... cause, everyone likes dogs” AA p.4. In this instance AAR1’s content is selected on the basis it is universally approved by peers (and thus would likely always result in positive interactions after it is shared). Others in group AA stated “food” “memes” “days out and stuff” “group photos” and “selfies”, were habitually shared by certain individuals. Group AB suggested that the app itself determines the kind of content created and shared “It’s different on each app ... for me it’s [Facebook] like memories like when I am holiday or school trips. Snapchat’s just for random things in the house... a picture of my light, just put something on and WhatsApp pictures I’ve got like funny pictures from the internet so it’s all different” AB p.9. Here more of an explicit link it made between app and image-content. However as described in group AA – this may be also be linked to how these apps allow audiences to respond to images (i.e. likes and comments on memories on Facebook, irreverent ad-hoc replies to “random things” on Snapchat, or conversations surrounding “funny pictures” on WhatsApp etc.)

Cohort Theme S1A6: New apps must offer something “unique” from others with: basic hardware and software

Discussions with Cohort A highlighted key requirements for the uptake of new apps. The first of these was that a new app needs to offer users something distinct from the existing platforms – and must not be seen as derivative. In group AA this is expressed in a dislike for apps that “just copy off each other” AA p.12. In group AB, ABR3 supports this: “something unique like Twitter and Facebook, like totally different... Snapchat has got unique part where you can take a picture for... 2 seconds” AB p.11. In addition, Cohort A cited a number of fundamental features that as important in new apps. Cohort A’s demands were based on access to hardware including access to: “flash”, “camera roll” AA p.14. Group AB was

concerned about software, citing “private messaging”, “group messaging” as important; as well as “a feed for getting the pictures” and “new information” ABR3 p.11. This expresses a tension, in presenting the user with a non-derivative way of sharing – but with the familiar characteristics and logic of existing apps.

Cohort B

Cohort Theme S1B1: Use of a set of core apps: Instagram, Facebook and Snapchat.

Initial discussions with Cohort B in section 1 described smartphone apps that participants used for practices. In both group BA and BB, Instagram, Facebook and Snapchat were discussed. In addition, WhatsApp, Email and Text were also featured in discussions.

Cohort Theme S1B2: Snapchat: sharing ad-hoc humour with people as if in the room: less permanent or accessible

Cohort B’s discussions described Snapchat as being used for a unique set of practices involving humour. In group BA, BAR3 stated that Snapchat images are: “just like a quick little snap... not really anything amazing ... ugly pictures of yourself... a funny thing that is happening... to share with your friends quickly...” BAR p.7. This statement stresses key aspects about Snapchat: (1) it is used for sharing with friends quickly; (2) less formal attention is paid to the image than in other apps, (3) perhaps most significantly, it is used for sharing something as it is happening. This description is shared in group BB by BBR1: “Snapchat is usually, a bit like making a little joke. But, the person isn’t in the room ... you try and do a little ... giggle. ... Something you find funny, and you intend that someone else will find it funny... capturing those little moments that are less permanent than Facebook, Twitter and things like that” BB p.5. In addition to Group BA’s description, BBR1’s statement emphasises Snapchat as less “permanent” than other forms of image-sharing. This implies that outside of Snapchat practices, such “little moments” are less likely be captured and shared, as they would remain as a memory after the fact. In addition, BBR1 stresses Snapchat’s function of sharing a small joke with someone “not in the room”, implying that the images function to bridge spatial distance between users at a point of interest.

Cohort Theme S1B3: Choice of app determined by the need to reach others, or key friends.

In Cohort B discussions suggested that app choice was ultimately determined by the requirement to reach and audiences. Additional motivation for using a certain app was seen to be overridden by the desire to distribute the image to a specific person. In Group

BA, BAR3 describes this: *“images I share on Facebook are for ... all of my friends back home ... for more of my family I would send them through ... BBM and WhatsApp and stuff - just because my parents wouldn't see the pictures on Facebook”* BA p.11. In addition, BAR3 stated that they *“create the albums on Facebook specifically knowing that only my friends are really going to see them”*. Here BAR3's implicit knowledge of their audience on Facebook allows them to share different content knowing that certain audiences (i.e. parents) won't see them. BBR2 cited a similar problem when using Facebook: *“...I've got like friends and family not on Facebook, so then I might email or BBM or send it to them”* BB p.5. These examples demonstrate use of a typical strategy: sharing with most audiences using a set of primary apps – then targeting specific individuals through other means.

Cohort Theme S1B4: Facebook albums as a means of consolidating an experience through: focus and narrative

Group BA refer to the use of Facebook albums as an effective way to *“capture well”* [sic] activities (e.g. a *“holiday”*); as they are *“focused”* and the audience *“knows what they are looking on”* BA p.16. Group BB stated collections of images on Facebook they: *“tell stories”* *“invoke memories”* and are described as the *“modern day photo album”* BB p.8. The response in group BA highlights that the construction of an album is seen to consolidate an experience in a way that prepares the audience to follow a unifying theme or experience; as they perceive that the images are gathered by the image-creator with this in mind. In group BB this theme is implied as a narrative put together by the image-creator – analogous to albums of physical photographs. In both cases, the audience perceive the intention actions of the image-creator (to *“focus”* the album, and *“tell stories”*) in their comprehension of the images they are presented.

Cohort Theme S1B5: Photographic images used as a means to say more (or more clearly) than words

Cohort B's discussions in section 1 highlighted that photographs are often used to communicate something more substantively than other forms of communication (e.g. a text description). Group BA highlighted that images can *“sum something up not eloquent enough to say”* and *“tell you a lot more than words can”* BAR1 p.14. BAR1 gives the example of a job offer: *“I'll just Facebook message them with the picture... it's a lot quicker than physically typing it out”* BA p.28-29. In this way, images are described as presenting audiences with more information, in both an explicitly and implicitly descriptive way. Group BB share this position; BBR4 states *“when I have been working sometimes [I'll] take a picture and sent it*

as an attachment"; *"it's more helpful than writing a long email"* BB p.4. Thus, in cohort B image-sharing practices can be motivated by the ability for images to express something (1) more clearly, (2) with more information, and (3) more expediently than using other means of communication. This appears to have increased relevance to forms of sharing that are information based – within 'conversational' and 'instant' sharing.

Cohort Theme S1B6: Participants not "knowledgeable" on new offerings, influenced by word of mouth

Finally, within Cohort B, both groups stated that they did not actively seek new apps. Reasoning given was that they lacked information about new offerings. Instead of identifying new apps themselves, participants in both groups cited that their adoption of new apps relied on other people. BAR1 stated: *"I'm not very knowledgeable on the subject so someone normally has to mention it to me before I know"* BA p.26. In group BB, BBR3 stated: *"I'm really slow on the uptake, so I'm always really late to the door with these things I never know and everyone else has got it"* BB p.16. In this case adoption again relies upon word of mouth, and/or a pre-existing population of users that the participants are interested in connecting with. This may have relevance to B3 above – wherein the choice of application used to create and share images is determined by its expediency in delivering images to the image-creator's desired audience.

Cohort C

Cohort Theme S1C1: Use of a set of core apps: Facebook, Twitter, Instagram, Snapchat: plus, Email, text and WhatsApp

Similarly, to both of the above cohorts, discussions within Cohort C centred primarily on a key set of apps. In this case they were: Facebook, Twitter, Instagram and Snapchat. Discussions also featured Email and native text messaging applications more so than in younger cohorts. This may be seen as evident of an affinity to older modes of distributing digital images that have been historically available through use of mobile communications devices.

Cohort Theme S1C2: Practices and apps split: "general" (large distribution) and "specific" (p2p) audiences

Both groups in Cohort C described their practices as split between *"general"* and *"specific"* apps and activities. Thus, Cohort C's practices were divided between (1) larger-scale

sharing, with content created with wider audiences in mind; and (2) peer-to-peer exchanges. In group CA participants begin by describing their activities in this way “...depending on who I want to share with, if it’s just a general thing I use Twitter or if it’s specific to certain people then I’ll use Facebook... then for my family it will be email, sometimes text message” CAR3 p.4. Analogous responses are also given shortly after by CAR4 and CAR5. Similarly, to theme B3 we see that the requirement to reach certain audiences (e.g. family) shapes app choice and the nature of some “specific” practices. This is reflected in discussions in group CB “if I am actually sharing with someone specifically I’ll ...either text it to them or if it’s say my mum I will email it to her and then call her and tell her how to open it...”; they continue: “So yeah the usual, Facebook, Twitter, Instagram but if it is with a specific person usually a text or a Facebook message or an email if they cannot use the previous two” CBR2 p.3-4.

Cohort Theme S1C3: Email and Dropbox for sharing "proper" images, to be "used" rather than shared

Cohort C discussed use of Email and Dropbox to share the image as motivated by maintaining image quality. However, this was only cited as a concern in professional contexts (e.g. sending an image in the workplace) or when the image was being sent to someone to “use”. Group CA described a key motivation in these practices is: “maintaining the integrity of the picture”: “I send... in an email because I believe correctly or incorrectly that it’s the best way to send a high quality image ... if I’ve taken a photo in an experiment...” CA p.17. Within group CB this was cited “the difference when photos are uploaded to a server to the cloud or to Dropbox ... apps will compress the photos and change the quality ... if I want to keep the same quality I will have to upload it and share the link with somebody”; CBR1 continues: “the difference is when I want to share photos for other people to use or when I want to share photos for other to see” CBR1 p.5-6. Here a distinction is made practices between sharing an image with an audience to “view” or “use” in some sense – at which point maintaining image-quality becomes a critical concern. This may not be relevant for personal photography on smartphones however, as typically images are shared for audiences to be viewed by audiences.

Cohort Theme S1C4: Feeds critical to apps where users view. Emphasis on passivity, not actively seeking photos

Cohort C's discussions highlighted the importance of "feeds" in apps where participants view images. CAR1 stated that viewing through feeds was a routine activity: "I usually check my Instagram feed two, three times a day whereas on Facebook... scrolling through feed" CA p.5. Crucially CAR1 noted that: "I don't actively go onto a friend's profile to view their photos". This distinction implies that "actively" doing so would constitute different viewership from incidentally seeing images within a feed. In group CB emphasis is placed on the dominance of viewing images over creating them in feed-based apps. CBR3, states of Instagram: "very very rarely upload... always looking through... looking at photos" CB p.5. CBR2 continued stating that they "go on every couple of days cause some people use it very actively, some people [share] too actively" CB p.5. The viewing of feeds of images is significant as it appears to grant audiences the ability to engage with images passively. This appears to allow audiences to be less obligated to become actively involved in an exchange, reducing obligation to reply with an image, non-verbal indicator (e.g. like), comments or conversation - when compared with direct exchanges.

Cohort Theme S1C5: Snapchat: targeted sharing of humour, with expectation of response

Cohort C's discussions also described the practice of using Snapchat for humour-based exchanges, and that in doing so there is an implicit expectation for a reply. CAR2 stated: "I take an image and think 'who will find this funny ... 'x' would find this funny ... then I know I'm going to get one back... it's kind of a back and forth" CA p.9. Thus humorous images are exchanged on Snapchat as a means of entertaining a preconceived audience - in the likelihood of generating a reaction from them. Expectation of a response in return of sharing on Snapchat is also described in group CB (also referencing Instagram): "I think when it comes to Instagram and Snapchat it becomes almost equal... because you send something and then you expect something back ... it's almost equal" CB p.5. This is broadly similar to descriptions of Snapchat exchanges within the other cohorts where images are seen to form the basis of utterances within a "conversation" - as opposed to functioning as lasting records of a specific event in space and time.

Cohort Theme S1C6: Distinct categories of image-sharing, from "memories" to "instant"/"moments"

Finally, Cohort C described categories apps based on the long-term accessibility of an image. This is broadly similar to the "order" described by Cohort A in theme A3. CAR2 stated in group CA: "You see Snapchat is just a moment, and then it goes you know it's a really quick joke or one liner and then it's just gone" CA p.11. In this case there is an implication that a key characteristic of "moments" shared through Snapchat is that they become inaccessible. In group CB, CBR3 suggested "...If it's... like more like a memory sort of thing it will be Facebook, or Twitter or Instagram or instant things Snapchat" CB p.4. This again emphasises a critical distinction between "memories" and "instant" sharing. Moreover, these categories of image-sharing are attributed to different apps. It is of note, that within Cohort C these are described as polarized categories of sharing – with no category in between as seen in cohort A. This is seen in Cohort A where "conversation" on messaging apps where images remain accessible but are more difficult to navigate.

Section 1 – key themes

The master themes for section 1 below have been identified through comparing themes from each of the cohorts. Themes which are shared by more than two of three the cohorts are pursued and described in brief below.

Key themes shared between all cohorts

Key Theme S1KT1: Use of core apps: Snapchat, Instagram, Facebook and WhatsApp.

Within all three cohorts four key apps were the focus of discussions. These were Snapchat, Instagram, Facebook and WhatsApp.

Informed by cohort level themes: S1A1, S1B1, S1C3

Key Theme S1KT2: Humour as key motivator of "instant sharing", share a joke with specific audience, as if in the room less permanent way, and with the expectation of a response

Within all three cohorts humour was a key motivator behind participants' practices. Typically, this involved sending an image to a specific audience to elicit a response in kind. Where this humorous imagery is captured first-hand, sharing is designed to be as if the audiences themselves present. This type of sharing is typified by use of Snapchat, where participants found a greater license to share in this way – as images are typically

inaccessible after being viewed. Cohort A notably described sharing in this way through use of second hand imagery, including memes and other images from the internet.

Informed by cohort level themes: S1A4, S1B2, S1C5

Key themes shared between two of three cohorts

Key Theme S1KT3: "Access" to images shape practices: "memories", "conversation" and "instant". Between cohort A and cohort C's discussions in section 1 an "order" of images was described which related the prolonged access to images after they are taken. In cohort A, this point was explicitly linked to the design of different image sharing apps – in one, images "goes straight away" whereas another is "permanent". This was seen to impact how apps were used with those where images are harder to access after sharing attributed to "instant" and "conversation" based practices –and apps where images are continually accessible described as suitable for "memories". In cohort C this is more broadly described as a dichotomy between "memories" and "instant" sharing. Notably, the same apps are conventionally attributed to each practice.

Informed by cohort level themes: S1A3, S1C6

Key Theme S1KT4: "General" vs. "specific" sharing: choice generally determined by ability to reach audience

Similarly, a common theme in cohort B and C was a split between "general" and "specific" sharing – i.e. sharing an image with many or a single person at a given instance. The desire to reach certain individuals was seen to ultimately determine app choice. A common example was seen across both cohorts where sharing with older parents determined use of platforms they could be contacted through (e.g. email, text message). In each case "specific" sharing was used to target individuals both: as unique recipients of an image; and, on the basis they could not be reached through "general" distribution (e.g. an older family member not familiar with newer platforms). In addition, it was noted that a participant in cohort B used this as an opportunity to share on a public platform in the knowledge that their family would not see the images.

Informed by cohort level themes: S1B3, S1C2

Section 2

What do participants like and dislike about the apps and practices they do?

The second section of the focus group activity encouraged focus group participants to describe what they enjoy and dislike about the image-sharing practices they conduct. What follows are the shared themes between cohorts, and the master themes for section 2.

Cohort A

Cohort Theme S2A1: Aversion to “attention-seeking” and popularity-based practices, particularly in public sharing

Cohort A were critical image sharing practices they perceived as “attention seeking”. Disapproval was seen both in exchanges between friends, and more broadly as an intrinsic characteristic of sharing with strangers on apps such as Instagram and Twitter. In group AA, AAR1 highlighted this in WhatsApp sharing: “Some people do it for attention. They’ll post a picture of themselves and be like ‘I’m so ugly’ because they want everyone to go ‘You’re not ugly, you’re beautiful’” AA p.22. Thus, contrived actions to gain attention are key motivator behind maligned practices. This logic is extended to public sharing such as on Instagram, where users are perceived to be motivated by popularity. AAR1 stated: “I’m really not like looking to be popular on there ... some people ... in our school, that really are out to get followers, so they’ll post loads of quotes and enter Instagram competitions – they’ll do all kind of things” AA p.26. Here AAR1 (along with the rest of the group) actively distances themselves from practices they perceive as contrived in this way. A similar position is given in group AB, ABR2 states: “...with Instagram it’s less about the picture and it’s more about the following ...” AB p.25. Thus, to ABR2 image-sharing on Instagram operates on the premise of popularity, which again the group largely distance themselves from.

Cohort Theme S2A2: Strategies and desire for granular control of distribution of images, audiences

The second theme within Cohort A’s discussion involved a desire for greater “control” in image sharing. Both group AA and AB demanded that images were distributed with as greater accuracy as possible. In group AA this was expressed through use of several “group chats” in WhatsApp. AAR1 stated: “the creator is the moderator of the room... they can just remove people, which is what happened the other day” AA p.36. In exercising this level of control, many iterative groups are formed from the same set of users; AAR3 stated: “We have like literally fifty groups and it’s so annoying everyone’s like ‘bring this conversation over’

from one group to another" AA p.48. This practice, demonstrates significant desire and effort on the part of group AA to maintain granular over the audience of images – even where images are being distributed to groups of friends. As a strategy this allows participants in group AA to generate and maintain several small networks of friends that are variations of each other. In group AB audience “*choice*” is highlighted as a key benefit of Snapchat, ABR3 states: “*you can choose who you want to share with and you can get a picture off someone without actually adding them. You’re in control of ... who you’re sending it to – whereas Facebook and Twitter you don’t have the control...*” AB p.26. Thus, group AB also desire to actively “*control*” distribution of their images to specific audiences of friends. This represents apathy toward public sharing in Cohort A, and an evident outlook on privacy.

Cohort Theme S2A3: Notifications: active alerts and viewers’ status as increasing obligation to respond

Notifications were cited by Cohort A as a critical feature of their practices. AAR1 stated that active alerts on WhatsApp meant audiences were more likely to respond directly to an image than on Facebook: “*WhatsApp’s just nice... with Facebook ... you have to log on and check your messages ... but with WhatsApp it’s straight away... people who are on it are on it religiously, so straight away they’ll reply*” AA p.29. Here, a WhatsApp image (and active alert seen without “*logging in*”) results in increased urgency and obligation to reply than Facebook. In addition, AAR1 stated that they are implicitly aware that the recipient is a frequent user; this, alongside notification of viewer status increases the audiences’ perceived obligation to reply. AAR3 described a similar functional characteristic in Snapchat as beneficial: “*I just like Snapchat me... you can see everyone who has seen it as well, I think that’s good*”. Snapchat also provides the image-creator with viewing status displaying whether their image has been viewed by its audience or not. AAR3 explains the significance of this: “*you can see... who was obviously on their phone though, like if they’ve seen it, you can tell if people are ignoring you*” AA p.13. In both cases, group AA attribute expectations upon audiences (and themselves) from information the app has presented them about the image. This grants AAR3 knowledge about the behaviour of the audience, where the expectation is that a reply would be sent upon seeing the image as a common courtesy. Group AB also refer to this as a benefit within Snapchat: “*I like what on [sic] Snapchat is that you can’t like other people’s pictures but you can see who viewed it*” AB p.34. Here again, knowing an audience has seen an image through an automatic notification is

described as a critical distinction to Facebook – where a “like” later implied to represent both acknowledgement of the image and approval.

Cohort Theme S2A4: Annotations and captions as a critical component of practices

Cohort A described annotations and image-captions as essential to their practices. In group AA AAR1 criticised the inability to caption a photograph in WhatsApp: “they don’t let you caption the photo in WhatsApp, if you want to say something about it you have to say it afterwards” AA p.38. In this case, AAR1 highlights that WhatsApp forces any attempt at annotation to follow as text within conversation, thus assimilating it into the rest of the exchange. Similarly, the absence of an image caption on Instagram is described as unnatural by AAR3: “...on Instagram, if you put on a photo and you didn’t put a caption it would just seem weird... people normally do that, so you know what they’re talking about.” AAp.38. Thus, the “caption” is critical in explaining or justifying what is shown in the image. Additionally, where a caption hasn’t been assigned this can result in a unique confusion on Instagram: “...it just confuses me when people don’t [annotate an image] ... because [other] people comment on it and it looks like it’s them that’s taken the photo” AA p.38. Thus, in Instagram annotations and comments are indistinguishable, and if one has not been attributed to an image this can result in the first commenter being identified as the author of the image. Group AB places similar significance upon annotations; ABR3 stated: “The caption – you can actually post how you feel about the picture I think that’s a good feature and it shows what you’re thinking” AB p.33. As with group AA, annotations serve to explain the rationale behind the image, specifying the image-creator’s attitude toward what is shown in the image. ABR3 states that captions on different platforms mean different things: “Facebook is more thoughtful, compared to ... Snapchat where Snapchat you say whatever is on your mind at that moment Facebook is more thoughtful compared to it” AB p.34.

Cohort Theme S2A5: Sharing from distance using messaging apps: pitfalls and benefits of directness

In cohort A, both groups discussed use of messaging apps to share images on holiday. In group AA sharing images on WhatsApp on holiday was described as inappropriate: “...if someone posts something and they’re on holiday ... the main response is ‘why are you texting, you’re in a lovely country, stop texting us!’” AA p.33. Group AA described this as an inconsistency between how a person is presenting their experience in images – and what the audiences perceive their actions to actually be (i.e. devising images to share in

WhatsApp). AAR2 expanded: *“every time someone texts someone would reply straight away, so we were like – you must not be doing anything then...”*; AAR2 added: *“It’s nice if you get a text off them once a day... but if they’re on their phone ... all the time I don’t see the point... they should be enjoying themselves”* AA p.33. Thus, whilst group AA initially perceive the image-creator’s exchanges to be artificial, they are confirmed so when the person is active in conversation rather than enjoying the experiences they are sharing. In contrast, group AB WhatsApp was described as the best means of sharing on holiday, ABR3 stated: *“you use WhatsApp for that, if you take a really good picture I’m not going to post them all on Facebook ... I will just send them to family like a really good picture of myself if I was on holiday I’ll send it to family like what I am doing right now”* AB p.36. Here, WhatsApp is described as a more targeted way of sharing from distance. This may be a consequence of the wider disregard of *“general”* sharing in cohort A – and particularly group AB. It is notable in this case; ABR3 describes only sending a single image, which is consistent with the concerns of group AA. This may also be a symptom of a greater requirement for accuracy in younger cohort’s sharing.

Cohort Theme S2A6: Uses of Snapchat filters: not aesthetic rather increase presence in image, tools for humour

Both groups in cohort A mentioned Snapchat filters as useful in their practices. In Group AA, usage of *“smart”* filters were explained by AAR3: *“on Snapchat you can put loads of different effects on, or you can ... put the weather on, or how fast you’re moving or something like that”*; they explained: *“it’s just stuff like that so people can actually be more there ... get more into the picture”* AA p.23. In this case, the additional information provided on the filter, is described as allowing audiences to become more immersed in the image content. In group AB filters are described as a way of adding humour to an image. ABR2 stated *“...with Snapchat there is filters, but I think those are used in like a joke way. So you might catch a friend like sitting ... you just took a picture and put it in black and white and write ‘deep thinker’ something like that”* AB p.30. Here use of a black and white filter is used to present the image content (a friend appearing serious) in a more formal light, to humorous effect. In each case, Snapchat filters are seen as functionally adding value distinct from any aesthetic impact on an image (e.g. as in Instagram).

Cohort B

Cohort Theme S2B1: Snapchat sharing motivated by boredom, reaching out to others with irreverent content

Cohort B's described use of Snapchat to reach out specific audiences in ennui and connect as friends. BAR2 stated: "...that's your way of showing them your little bit of craziness ... or utter boredom that you've suffered during the day" BA p.30. BAR3 expanded: "Snapchat messages, you use it just to be silly ... send ugly pictures of yourself or like funny things that are happening around you... you know... it's very unlikely that it would get sent out" BA p.44. Thus, Snapchat encourages users to connect with each other using self-deprecating or irreverent content. Trust is placed in the app recipient to not distribute the image further, as well as the app in its functional deletion of the image. This broadly ensures that the image is seen within a specified moment in space and time determined by the image-creator. Furthermore, the moment shared is not seen as special; instead it is described as "craziness" or "boredom" which would likely not be shared if it was continually accessible as a "memory". Group BA also highlighted that sharing on Snapchat tacitly involves small audiences: "you'd probably feel like there's less people that it has been sent to, so it's like more of a personal image that an individual person wanted to share something with just you" BA p.44. Thus, images shared on Snapchat are perceived by audiences as being openly targeted toward them, and personal in nature. In group BB sharing in this manner is described as a way to improve friendships: "Make them laugh? ...strengthen your friendship... You can't actually physically see someone ... but then you send them pictures everyday ... It's more quantitative and immediate" BB p.16. Thus, funny interactions over Snapchat function as a way of enacting friendship remotely. Previous to this statement BBR1 had said: "Snapchat [...] they wouldn't put that up on ... [an] easily accessible album or permanent [...]" ... "I don't think it would invoke the same back and forth ... where it is a conversation" BB p.10. Here, "conversation" refers to the continual exchange of images and other content as a more meaningful connection between friends than "general" sharing. Notably, this distinction implies that the practice of "conversation" and the kind of content it involves - is not appropriate for wider audiences, or recollection.

Cohort Theme S2B2: "Specific" "directed" sharing distinguished from other practices: awareness of audiences

The second theme from Cohort B distinguished targeted sharing practices from others in smartphone photography. BAR1 stated: *"Facebook anyone can see your pictures that you don't want [them] to [see], whereas on WhatsApp only the very specific people you send it to, unless it saves on to their camera roll automatically and they put it on Facebook"* BA p.39. Here control over audiences in WhatsApp is implied as positive, with a vulnerability of Facebook being images being accessible to audiences the image-creator is unsure of. It is noted by BAR1 that this can be achieved on WhatsApp through sharing images on Facebook saved automatically on the camera roll, though this is less of a perceived threat. In group BB, BBR3 stated: *"WhatsApp is quite different to the other ones ... it's shared to ... a much smaller amount of ... people ... WhatsApp and Snapchat are different where they are very much more directed at someone"* BB p.17. Here again a distinction is made between sharing *"directed at someone"* specifically, and broader sharing such as seen on Facebook. This represents a characterisation of WhatsApp and Snapchat with both audience size, and *"directness"*. This indicates that participants perceive the implicit audience of sharing apps in both when distributing and viewing images – and that on larger platforms represent a comparatively in direct way of sharing.

Cohort Theme S2B3: Sharing to attract and generate connections with people through a common interest

In Cohort B, some practices were described as being conducted to develop relationships with others over shared interests. This practice is seen to take place with existing acquaintances and the wider public. BA2 described connection with friends in this way over Facebook: *"Facebook ... I know that my friends ...into cars will be much more interested ... the notification from that was going to be a lot more from those friends... I'm going to tell him more about it and post more pictures about that to him"* BA p.30. In this example, images of cars are shared to attract attention of others interested in discussing them. In this case the audience are pre-existing friends, who – through connecting on a common interest – would become closer to the image-creator. In group BB a similar activity is described in relation to Instagram and use of hashtags to connect with public audience. BBR2 stated: *"hashtags. ... I think that when I use Facebook, Instagram and put up a selfie, I do 'hashtag selfie' and I'll search 'hashtag selfie' ... everyone who has done the selfie ... would be notified that I've liked their thing"*

and then and I'd hope that they would go back onto mine and do like for like on it... BB p.25. In this example – sharing occurs in a public feed of images, and reciprocation is sought through additional interactions (i.e. liking someone's images and sharing similar material). Here motivation behind sharing images appears to be more to do with validation through a public community – through quantifiable interactions (likes, follows etc.) In each case however, image sharing is used as a means to generate connection and acceptance with others using a common interest.

Cohort Theme S2B4: Description of Email for image-sharing, strengths of Facebook in comparison

In both groups in Cohort B, email was described as an outmoded method of sharing images. In group BA importance was placed on the tools offered by Facebook not present in email. BAR2 stated: *"Facebook is more geared towards ... picture sharing so ...it's much quicker, it's much faster, ... whereas email... it takes a lot of pictures to get it sent ... plus ...you expect to see it on Facebook ... it gives you the option to share, like, comment, email doesn't"* p.46. Here, emphasis is placed on: the (1) expectation to find images on Facebook rather than through email, (2) the faster speed in sharing and (3) social tools offered. BAR1 expands on this by saying: *"it's trendy to put your pictures on Facebook... Instagram, Emails are past it. they're perfectly functional they're just not perceived to be cool anymore..."* BA p.46. Thus email, whilst functional, is no longer accepted as a method of image sharing and lacks many of the prerequisite attributes. Despite this, positive characteristics are noted of emails for image-sharing – particularly that they obligate a serious response; BAR2 stated: *"on email I know I've got to do something with this... No one's going to just send me a picture of another person" ... "an email you kind of feel like you have to at least reply back to them with what's going on"* BA p.43. Thus emails imply a sense of formality, urgency and audience specificity. In group BB, emails are described purely on the basis of their perceived obsolescence: *"It's quite old school... if I had that on like Snapchat or something it would be ridiculous because it's just can't see up to like ten seconds"* BBR2 p.26. In addition to email's outmodedness; this statement highlights the inappropriateness of conducting app specific practices over email. In this case email is far more *"formal"* and *"permanent"* than Snapchat as it lacks the affordances that can be seen to shape use of the app (self-destruction).

Cohort Theme S2B5: Twitter as a public platform not populated with friends, becomes "mouthpiece" (whereas Facebook=reprisal)

Cohort B described Twitter as not popular with friends; allowing it to function as a safe place for "opinions". In group BA, BAR4 stated: "Facebook's more of about you than Twitter is. Facebook's more of my own personal kind of information and my life whereas Twitter's like – I'll just say whatever" BA p.34. Here absence of friends or "personal information" allows Twitter to be used more freely. BAR1 reiterates: "none of my friends are on Twitter, so if I am on Twitter it's just really me sort of just looking at things and just tweeting things just from my own opinion really – you don't have to think that this is really directed toward anyone" BA p.37. This statement implies less inhibited sharing occurs on Twitter as there is no specific audience in mind. This point is expanded to highlight that this allows BAR1 (a vegetarian) to share without fear of social reprisal: "Facebook... I can't say anything about vegetables or food ... they just never leave me alone about it whereas on Twitter they won't say it..." BA p.38. BAR3 supports this statement, describing Twitter posts as: "a thought on somebody's mind ... whereas Facebook ... you wouldn't put as many statuses on Facebook as you would on Twitter" BA p.35. Thus, Twitter appears to also grant license for higher frequency of posting than Facebook where posting is more calculated and linked to identity. In group BB, Twitter forms part of a broader distinction made by the group between "keeping in touch" and public sharing of images. In this case Twitter is rejected as a site for image-sharing as group BB have no motivation to share publically (or extraneously to their friends). BBR1 states: "...I don't use Instagram or Twitter because I am not particularly interested in sending pictures to loads of people I don't know... I think it is trying to do something completely different to stuff like Facebook and Snapchat where it is keep in touch with people" BB p.22. Here group BB similarly make a distinction between the use of Facebook to "keep in touch" with people through sharing – but do not identify the use of Twitter as a means to post without fear of reprisal.

Cohort C

Cohort Theme S2C1: Facebook as lasting social record, opposite to Snapchat

In Cohort C, Facebook photography is described as a lasting record of the user, created and maintained socially. Photographic memories are constructed with a large audience in mind, resulting in the image-creator representing themselves positively in their practices. Group CA describe Facebook sharing as a means to record "situations" involving friends:

“... [Images]... I share on Facebook tend to be of people and friends ... situations that I want to recall at a later date ... and be able to share with my friends...” CAR3 p.13. Thus on Facebook, images function to record memories that may include friends and are created to be shared with them later. Thus, perceived audiences influence practices, as memories are created with them in mind (both as subjects and audiences of images). This is expanded upon by CAR2: “I’m very ... strict about what goes on my Facebook which is why I don’t broadcast much these days... I know it follows you ...it’s your projection of your life whereas Snapchat is very much the opposite... you can say things that perhaps aren’t politically correct ... because you know it’s not being recorded...” CA p.14. Within this statement CAR2 expresses concern about images shared acting as a lasting “projection” of themselves. As a consequence, for CAR2, Facebook practices involved increased “strictness” in sharing and omission of certain exchanges deemed “politically incorrect”. This is presented in direct opposition to Snapchat – which allows unimpeded exchanges that are not “recorded”. Responses are expected of audiences on Facebook – as the creation and sharing of memories are inherently social. CAR2 said: “On Facebook if I put an image on ... I would probably put it up if it’s more than just me in it if it’s like ten people ... you’d expect a few likes you know not being greedy” CA p.38. Here images shared are perceived to be relevant to a larger group of people and acknowledgement and approval is expected through “likes”. In group CBR5 also supports this argument comparing Facebook to email: “[it] all comes back to the reason why you’re sharing it, so specifically with Facebook presumably you’re putting it on because you want everybody to see it – whereas if you wanted to see it via email that would take a long time And you don’t have everyone’s email” CB p.25. Here motivation behind sharing an image through Facebook is that “you want everybody to see it”, supporting the idea that images created as memories on Facebook are also inherently social, as the app offers a quick way of sharing with a broad audience without seeking each recipient’s contact information.

Cohort Theme S2C2: Twitter: motivated by popularity, knowledge, approval and consensus, “self-promotion”

In cohort C, Twitter image-sharing practices are described as motivated by popularity. As a result, practices are targeted for “engagement” more so than when sharing with groups of friends. In group CA, CAR4 stated: “the images are often either something that says you know ‘good morning’... created for the morning of that day ... because there’s a lot more engagement than Facebook which is very community based or group based...” CA p.13. Twitter image sharing is also described as motivated by popularity indicators: “if it is an open profile you are

tweeting and uploading photos that are hopefully going to get more favourites and Retweets and followers” CAR1 p.15. Similarly, in group CB Twitter is described as being geared toward “self-promotion”. Discussing their role in a play CBR4 stated: “Sometimes for self-promotion actually... I wouldn’t do it on Facebook... So I ... shared that on Twitter to ... encourage some people that follow me to kind of check out the website or perhaps come along and see it” CB p.15. This is later explained as a result of the mechanisms offered by Twitter to distribute the image further: “if you had a photo that ... was self-promotion in some way ... and you wanted the world to see you would probably put that on Twitter ... because it will get retweeted and further shared. Whereas if you just want one person to see it you’d text it or WhatsApp...” CB p.20. Thus, Twitter offers the tools for public distribution and consensus in the form of the “retweet” which characteristically occur when an image tweeted is seen to be of relevance to wider audiences. CBR4 stated: “if you’re posting or using a witty picture ... say someone who follows you on Twitter but you don’t know personally Retweets something you think ‘oh that must have been something genuinely interesting, not just interesting to someone who knows me”” CB p.19.

Cohort Theme S2C3: Different expectations of acknowledgment behaviours across platforms

In cohort C differences were noted between the responses participants expected across different image sharing apps. This began with a differentiation being made between two analogous interactions: the Facebook “like” and the Twitter “favourite” which is seen to act as a bookmark. CAR3 stated: “it’s a different thing to liking and even favourites because ‘favouriting’ is for different reasons in Twitter I think some people do it so they can go back and remember it”; they continue: “it has a different weighting I think ... the same picture would be more likely to get Instagram ‘likes; than to get ‘retweets’ or Facebook ... ‘favourites’ on Twitter” CA p.15-16. Thus similar interactions can be seen to mean different things across different apps. CAR3 ultimately concluded that the difference between these interactions was determined by the goal of sharing the image: “I think it depends what you’re doing... you were saying about the picture of the tray of biscuits erm you know you could put that on Facebook and tag each individual biscuit with a friend’s name and then you know people would... or you could put something up like I don’t know ‘who wants a biscuit?’ People would probably respond to that more on Facebook than they would on Twitter or Instagram because it’s pretty non-descript picture but it depends on how you use it and how you frame it...” CA p.23. In group CB different responses to images were attributed to different apps: “it’s different for each app ...Snapchat other than sort of seeing that they’ve seen it, it will be a photo back... Facebook it is likes, I think Instagram you get a heart...” CBR5 p.18; CBR4 continued: “It will be ‘favourites’ and ‘retweets’

on Twitter"; CBR3 added: "when I'm on like WhatsApp group it will be talking around the picture so yeah like responses with images or like messages" CB p.18. In this way, different apps provide users with ways which they can respond to the image that can be seen to motivate app choice, and the practices undertaken.

Cohort Theme S2C4: Snapchat: motivated by making people laugh, specific audience, trust in sharing

In cohort C's section 2 discussions, Snapchat was described in additional detail. Four key aspects of the app were highlighted. Firstly, the desired response to a Snapchat image being shared was described as making the recipient laugh, which is seen to result in a reply: "I think the ideal outcome would be to make someone laugh ...if you've done that you've achieved your goal and you'll find out because normally you'll get [an image in return]." CAR2 p.16. Critical to this is the ability to attribute a comment to the image, which is described by CAR2 as a core feature: "Snapchat lets you edit them and put your little one liner in – I think that was the original feature so: take your photo, type your ... 50 characters max ...send it ... it's not a fuff it's 'bang' 'bang' 'bang' that's away" CA p.20. Here the comment is critical to the sharing of humour, as the image alone does not express the image-creator's perspective on what they are seeing. The comment and speed of sharing thus appears to be important in the ability to use Snapchat humorously. Notifications also play an important part in Cohort C's Snapchat practices. In group CB Snapchat is described as unique in that its notifications let the image-creator know the viewed status of their image. CBR5 stated: "Snapchat you can see whether someone's seen it or not..."; CBR4 continued: "it's hard with Snapchat to know whether they've found it funny or interesting or not; but ... if someone has sent me something really funny and I haven't got anything really funny to respond I just take a selfie of myself going ... just to show that I enjoyed it." CB p.17. Thus Snapchat encourages like-for-like image responses through audiences' implicit awareness that the image-creator knows they have seen the image. The inaccessibility of images after sharing allows CBR4 to share a reaction selfie for this purpose without fear of reprisal. Control over audiences' viewing of images is also stated as an important feature of Snapchat. CBR3 stated: "Snapchat allows you to ... narrow down who you're going to show it to and ...the amount of time they're going to see it for ...and if it does get shown any more you know about it. But on WhatsApp if someone does use my pictures then I won't necessarily know about it." CB p.20. Here CBR3 also highlights the screenshot notification in Snapchat alerts an image-creator to audiences that have saved an image, which may potentially be shared outside of their control. This is

supported further when comparing the use of Snapchat to texting images. CBR4 stated: *“it’s the trust thing or because obviously if you send someone a Snapchat you know it’s going to be gone ... whereas if you send a text saying delete this after you’ve read it... if I sent them a picture saying delete this after you’ve seen it they would purposely keep it”* CB p.26. Thus, whilst there is reliance upon the audience of a Snapchat to not share an image further or outside the original context of sharing; this is also enforced by the affordances of the app itself.

Cohort Theme S2C5: Responses expected from friends vs. those expected from strangers

Cohort C’s discussions also suggested that different responses to images are expected from strangers and close friends. CAR4 stated: *“with strangers I do not want them commenting on my photos which I find odd if someone striked (sic) up a conversation but with friends I would certainly want them to say something that friends would say and not something that a stranger would say”* CAR4 p.37. Here CAR4 specifies that certain expectations are expected from strangers’ comments (i.e. not to strike up a conversation as friends would). Furthermore, friends would be viewed critically if they were seen to react to an image *“like strangers”*: *“and just double tap an Instagram photo and just say ‘great’ so you kind of get offended if your good friend just says that”* CA p.37. Thus interactions from friends are criticised if they are seen to be emotionally distant or uncharacteristically short. CAR3 discusses their attitude toward verbal responses from strangers on Facebook and Twitter: *“on Facebook ... if it was about an event that friends knew about I would expect them to comment ... but I wouldn’t expect stranger to be commenting on or even seeing pictures on Facebook ... on Twitter I am quite happy for strangers to comment”* CA p.37-38; this is supported by CA: *“And I’m pretty much the same as you but I’d expect friends or family to comment on but if I had a complete stranger trying to comment or talk to me yeah then I would find that quite strange”* CA p.38. Group CB also discuss *“over-familiarity”* from strangers: *“sometimes it’s weird isn’t it? Over-familiarity from someone that you don’t know who has commented on a photo that you’ve done...”* CBR5 p.18; CBR4 continued, discussing friends of friends on Facebook: *“if you take a photo and you tag a friend in it and then loads of people that you don’t know but their friends are liking it and you’re like ‘who are these people?’; CBR2 added: “You know you’ve got 15 likes and only two of those are my friends”* CB p.18.

Section 2 – key themes

The master themes for section 1 below have been identified through comparing the emergent themes from each of the cohorts.

Key themes shared between all cohorts

Key Theme S2T1: Twitter use for self-promotion exclusive of friendship groups, (apathy in Cohort A)
In cohort B and C Twitter was described as being used for photographic practices exclusive of friendship groups. As a consequence, in Cohort B, Twitter was described as a safe haven for opinions outside of sharing amongst friendship groups. As a consequence, Twitter sharing is described as more of an “opinion” and “thought on somebody’s mind” which is less subject to social pressures on other platforms (e.g. Facebook). In Cohort C, this is reflected in the use of Twitter for sharing for “engagement” and “self-promotion” rather than “community”-based sharing. In this case popularity is a key motivator, with participants seeking validation of images they share with wider audiences through interactions that quantify its relevance to wider audiences. Notably, this kind of sharing is viewed as contrived in the youngest cohort – who view public and attention based sharing apathetically – focusing instead on sharing with their friendship groups. In this case such practices are described as being completed by “others” who are more interested in popularity rather than what is being recorded.

Informed by cohort level themes: S2A1, S2B5, S2C2

Key themes shared between two of three cohorts

Key Theme S2KT2: Movement toward more “specific” image-sharing practices in younger cohorts
Within Cohort A and Cohort B discussions in Section 2 identified a move toward more “specific” image sharing practices – wherein the majority of practices are being conducted with specific audiences in mind. Responses indicate that the concern here is predominantly based upon accuracy of distribution – that is to say, ensuring that the audience of an image is as specific to the image-creator’s ideal as possible. In cohort A this is seen through the granular management of audiences using a series of WhatsApp groups – as well as a preference for applications where participants found themselves able to exert greater “control” over those seeing the image. In cohort B this was also expressed as an inherent concern on Facebook – where it was believed that it is inherent that some images would be seen by audiences that the image-creator is unaware, or concerned of. This similarly resulted in greater interest and use in applications, seen to be more “direct” – wherein audience specificity is heightened.

Informed by cohort level themes: S2A2, S2B2

Key Theme S2KT3: Further description of Snapchat (reaching out, co-presence, remote friendship)

The second master theme in section 2 concerned the two older cohorts describing their Snapchat practices. Of particular note in these discussions were participants' explanations that these practices are often conducted as a means of reaching out to others in moments of boredom – and sharing irreverent and absent-minded jokes. This was particularly notable, as other forms of image-sharing described within the focus group activity had been explicitly explained as a means of representing the image-creator in a positive light. Cohort B noted however that doing so allows people to reach out with “craziness” and “boredom” as a means to connect with others – as you would a friend in the room. It was noted that the ultimate goal of such exchanges is to make the audience laugh and “strengthen friendship” in doing so. Thus, sharing in this distracted off hand way, whilst useful for connecting with others – is seen as restricted on other image-sharing platforms which don't elicit the same kind of “back and forth” and informal conversational exchanges. This position is shared by participants in cohort C, who state similarly that the idea response is to make audiences “laugh” as well as receive a reply. They also draw attention to the role of audience notification in increasing the audiences' likelihood of reciprocation. Critically however, and in tandem with a key theme in Cohort A – Snapchat's design (particularly the “auto-delete” and “screenshot notification” features) create an implicit sense of trust for users sending images over the platform that allow them to use the app for informal exchanges.

Informed by cohort level themes: S1A4, S2B1, S2C4

Section 3

What do participants like about the apps and practices they do?

The first section of the focus group activity encouraged focus group participants to describe how they make use of smartphone photography.

Cohort A

Cohort Theme S3A1: Critical self-editing consequence of representing self through images

Within Cohort A restraint in image-sharing was common as participants found themselves not wanting to represent themselves negatively in exchanges. In group AA this was seen in relation to image content, where innocent holiday pictures could reflect badly on the image-creator: *“if you’ve been on holiday and you’re all in your bikinis ... you can’t really post that because you’ll probably get a bad name for yourself”* AAR3 p.40. Here the sharing of holiday pictures is seen to have an ulterior motive as images are seen by wider audiences. (This may be seen alongside group AA’s early concerns in relation to contrived attention seeking). Group AA are also critical of over sharing on feeds: *“some people you look and like they’ve got something like 500 posts and just like always putting stuff on and it’s just like – weird”* AAR3 p.44. Here *“weirdness”* can be seen to stem from the perception that over sharing within a feed is seen as contrived attention seeking behaviour. Group AA describe consequences of sharing in these ways as being ignored, or even removed from sharing groups: *“I’ve never experienced it other people especially with photos of themselves”* AAR1 p.48; here people over-sharing images of themselves results in separate groups being made without them; AAR3 explained *“it always gets made, and then everyone talks in it there’s this new one and that one and it just swaps”* AA p.49. AAR2 continued: *“Sometimes it depends on arguments and friendship groups that have happened as well because you might make another group without certain people”*. In this way Group AA’s image sharing practices on WhatsApp are socially charged interactions that have the potential for serious consequences. Group AA continue to describe types of images which may result in negative reactions: *“I never put quotes on them or anything like that because they annoy me so I think they would annoy other people ... And nothing soppy”* AAR3 p.52. AAR1 continued: *“It’s like most of the picture I take no all of the pictures I take I wouldn’t be ashamed about because they’re normal photographs”* AA p.53. In this way, the kinds of images that are made and shared are mediated in order to be *“normal”* in the eyes of the wider social group. In group AB this concern is reflected in description of use of Facebook – where old images are

deleted if they represent the image-creator negatively: *"I get that a lot with like Facebook pictures like all pictures from 2008 and 2009 I look at them and think 'wow' they look horrid right now. So I quickly delete them or quickly hide them all from my timeline so people don't see"* ABR3 p.32. In this case we see ABR3 enacting a historical revisionism – shaping representation of their past selves in accordance with how they want to be perceived today. Similar to group AA, there is also concern in appearing to seek *"attention"*, ABR3 stated: *"Personal images on Facebook. I might post it and then be like I would rather not that be seen by these specific people so I'll just kind of back down from it a bit. ... people think you're crying for attention or putting a picture for attention you kind of want to stick to yourself in a way"* AB p.43. In this example, an instance of sharing something *"personal"* is retreated from on as ABR3 believes they will be viewed negatively as a consequence. It is noted that group AB suggest that this issue is not as prevalent on Snapchat, where: *"you just send them [images] anyway"* ABR234 p.43 – even if they represent the individual negatively.

Cohort Theme S3A2: Different reactions expected/ preferred from friends and strangers

In section 3 Cohort A's discussions highlighted the difference in responses expected from strangers and friends when sharing images. When sharing with friends group AA made it clear that emotionally involved responses were preferred: *"It depends on what kind of photo it is – if it was a funny one you would want your friends to laugh and you would want strangers to as well...if it was ... a sad one, you would want your friends to be more caring and I wouldn't really expect a stranger to be like anything really"* AAR3 p.50. Thus AAR3 notes that ideally friends would be emotionally invested in images shared, and that strangers on the other hand should maintain emotional distance (especially in relation to *"sad"* images. Further responses imply strangers can comment on the image if they were present: *"when you ... find a picture and put it up after ages and it's you and a friend and a stranger just suddenly joins in like ... it's not really their place to say it because they're weren't really there"* AAR2 p.50. As such, AAR3 stated that non-verbal interactions are preferred from strangers: *"it's ok if they like it because it's not as though they are doing anything ... with a comment it's a bit weird because only your friends comment on your pictures"*; AAR2 continued: *"I think it's weird if people do that I can see that you've liked it why did you just comment on that"* AA p.51. Here commenting is seen as overly familiar, as a like is seen as an acceptable acknowledgement of the image shared. Group AB note that the *"like"* however is not emotionally neutral: *"I think the like button is also kind of bad ... if someone posts ... someone's died and you get people liking that and it just seems wrong"* ABR2 p.38. In this example there is a disparity between

the “like” as a non-verbal acknowledgement of an image – and the sentiment the individual wishes to express. ABR3 notes that emoji would potentially allow people to respond non-verbally, with greater emotional scope: *“I think that responding with it I dunno I think because most phones have like the emoji now so I think you can kind of respond back that way but people choose not to”* AB p.39. Despite these concerns Group AB noted that strangers’ comments would not likely spark conversation. ABR3 stated: *“...if a stranger commented you’d just put “thanks” ... while if it was a friend you would actually have a full blown conversation...”* AB p.52.

Cohort Theme S3A3: Differing arrangements of images on different apps

Next, Cohort A discussed how different arrangements of images impacted their practices. AAR3 stated that the act of creating holiday albums allowed them to consolidate their experience before sharing – and that this was preferable: *“I don’t really put it on as I am doing it because I probably don’t think about it at that time ... when I’m home... I’ll just think about it ... everything I did – I think it’s better like that”* AA p.46. Here AAR3 prefers to curate their holiday experience prior to sharing. Group AA also stated that sharing individual images places more emphasis on what is shown: *“If you’re posting them ... on their own because its more unique than a set ... if other people are ... viewing it on Instagram you don’t want fifty of you ... one on its own it’s more hype about it”* AAR1 p.46. This statement is supported by Group AB: *“...it would mean something more to have it as one single picture, because that’s what you think is the best picture while if you had in chronological order you think ‘this is the time of my life’”* ABR3 p.48. In this respect a single image implies that it has been selected from a number of others to encapsulate an experience. ABR3 notes that in comparison images within a feed stand more to represent an ongoing process, rather than “perfect” representation of an event: *“like it’s not meant to be like the perfect picture is this is the great time I’m having. The set is like these are all my perfect pictures”* AB p.49.

Cohort B

Cohort Theme S3B1: Spontaneity: capturing an image while impetus remains

The first theme to emerge in Section 3’s discussion in cohort B was the importance of spontaneity in image-sharing practices. BAR1 stated: *“I am not the sort of person who has that maybe depth to wait if it’s in my head it’s in there one minute so I have to take that minute or it’s gone”* BA p.54. Thus to BAR1 there is a critical period between being motivated to create and share an image – after which the impetus is lost and they withdraw. This is not

a universal sentiment in group BA however, BAR3 takes a more contemplative approach: *"I don't feel any rush to share, if I'm travelling and I take a picture in the day ... I'm not there to take the picture, I'm not taking the picture necessarily specifically knowing that I am going to share it later, I might look at it later and be like 'this would be a nice picture to share'"* BA p.54. In BAR3's case capturing images is not inherently linked to social sharing – with images being captured first, examined and then shared after if seen appropriate. In group BB impetus for spontaneous sharing is described again as emerging from boredom: *"I think boredom's a really big factor in image sharing like when you're sat in a lecture and you're not interested and you really and people really go on Facebook instead"* BBR3 p.34. Similarly, to group BA, loss of "spontaneity" through drawn out processes results in failed sharing in group BB. BBR1 states: *"if it loses some of the spontaneity of the [...] because you've taken the photo, by the time you've uploaded it, you've tagged it, added a little comment to it, added it to a different album, you just feel like – I've lost interest in this"* BB p.37. Here a loss of interest through the process of creating and preparing the image is seen to detract from the spontaneity of image sharing.

Cohort Theme S3B2: Attitudes towards old images: rediscovery, revision, apathy, context

In cohort B participants expressed a range of attitudes towards "old" images. These also reflect the emerging importance of images being current. BAR1 describes re-discovering old photos on Facebook: *"...sometimes it is nice when you can't remember that you've taken a picture, can't remember why you've taken the picture and you just see it..."* BA p.47. Here BAR1 implies that reviewing older images is not a commonplace activity – and that enjoyment comes from the surprise of not remembering how, when, or why the image was created. BAR1 continues: *"I wouldn't really go through an old Facebook album and I wouldn't really look at old Instagrams but you do look at old pictures and it's just quite nostalgic"* BA p.47. Thus, whilst Facebook and Instagram images have often been attributed throughout the focus group activities as functioning as "memories" – the extent to which this actually occurs is unclear. As in Cohort A, BAR2 also describes revising old images on account of how they represent the individual: *"a lot of them are embarrassing and... 'Should I delete them' but I just leave them kind of bury them type thing"* BA p.52. Here large quantities of images serve to "bury" images which the image-creator are embarrassed of. In group BB, BBR2 states a preference for "fresh" over older images: *"I think something becomes less interesting if it's from ages ago... the sooner you send it you have like a faster response if it's something that's just happened and it's like fresh news. ...It's just not as exciting to see something the second time*

around..." BB p.42. This supports group BA's indifference toward older images. It is noted however that sharing older images is permissible on certain platforms, BBR4 stated: "[it] depends on what platform you're sharing it on ... A text with a picture of something ... two weeks ago ... would be like 'why have you sent me this text' whereas if you uploaded the same picture on Facebook that would be ok [...]" BB p.43.

Cohort Theme S3B3: Sets and feeds of images effective in showing transformations

Cohort B noted in their discussions that images shown in chronological order are effective in showing transformations that take place over a length of time. BAR2 stated: "...if you're doing images which are showing a transformation in physical ...if you're like a bodybuilder ...you would often stick the order of the things they've done" BA p.57. In this example the physical transformation of a bodybuilder over time is shown to be best represented through a chronological series of images. This sentiment is also reflected in group BB, who describe this for a "night out". BBR1 stated: "I do quite like albums of night outs, especially if they're in [a] chronological album. You can explain the end of the album, with the beginning and that's quite good. It kind of you relive the story of the night in a way looking through photos in that way" BB p.44. Here BBR1 notes that by looking at the album as the audience is able to gain additional knowledge about images from their context within the whole of the recorded event.

Cohort Theme S3B4: Ideal responses to sharing acknowledgement and validation – failed sharing when absent

Cohort B also described the ideal response to image-sharing in their discussions. In each case the goal of sharing was forms of validation – with failed instances of sharing occurring when this was not present. BAR1 stated: "my friends would literally just take the piss so much because ... I am an over sharer of pictures ... done pictures of dogs and knitting needles and all things that nobody else but me wants to see" BA p.53. Here BAR1 is aware that the images they share are not relevant to audiences – and that this results in ridicule from peers. In group BB, BBR2 stated that they remove image if they have not received an expected amount of "likes": "on Facebook where you delete it in the end because it's so awkward... Unless it's been posted at just a really weird time – then I wait about half a day" BB p.35. BBR2 expects a certain response to the image – and when this is not achieved they feel that this reflects badly upon them. It is notable that they perceive the audience status, and will wait to delete an image if they believe that they have not seen it (i.e. they're asleep as the image

has been posted at a strange time). Critically however, BBR4 and BBR3 noted that validation is the key motivator behind image sharing, stating: *"Affection – validation I guess" ... "You want them to care"* BB p.46. Group BB noted that the "like", as a non-verbal interaction, performs this function: *"I like things my friends at other unis have put up ... its ... an acknowledgement that I am keeping track with what they're doing and that I'm still interested in what they're doing with their life"* BBR3 p.47. Here BBR3 stated that they are showing acknowledgement to friends' recorded activities although they are far away. As a consequence, (and as stated in some other groups) there is an emphasis upon images representing the individual in a positive light. BBR3 stated: *"when you're drunk you don't really want a photo – like it doesn't matter if people who were there when you were drunk see it but you don't really want everyone who wasn't there to be like 'oh, look at you you're a mess'"* BB p.46. Here an image of BBR3 enjoying a night out is seen as a negative representation thereafter; both to those who were not, and significantly those who were, present at the time.

Cohort Theme S3B5: Instagram: just "visual" pictures, artistic, without context, online identity

Cohort B's discussions presented an interesting account of Instagram as an image-sharing platform in comparison to others. In particular, it was described as more intrinsically visual, which placed greater emphasis on its use for artistic practices. Alongside the limitation of sharing singular images at a time, this was described as promoting construction of an ideal identity. Group BA began by comparing Instagram to others: *"Twitter you'll have I guess like different statuses and Facebook is like everything but Instagram is just pictures ... it's so easy to just look at a picture for three seconds and scroll past it and it's just a lot more interesting to look at pictures ..."* BAR3 p.49. Here the increased emphasis on images (rather than other forms of sharing) allows BAR3 to navigate content more effectively. BAR4 continued noting: *"I like Instagram the best as well because you're not really sharing an opinion ... or anything personal you're just sharing what you've done, your experience, something that you've seen... I don't tend to put a caption or anything I tend to just put an emoji..."* BA p.50. Here Instagram's focus on images is seen to draw sharing away from opinion but instead as visual communication. In group BB it was noted that Instagram image – being posted individually – are a more deliberate, considered recording of an event: *"if it's just a random image on its own doesn't have any context, whereas chronological you're kind of following what somebody is doing with their life or they could constructed that's much more of a deliberate thing I think it does make a big difference to what you're sharing"* BBR3 p.44. Group BB continued stating that these selective practices result in online identity as a "construct"

which is different from their experience of the person in real life. BBR4 and BBR3 stated: *"there's people you know and you don't see them for a couple of years and you've been so interconnected with them because of all these pictures they've shared that you've seen and they've built like this web presence and then you see them and it's like – you're still exactly the same as when I met you and you're not this person you've created online" ... "It's almost like a contradictory isn't it if because if when you actually do work you spend more time talking to people interacting than you do [...] that you do with their web presence or whatever – and it's false advertising really"* BB p.40.

Cohort C

Cohort Theme S3C1: Instagram: difference between identity and real life, selective depictions

In cohort C Instagram was characterised as a platform where representations of the individual diverge from real life. Instagram photos were described as *"heavily worked on"* by CAR4 – as a consequence they are each seen as having a *"story to tell"*: *"on Instagram everyone that I've seen only post photos that are heavily worked on... say it was ten photos from the same person I'm pretty sure each one of them would have its own story to tell"* CA p.28. In this case CAR4 implies that with the care that appears to go into creating each image – there is increased intention from the image-creator. CAR4 notes, that as a consequence of this – Instagram images are more about aesthetics than communicating the here and now. They stated: *"...on Instagram it's just an image that I think looks good – so it's not necessarily saying this is what's happening right now"* CA p.33. This emphasis on *"looking good"* is noted by CAR1 as making Instagram ultimately about making your experiences *"look more interesting than it is"*. They stated: *"...a personal Instagram you're trying to make your life seem more interesting than what it probably is"* CA p.18. Group CB supported this position – stating that use of Facebook and Instagram typically involve the image-creator presenting themselves in the best light. CBR4 stated: *"everyone always looks their best on Facebook then everyone is always doing really good stuff... People only really tell you about the good stuff or the interesting stuff some people tell you about the uninteresting stuff and that's ... annoying in its own way"* CB p.41; CBR3 continued: *"I would say Instagram is probably a similar thing where it's they people heavily filter what they put on there"* CB p.42. In this way Instagram and Facebook can be seen as representations of the image-creator which privilege some moments of interest over others. It is notable that CBR4 also stated that when images are shared of the banal minutiae of life – this is annoying in its own right – and that as such

photography when used correctly is inherently prone to privilege important moments over the ordinary.

Cohort Theme S3C2: Significance of notifications in image-sharing practices

In cohort C notifications were highlighted as critically involved in participants' image-sharing practices. CAR5 stated that they were annoyed about receiving notifications from an image posted on Facebook: *"Facebook one of the things that put me off it is you know when you comment on a picture post – anybody who comments you get a notification"* CA p.29. Here CAR5 is particularly annoyed by the fact they are receiving notifications they are not interested in. In Group CB, WhatsApp notifications are seen as beneficial in encouraging reciprocal exchanges. CBR1 noted: *"if I want to share ... one person I will use WhatsApp ... the advantage of that is I will know when this friend was last online and whether he has seen my image or not and I will be expecting a response..."* CB p.29. However, this is also seen as a potential weakness, when an image-creator is aware that an audience has seen an image – but they fail to reply, CBR4 stated: *"I sent a picture to my sister ... at the rugby I got stamped on the face and I was hoping for some sympathy – I sent to her on WhatsApp she never replied, she's seen the message!"* CB p.37.

Cohort Theme S3C3: Description of Snapchat and synchronous sharing practices

Section 3 Discussions in Cohort C commented the significance of photographic practices that focus on real-time exchanges. The application most commonly linked to these practices was Snapchat. CAR2 stated that Snapchat is: *"very much about the now"* CA p.31. It was noted by CAR2 that as a consequence of exchanges being in the "now" (as opposed to being lasting recordings) there is less scrutiny placed on the nature of their exchanges. They stated: *"Snapchat, some of them fall flat you just normally get a response which is someone's face pulling a face saying 'what are you on about' because they've not understood the point and they've only got five second to see it but the [...] nature of it there's nothing riding on it you know it's just 'try again next time'"* CA p.37. Here reduced risk is encouraged by the likelihood that the audience did not have enough time to see the image. Group CB noted that there are different motivations behind practices where sharing occurs in the moment, or later. CBR3 cited context: *"it entirely depends on context because there is (sic) some things that I would maybe take a picture of but I would still want to enjoy later ... whereas there are some things like I see a person on the street take a picture straightaway and upload it to say that 'this just happened'"* CB p.31. CBR4 noted that in sharing an event as it is occurring, the image-creator (and

audiences) is capable of influencing events as they are occurring. CBR4 stated: “...if you’re like at a big event ...say you’re sharing on Twitter or on Facebook ...you see what’s trending ...now you’re part of that shared experience... what you’re doing is actually part of the live event you might even influence things” CB p.31. Finally, CBR4 noted: “sharing photos instantly. Sometimes it’s actually tied to the event and has a sense of the event in it” CB p.31. The implication here is that sharing images of an event synchronously allows audiences to remotely access it.

Cohort Theme S3C4: Significance of how images are arranged in audience comprehension

Cohort CA noted that certain applications encourage image-creators to share their images in certain configurations. They also noted that this can have an impact upon how the audience comprehend the images they are presented with. CAR3 stated: “I would probably at a later date compile them into a group and put them on Facebook but it would be ‘this was my time at’ as opposed to ‘this is what I am doing now’” CA p.31. CAR2 noted that often image-creators need more than a single image to communicate what they want to. They stated: “some topics ...are more dynamic in nature than one photo...” CA p.34. This expresses CAR2’s concern over the use of a single image to record the totality of an event. CA continue stating the strength of posting multiple images: “pictures that ... make sense as a sequence I will put them up as an album ...even on Instagram if something makes sense in a sequence I would probably upload them immediately as in one two and three ...rather than just ...doing one this morning and one this evening ...not everyone is going to get to see them” CAR4 p.34. Here CAR4 noted that whilst Instagram typically encourages the posting images on a one by one basis – posting them close together encourages audiences to view them as a whole. This point is then supported by CAR5, who stated: “if you ...upload four pictures or five pictures it sort of tells the story ... people try to get the message even if you don’t add caption” CA p.35. Thus, a series of images is seen as capable in accurately communicating meaning to an audience through their implied relationship. This also highlights the importance of the caption where this is not the case. In group CB it was noted that collecting images together as a “set” has an impact on how they are perceived, CBR1 stated: “I think putting it into an album or a group of photos levels all of the photos into one level which is the album whereas if you put them individually one photo or more would take more or lots of interest and one would be ignored” CB p.34.

Cohort Theme S3C5: Practices predicated upon the knowledge of audiences interested in images

Both groups in Cohort C noted that their smartphone image sharing practices were established on the basis of audiences interested in seeing their images. This supports the concept that smartphone photography as a set of practices are inherently social. CAR3 stated: *“if I didn’t think that there was going to be many people who would be ...interested I wouldn’t bother”* CA p.30. In group CB, CBR2 supported this claim: *“I sort of wouldn’t put something on Facebook say for example – I am not massively fussed over whether everyone on my feed was going to interested in something because ultimately there will be hundreds of people who are going to be like ‘what’s that guy in my seminar 2007’... CB p.29”* In both cases sharing content which may be interesting or memorable to the image-creator is nixed on account of fear of social reprisal.

Cohort Theme S3C6: Sharing alongside others’ images – impacts on comprehension

Within Cohort C, discussions also highlighted that when an image-creator’s picture is shown alongside other people, this results (1) in a degree of implicit competitiveness, and (2) privilege of the image-creator’s own perspective. CAR2 stated: *“I think if you get photos from different kinds of sources together you’ll start getting photographer competitiveness – ‘let’s take the best photo of Leeds night out 2014 tonight’ most likes whatever”* CA p.35. CBR3 noted that sharing alongside others has an impact of how their own image is seen: *“I probably wouldn’t want their picture diluting mine cause I want my friends to be looking at my picture”* CB p.35. Here CBR3 places emphasis on the increased relevance of their image to their friends – over strangers’ which may depict the same content. Despite this CBR4 stated: *“Your phone might be one of many ...your photo shows part of the story – so it depends whether you’re looking for information”* CB p.35. Thus to CBR4 there is benefit to sharing within public feeds, as the image-creator’s picture serves as part of a larger source of information about an event. Ultimately however CBR1 noted: *“for a general public event I would care more for the pictures I have taken myself ...I care about sharing a photo because I was there myself. I wouldn’t share a photo if someone else took it or wouldn’t care if I see it”* CB p.36. Thus in smartphone photography practices there is an implicit and almost individual aspect to sharing – that is that the image is testament to the image-creators direct experience and recording.

Cohort Theme S3C7: Acceptable interactions from strangers and friends

Cohort C's discussions in section 3 touched upon ideal responses to images shared. As with other cohorts, distinctions were made between acceptable interactions from strangers and friends. CAR4 expressed the implicit boundaries they encounter when viewing stranger's images: *"if it's [an] Instagram post I probably 'like' people I don't know posts but that's all I'd do – I wouldn't comment and say 'hey yeah that is nice' or something strange like that"* CA p.19. Similarly, in group CB commenting on images is seen as unacceptable behaviour from strangers: *"if my friend commented whether it's good or bad it's still them acknowledging the picture. If a stranger liked a picture it's 'ok a stranger liked the picture fair enough' but if a stranger commented on the picture it's a bit..."* CBR3 p.39. It is notable that friends are seen to be able to comment on an image both positively or negatively, as this is seen broadly as a means of acknowledgement. Comment from a stranger however appears to represent trespass, even when the nature of that comment might be encouraging to the image-creator. In this case it is apparent that non-verbal interactions (e.g. likes, favourites etc.) are preferred.

Cohort Theme S3C8: Ideal responses to images, acknowledgement acceptance

Cohort C discussed in length the preferred outcomes to their smartphone photography practices. These outcomes are broadly concerned with acknowledgement and mutual acceptance. In relation to sharing on Facebook, CAR5 stated: *"when you post a picture on Facebook... you're expecting some likes or some compliments that will make you feel good... when I don't get them I feel 'I like this picture – are people not seeing what I am seeing here?'"* CA p.35. In this example we see that CAR5 equates a lack of Facebook 'likes' to audiences' rejection of the image. This leads to a crisis of confidence, and concern that the image-creator is deviant. *"Engagement"* is also stated as important to CAR4, who suggests that lack of 'likes' might more likely be due to ineffective distribution. They stated: *"I work with people to do precisely that so I find that when ... you don't get any engagement you realise it's because it's been the wrong time and the people you put it up for didn't get a chance to look at it"* CA p.36. Thus to CAR4 the preconceived reaction (and subsequent likes) is a foregone conclusion, with failure only a consequence of logistics. CAR1 discussed *"failed"* sharing in relation to Instagram: *"...the odd photo that I've uploaded to Instagram and it's had no likes or comments and that doesn't particularly bother me I've just uploaded it for me more than anything else"* CA p.37. In this case CA attributes a lack of engagement with an image as failed – but excuses

this as the image uploaded to the platform for their own viewing. Nearly identical sentiments were found in group CB. CBR5 cited a pre-conceived expectation of 'likes', and subsequent disappointment: "I think most times ... you put a photo and think 'I'm going to get loads of likes' or 'I'm going to get retweeted' and then no" CB p.37. Thus a lack of acceptance can be experienced through both less engagement than expected by the image creator – as well as more overly negative responses from audiences. CBR5 described a worst-case scenario as: "...no response at all or please stop texting me ...no means no" CB p.37. In addition, CBR4 offers "worst-case" examples where sharing draws direct criticism from strangers. CBR4 stated: "Well sometimes you [sic] sharing something on the internet and someone you don't know comes back at you criticising it or criticising something to do with it and you're like 'you don't even know me' and it's like a friend of a friend." CBR4 continued: "worst case scenario kind of thing for me is I share something on Twitter like an image I thought that was sort of funny or cool and someone I don't know goes 'why are you doing that' to get a negative response from someone you don't know" CB p.38.

Section 3 – key themes

The master themes for section 3 below have been identified through comparing the emergent themes from each of the cohorts.

Key themes shared between all cohorts

Key Theme S3KT1: The significance images being displayed as: sets, feeds and singularly

Within all three cohorts, participants discussed the significance of sharing images singularly, in curated sets, or chronological feeds. In each case this was seen to have an impact on the comprehension of the image. In cohort A, participants stated that sharing an image on its own has more impact, as it implies that the single image has been selected to represent an entire experience. Similarly, creating a feed of images together generates a similar inference in the audience – that there is a unifying theme or event being represented (a participant in Cohort A notes that creating a Facebook album allows them to think back upon their experience in a positive way.) In addition, chronological images are seen to grant users license to share images that are not "perfect" but that represent ongoing events. In cohort B noted that – sharing in this way is seen to be particularly useful in representing transformations e.g. a car being washed, or a night out. Doing so is seen to allow audiences to "relive" the events of the album, through following the events that unfolded chronologically. Cohort C stated a preference for "compiling" the

experience of an event into an album for later – rather than sharing as they went along, likely as this allows the event to be portrayed in the best light. Cohort C also noted that in order to represent some things more than a single image is often required – and in doing so each image shared as a set has the same “level” of significance.

Informed by cohort level themes: S3A3, S3B3, S3C4

Key Theme: S3KT2 Instagram: as an inherently visual network, constructed as ideal

Within Cohort B and C Instagram noted in that it is a social network based wholly on distributing images (whereas the other discussed also included exchanges of text etc.) As a consequence of this the older cohorts noted that this resulted in users presenting themselves and their experiences in idealised depictions. It was noted in Cohort B that Instagram allowed people to share exclusive of an opinion, as the platform placed emphasis on visual communication. In addition, each image was seen to be posted without context, and selectively, both through the process of identifying the singular image to use to represent an experience; as well as through the process of “editing” the image prior to posting. It was noted that as a consequence of this on Instagram (and other platforms) individuals construct a “presence” online through image-sharing that falsely represents themselves and their experiences. In cohort C this point was stressed – in that Instagram photos which are shared are perceived as “heavily worked on” and therefore privileged in that they are seen to have a “story to tell”. Notably however this also results in selective sharing and omission – wherein audiences implicitly perceive that they are only being shown “the best stuff”. Thus, sharing on Instagram is seen (when compared to Snapchat) to privilege moments of users’ lives above others that are shared.

Informed by cohort level themes: S3A1, S3B5, S3C1

Key themes shared between two of three cohorts

Key Theme S3KT3: Audience intimacy and ideal reactions

Cohort A and C both shared similar attitudes toward interactions with friends in comparison to strangers. In each case the ideal reaction sought from sharing an image was approval and real life emotional investment from the audience. As a consequence of this Cohort B and Cohort C noted that expectations of reactions from friends and strangers should be express a suitable level of familiarity. With strangers, over familiarity (i.e. commenting extensively) was seen as uncomfortable and inappropriate, with non-verbal indicators of approval preferred. With friends, the opposite was true, with measured

responses being seen as cold or impolite. Cohort A also noted that this creates difficulty where non-verbal indicators are not emotionally neutral (i.e. a 'like') – as some instances of sharing may involve negative scenarios. As stated previously comments are also seen to be unique from conversation, as they are shared with the entire image audience. Thus they are created with this in mind. Cohort C also expressed similar attitudes toward commenting from strangers as representing a trespass. Typically, this is described as someone commenting who the image-creator “doesn't know” or whom “wasn't there” – therefore intruding upon approval sought by others.

Informed by cohort level themes: S3A2, S3C7

Key Theme S3KT4: Ideal responses to images – acknowledgement, validation from relevant audiences

Cohort B and C were in consensus in describing the ideal response to images being shared. Universally images were described as being shared to achieve acknowledgement and validation from relevant audiences. It was also noted within the discussions that where relevant audiences were not available to users that this was seen to remove the impetus to share. Cohort B described instances where sharing had been considered failed – characterising these as when an individual had shared images “nobody else but me wants to see”. Furthermore, another example described deleting an image that had not achieved a preconceived amount of “likes”. Ultimately, this was described as a means of acknowledging and validating what has been shared. Cohort C's testimony supported this claim stating that sharing was conducted in order to generate “likes” and “compliments that will make you feel good”. Similarly, lack of this expected response was noted to result in confusion. In cohort C examples were also given where sharing images had “backfired” and resulted in either negative reactions from friends and strangers alike (ranging from indifference to criticism). In an additional theme however it was noted that where relevant audiences for an image are not perceived, this may result in a loss of impetus to share images altogether.

Informed by cohort level themes: S3B4, S3C5, S3C8

Section 4

How would participants like to conduct personal photography if there were no rules?

Within the final section of the focus group activity participants were asked to describe how they would envisage photography if there were no rules. Participants were encouraged to imagine and conceptualise apps and cameras that would allow them to conduct photographic practices without restriction. By doing so, discussions would generate insight into the unarticulated wants and needs of participants – obscured by accepted conceptions of contemporary personal photography. This section of the discussions was characteristically shorter than others, as participants were encouraged to continue to generate solutions for the research assistant to illustrate on an A2 sheet of paper. As a consequence, fewer themes emerged in this section of the discussion than others.

Cohort A

Cohort Theme S4A1: Simple but powerful “Photoshop” tools: including “layers” and “filtering”

The first shared theme in cohort A was the demand for “Photoshop”-like tools for smartphones. In group AA this was described as: *“having your own kind of like kind of like mini Photoshop in a way. Because like Photoshop is basically impossible to use now anyway but having your own dumbed down version which still has really good quality I guess and feature because all of the photo-editing stuff you’ve got is all a bit useless”* AAR1 p.57. Here AAR1 describes Photoshop as synonymous with effective photo-editing tools. However, they express disappointment over the perceived complexity of these tools. In group AB, ABR2 requested: *“Photoshop like, layer pictures on Snapchat”* AB p.54 and *“Selected filtering”* p.57. Here AB wishes to be able to select the figure within an image and place it outside of context, for humorous purposes. In each case however, reference to ‘Photoshop’ implies the desire for more powerful image-manipulation tools accessible through intuitive smartphone interactions.

Cohort Theme S4A2: Snapchat improvements: easier mass distribution, disabling of “screenshotting”

Within both group AA and AB, the first responses to section 4 concerned improvements to Snapchat. Within group AA, AAR4 requested: *“I would rather just select all then un-tick the people who I don’t want to send it to ... rather than going through them separately”* AA p.56.

Here, AAR4 is frustrated with the designed requirement on Snapchat to select every participant of an image, as to conduct widespread sharing, this becomes laborious. In group AB, ABR4's concern is with breaches of trust; they state: *"stop screen-shotting on Snapchat"* AB p.54. Whilst Snapchat sends a notification to users when images they have shared have been captured, the app does not restrict this from happening. In this way, ABR4 would like Snapchat to function without the possibility of images being seen outside of their chosen context in time and space.

Cohort B

Cohort Theme S4B1: Content aware distribution: "employment mode"

In cohort B a theme which emerged in the final stage of the discussion was assisted distribution – ensuring that images are only seen by appropriate audiences. In group BA this was seen in *"employment mode"* described by BAR1: *"That would be quite nice actually – if you could have something that could filter out the bad, you could still share the bad but with who that you want ... here's the photos that I share with my family and these are the photos that I share with everyone"* BA p.64. Thus, the application would be aware of the content within the image, and present different audiences with images suited to them. In group BB this was simply posited as: *"I guess one which automatically knows who you want to see it?"* BBR4 p.51. Motivation behind this may not be as clear as in group BA (where it is more explicitly avoiding negative representation), however it is implied that the function would *"know"* as much as the creator about audience preference. BBR3 later stated however: *"Timing is crucial I think like something you take after 10pm – you're unlikely to want to send to your parents ... Whereas you want to send to your friends I think it would be doable. I don't think people would trust it enough to let it just send images for you"* BB p.59.

Cohort C

Cohort Theme S4C1: Additional technical capability: low-light, improved lensing

In Cohort C the first recommendation given concerned improved technical capability of the smartphone. In group CA, CAR2 stated: *"I want it to work well in low-light and fix red-eye so this is obviously for the nights out when I'm not that steady with my hand I want it to autofocus and level"* CA p.41. Here intrinsic characteristics of smartphone cameras are seen as key limitations. In CB similar limitations are seen in the lensing offered by smartphones: *"something I saw when I was on holiday once was a guy who had something he slipped onto the back of his camera which was like a different lens? I think even a magnifier or like a fish-eye lens"*

but if that was built in that would be pretty cool” CBR3 p.43. Whilst the motive here is not explicitly stated, it is implied that CBR3 would appreciate greater variety in the lensing offering of smartphones – to capture experiences in a more diverse way.

Cohort Theme S4C2: Consolidation of applications, “tiered” sharing between various audiences

The second concept to be shared by both groups in Cohort C was a consolidation of different image-sharing apps into a single experience. In group CA, CAR3 stated: *“I think the thing is that there are various apps where you can do various things ...but the problem is that it you know one thing does one thing better than another so having it all in one app in one place is quite important”* CA p.46. The inference here is that CAR3 finds themselves having to compromise between siloed offerings in order to optimize their practices. This is expanded in additional detail in group CB, where CBR2 requested *“tiered”* sharing early in the discussion: *“there’s like the three tiers of like you’ve done something great you want everyone to see... you want just a few people to see it or you know you’ve got something you want to send to your girlfriend or your mum just an app that quickly lets you flick between those three sorts of things”* CB p.9. Here, by selecting between three *“tiers”* the image-creator would be able to switch between larger-scale general sharing, to a smaller group, and then to a specific audience. This implies that doing so at this time is problematic, as it is likely completed through a number of different apps.

Cohort Theme S4C3: Facial recognition, identifying people in images, management of identity

The last key recommendation shared within cohort C was the use of facial recognition in image-sharing to identify and manage images of individuals. In group CA this was described by CAR4 who stated: *“I would probably want it [the app] to find the people in the photo because I get annoyed. The reason I don’t use Facebook is that I get told off ‘You put a photo of me and didn’t tell me’ but it’s also annoying to go there and find them and tag them and so”* CA p.40. In this example, Facial recognition would be used to identify and tag people within an image – so that they can be notified of their representation online. For CAR4 this represents a point of contention where friends are critical of them being shown in images they do not know about. In group CB, facial recognition is proposed to be used in a slightly different way, that is the ultimate management of the online self by being able to identify and manage any instance of an image from the internet. CBR5 stated: *“facial recognition software which can scan every picture on Facebook and the internet so can find, even photos where you’re in a crowd at a football game and you can just find yourself anywhere”* CB p.45.

Section 4 - key themes

The master theme for section 4 below have been identified through comparing the emergent themes from each of the cohorts.

Key themes shared between all cohorts

Key Theme S4KT1: Greater control over distribution, employment mode, “tiered” sharing

Within cohort 4 there was only a single theme which was shared between cohorts. This concerned the provision of a feature which would through various means distribute an image more accurately. The motivation behind this was a desire to avoid certain images being seen by unwanted audiences. Within cohort B this took the form of “employment mode”, a feature which would have a mechanism which automatically detects the appropriate audience for an image. This would “filter out the bad” and ensure that this was not seen by “family” and prospective employers. In cohort C this was described in a slightly different way - namely that through “tiered” sharing the user would be able to more freely switch between sharing images with wide networks, more intimate groups of friends and individuals. This was described primarily as a means of consolidating a range of sharing offerings into a single application - but also implicitly articulates a desire for greater control over image audiences.

Informed by cohort level themes: S4A2, S4B1, S4C2, S4C3

Summary of findings

What follows is a summary of the findings of the focus group activity. This touches upon the core themes that have been identified through the activity.

1. The first observation from participants' discussions was the use of a set of five software tools for the majority of their practices. In each group: "Facebook", "Instagram" and "Snapchat"; followed by "WhatsApp" and "Twitter" were the main apps used for personal photography practices. This was consistent with the responses within the screener survey. In the discussions it was clear that there was a high degree of acceptance a small number of established apps, and apathy toward new offerings. Reasons cited for this included both: familiarity and trust in popular apps' functions; as well as confidence that - being widely used - they could be reliably used to send images to reach desired audiences (this a principle motivator behind practices).
2. Due to reliance upon these core apps, smartphone photography was described within the focus groups as primarily as means of social interaction. This is significant, as personal archives of images (e.g. photographs of family and friends, holidays and notable events) were described as created for the sole purpose to presenting experiences to others; and were submitted immediately into online spaces for review. As a critical consequence of this, sites of "memory" such as Facebook and Instagram and associated practices are significantly influenced and shaped by the expectations (perceived or otherwise) of audiences of peers or public alike.
3. Despite the unifying social function activities described were very diverse. Discussions uncovered a range of motives, attitudes and considerations that shaped participants' activities. Common distinctions were made in using smartphone photography to (in order of popularity within the discussions): (1) conduct "instant" sharing involving humorous exchanges, (2) send photographic "messages" in "conversations", (3) record "memories" of significant events, and (4) construct an online "identity" or "presence" for the wider public as a way of generating a form of professional publicity.
4. It was made clear within the discussions that (1) and (2) are vastly more common practices than (3) and (4) where images persist and are subject to extended social scrutiny from networks of friends and the public. As a consequence, (4) in particular as a deliberate practice was less frequent; and even criticised as self-regarding and vain.
5. Participants made a distinction within their practices when interacting with friends and with the wider public. In each case there were different expectations of what

constituted appropriate behaviours across the entirety of image sharing practices (from creation, to sharing, to various interactions thereafter). Sharing with the wider public was reported to result in more “*formal*” and “*constructed*” practices motivated by a desire to please “*universally*” and develop a “*following*”. Sharing with friends on the contrary was characterised by personalised content and “*inside jokes*” irrelevant to wider audiences. This was often cited as an idiosyncratic way of reinforcing friendship using distinct cues and personalized interactions.

6. Participants also sought to control the magnitude of their image-sharing; with many instances within the findings highlighting the perceived importance of control over image sharing. Here sharing peer-to-peer was reported to result in more “*conversational*” exchanges, characterised by an expectation of images in reply and the incitement of in-depth conversations. In contrast, broader sharing was described as allowing audiences to view images more passively (e.g. in a feed). Here there is a lesser expectation for “*acknowledgement*” to occur, mainly by non-verbal indicators (e.g. “*likes*” “*favourites*”), and/or short comments. It is also notable that practices that share at a greater *magnitude* typically involve less *intimacy*; especially as this is associated with permanent, definitive depictions of “*memories*” as more widely distributed material.
7. Participants are increasingly partaking in practices where images are shared in the moment. Smartphones are continually utilized by users and connected to pervasive data networks. This has allowed for photographs of an event to be captured and shared synchronously. This has given rise to novel forms of “*instant*” sharing are described within the focus group discussions that are characterised by the ability to share an experience as it is occurring – allowing audiences to interact as an event continues. These exchanges are typically described as emerging from “*boredom*” and feature ad-hoc exchanges designed to amuse an audience by sharing the image creator’s current experience. Key to these exchanges is difficulty in accessing the images outside of the instance of sharing – either through self-destruction of an image, or disappearance in feeds or messaging threads. This is described as allowing participants to share with less inhibition; and for audiences to feel privileged by their permitted access to intimate, candid and self-deprecating moments.
8. In the discussions it became clear that use of certain apps influenced participants’ practices through certain functional affordances and restrictions (the most important being access to the desired audience). This could be seen to result in the four main

categories of practices described above (“*instant*”, “*messaging*”, “*memories*” and popular public “*presence*”.)

Snapchat was described as broadly encouraging humorous “*instant*” exchanges through reduced friction in creating and sharing images, alongside an auto-deleting function. Similarly, Facebook was described as a place for “*memories*” with images described as shared with large audiences – permanently accessible as definitive recordings of the image-creator’s life experiences. Similar accords were made describing other platforms throughout the activity (e.g. WhatsApp for functional contextual exchanges in “*conversations*”, and developing an online “*presence*” for publicity purposes on Instagram).

Thus, the descriptions of using different apps were highly conventional; with sets of common: affordances, practices, and motivations commonly cited for each app which shaped their associated practices. Testimonies were largely characterised by use of app to create and share in the most obvious, efficient way presented to the user – implying that software tools themselves are in large part responsible for determining the nature of contemporary practices of personal photography.

This was not without exception however as participants reported using various strategies to modify the affordances of an app, or avoid its inherent restrictions for various motives. This supports the critical position that personal photographic practices are not the subject of strong technological determination. Instead, practices are more intricate, personal, and performative – involving continually transforming relationships between technology, human actors and culture at the broader level.

In the following chapter, the themes that have been identified through this process are gathered and discussed in relation to existing knowledge concerning the ontology of photography, and a critical account of the progression of personal photographic practices.

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CHAPTER 5: DISCUSSION

Overview

The preceding chapters of this thesis have detailed both the secondary (literature review) and primary source (focus group) research activity. The purpose of these activities is to achieve a description of personal photography, (1) prior and (2) post the widespread use of smartphone hardware and software tools – and then by comparison (3) identify key changes and consistencies. These key changes and consistencies then inform (4) a set of design principles for personal photography.

Thus far; of these four objectives (1) has been achieved through the literature review activity; (2) has been achieved through the focus group activity and thematization and summary of findings, within the last chapter.

This discussion chapter addresses the final two research objectives. What remains is a (3) description of key transformations and consistencies in personal photography through comparison with the analytical framework; and (4) derivation of a set of design principles for personal photography, informed by these changes.

As such; this discussion chapter is split into two principles sections. The first is an analysis of the key themes that emerged from the focus group; that utilizes the analytical framework; to identify key transformations and consistencies. The second section details the process of developing design principles for personal photography.

Key similarities, transformations and design principles

1 - Use of core apps: Snapchat, Instagram, Facebook and WhatsApp.

The first key theme which emerged from the focus group activity was the predominant use of small set of software tools for photography practices. Discussions were based around: Snapchat, Instagram, Facebook and WhatsApp. These were supplemented by use of the native camera tool, and other communications tools (e.g. text and email).

Participants would not use a single tool for their practices, but instead a small set, typically comprising of the 2 or 3 of above, to complete their activities. This is notable, in that each software tool made use of the same underlying smartphone hardware; yet, certain software design characteristics were described as offering participants unique possibilities in their practices (there are characterised below).

These different possibilities are reflected across not only through the provision of a different range of tools to capture of the image; but also (as Keightley offers in the theoretical framework) the broader scope of: storing, viewing and, in particular, sharing offered by the software tool [80].

Cohort level themes: S1A1, S1B1, S1C1

Notable Consistencies

Notable Transformations

- Where before; use of digital compact cameras and subsequent sharing online were separate technological activities; smartphone software tools often offer a holistic configuration which encompasses the entirety of the practice of personal photography. Users value tools which they can seamlessly use from capture through to interactions with audiences.
- This also represents the continued shift towards personal photography practices occurring digitally in their entirety – as software tools become increasingly all-encompassing of practices undertaken upon them.

Design Principle #1 - Holism in design

When approaching the design of tools for personal photography practices; the entirety of the practice should be attended to in the design.

This includes attention to activities associated with capture, to storing, sharing and (re)viewing images.

2 - Humour as key motivator of "instant sharing"

Humour has become a principle driver of personal photography practices. With a greater emphasis now on 'instant' sharing (see below). Humour driven sharing is characterised by: 1) speed, 2) directness to audience, and 3) disposability compared to other practices. Unlike other practices which require significant motive and justification to share, it can be motivated and completed in boredom; or seeing (then capturing and sharing something) deemed relevant to certain others.

This may be comprised of first hand material (e.g. through Snapchat); or second-hand content found online (memes, jokes sent on WhatsApp etc.) which provokes a desire to connect with specific people over a shared sense of humour. In the case of first hand material; where a content catalyst is absent, often self-deprecating material is shared (e.g. "*ugly selfies*") are shared as a means to fulfil an underlying impulse to simply connect with certain others.

Speed allows the user to act upon this impulse (to connect with others, or recognition of relevant content). Directness ensures that content (which is not relevant to wider audiences) is precisely distributed. Disposability encourages a mode of informal personal photography that is not intended to be permanent.

Under Van House's motives for personal photography; this kind of image sharing functions as both a means of social connection, and collective identity [135]; as they often occur from an impulse to connect with friends; through the perception of a shared humorous outlook.

Cohort level themes S1A4, S1B2, S1C5

Notable Consistencies

- As proposed by Belk [12] humorous sharing is reflects a continuation of the extension of personal photography into the everyday life and the banal.
- As outlined by Van House [135]; a new mode "*instant*" humorous sharing fulfils motivations of maintaining social connections, and an enactment of aggregate identity.

Notable Transformations

- Humour based photography has become a significant driver of personal photography practices.
- Humorous personal photography is created to be non-permanent. Whilst the images are testament to the exchanging parties' aggregate identity – they are not intended for function as a lasting representation of this (as with posed photos, arranged album of social connections). Instead the images functions as a means to an end (making the audience laugh, connecting with a valued other). This is indicative of a practice where significance is based upon the materiality of the image rather than content [135:3].

Design Principle #2: Image as a means not an end

As demonstrated within the example of humorous sharing; personal photography motivated by social solidarity can use the photographic image as a means rather than an end.

Design can be used to encourage content styles which result in images that function as a disposable provocation that elicits a desired interaction between parties. This is most suitable within impulsive, contextual and direct practices.

Design Principle #3: Emotional motives as drivers for photographic interactions

Humour has become core driver for personal photography (in practices such as mentioned above); there is a potential to explore further possibilities based on this drive. Additionally; other drives may be examined for their potential as a means of encouraging personal photography to connect with others.

3 - "Access" to images shape practices: "memories", "conversation" and "instant".

In cohort A and C, crucial distinctions were made between smartphone software tools; and nature of practices undertaken on them. Key to these distinctions were the perception of the lasting relevance of the image (from disposable to permanent). These were characterised as a continuum of "*instant*", "*conversation*" and "*memory*" temporal styles to: images, associated practices and tools.

Instant images (including the humorous mode detailed above) were associated with Snapchat. Conversation images were associated with WhatsApp (and native messenger

tools on smartphones e.g. iMessage). Memories were associated with Facebook, Instagram, and to a lesser extent – Twitter.

Critical to these perceptions of varying degrees of “*permanence*” was: 1) the ongoing ease in which the image could be accessed, 2) and the magnitude of its initial distribution. Instant images were highly ephemeral. Snapchat is noted for its core feature which ensure that images ‘self-destruct’ after viewing. As above, images are also typically shared with a limited number of specific individuals. Conversational images would be shared in the context of an ongoing conversation. Thus they would be circumstantial and expected to be displaced by new messages and topics; and then forgotten.

Memories were shared digital spaces where they are perceived to be widely accessible. Whilst in many cases they would be subject to displacement (e.g. an Instagram feed, Twitter, or Facebook Timeline); they are also displayed to a large audience (e.g. of family, friends, wider contacts, and the public). As such; this mode was seen as a definitive presentation of the self. As such, practices were subject to greater scrutiny in order to ensure content was socially significant and reflective of how the image creator wished to represent themselves to their peers.

Cohort level themes: S1A3, S1C6

Notable Consistencies

- Within the “*memory*” temporal style of sharing; a high degree of conventionality is seen in content styles. Images are shared which depict significant things in the person’s life (objects, people, places, events); and is broadly consistent with historical practices of identity and memory work; and use of photographs to substantiate narratives in the oral tradition [89:175].

Notable Transformations

- As above in the section on humour based practices; there is a potential in forms of personal photography which utilize forms of disposable or ephemeral photography. Rather than focusing on the image as a lasting trace; it could be configured as a means of inciting social interactions (e.g. as seen with conversation and humour).

- Where before in memory work, display and meaning-generation activities were completed with close family and peers; “memories” are now distributed publically [91:210] [12].
- As such; memory is subject to peer pressure. This may influence 1) the kinds of “memories” created in the first instance; 2) or their meaning (through the subsequent interactions, feedback that occur from their submission to a viewing public) [12].
- These memories are also shared as they occur; which entails that the narrative surrounding the self must be preconceived; or constructed on the fly. Thus subsequent additions are required to fulfil the narrative that the image-creator has already generated through previous instances of sharing sees of themselves (and that others see of the image-creator) [12]
- Memories are not created for primarily for memory work. Instead the majority of interactions that surround “memories” in smartphone personal photography occur at the point of sharing [12]; and the through the initial digital patina that occurs (likes, comments, shares etc.). This coincides with broader evidence suggesting photographic memory work (deliberate review of images, long after they have been taken) is diminishing as an activity within personal photography practices [12, 80:10].

Design Principle #4: New approaches to memory constructed in public

Memory-work through personal photography undertaken on smartphones has become associated with publicity. Happenings considered to be significant in users’ lives are recorded and tend to be shared generally - as a means of keeping large broader networks of friends and family up to date. As a consequence of this however; social pressure influences both what is shared; and its meaning (through the digital patina that occurs).

As a design principle; this insight could either be embraced - by offering a greater means for collaboration and interaction with memories that are shared publically at the moment they are shared (e.g. encouraging explicit contribution to the memory); or creative restrictions could be placed upon the sharing of memories to align memory work with historical precedent (e.g. design for interaction with small groups of intimate contacts; within a private context)

Design Principle #5: Making smartphone memories last

In addition to the above; emphasis on acknowledgement and affirmation behaviours through widespread sharing place greater significance on the moment in which memories are shared – rather than thereafter. In this way; memories. This displaces the effect to which the time passing engenders a nostalgic response; or reminiscence behaviours that would be traditionally associated with “memory” photography.

As above, this transformation could be embraced; using design to further encourage the initial digital patina audiences contribute at the point of sharing; as a means to generate additional collaborative meaning. Design could also be used as a means to encourage routine attention to older memories. Furthermore, the initial digital patina could be incorporated into the reappraisal as a means to encourage continued interaction by the creator and relevant audiences after the initial act of sharing.

4 - “General” vs. “specific”: choice determined by ability to reach audience

Desire to share with specific people, or groups of people is an overriding factor in participants’ image sharing practices. Participants were implicitly aware of the potential audience and reach of each software tool; and thus the capability for the tool to fulfil this underlying need. This perception was seen to influence the kinds of images shared, as well as the sharing strategies undertaken by participants.

This results in the separation of image-sharing practices between a “general” sharing act with a large implicit audience, and “specific” sharing with a smaller explicit audience. “General” sharing is typically undertaken as a catch all strategy; through use of tools (e.g. Facebook) that participants are implicitly aware they can reach the entirety of their audiences on.

“Specific” sharing may be motivated either by the desire to address specific individuals; or through the certain audience members (e.g. older parents) in spaces of “general” sharing. These cases required a supplementary “specific” instance of sharing; using a software tool which had precedent of use between the image-creator and audience member (in the case of parents usually text message, or email) to fill the gaps in their general sharing practices.

Cohort level themes: S1B3, S1C2

Notable Consistencies

- Ability to share with a desired audience is fundamental to personal photography. As personal photography practices are undertaken wholly through use of software tools, they must provide users with the ability to easily reach their audience. In this way; the tool must also *be* (or tap into) a network – as user expectation is that tools not only offer them a unique way to capture images – but also connect with others.

Notable Transformations

- Use of any software tool for personal photography practices is explicitly linked to a certain audience; as the design of tools often encourage certain audience “*styles*”. This creates an implicit relationship between the software tool, its unique selling point and audience style.

Design Principle #6: Audience before all

When undertaking personal photography practices users are fundamentally attempting to fulfil a social interaction with a preconceived audience.

As such; for the tool to be successful it must be optimized to ensure; that 1) an effective strategy is undertaken to populate users’ contact network with the audience they are likely to seek to connect with through use of the tool; or 2) if this audience cannot be reached through the tool itself, that it efficiently outputs to pre-existing networks seamlessly.

Design Principle #7: Matching “audience style” to USP

When a software tool is configured, its audience style (whether users are encouraged to share with: individuals, small groups, large groups; of: family, friends, acquaintances, the wider public) needs to be pre-conceived. This is important to ensure that the way that users are encouraged to share (e.g. memories, creativity, humour etc.) match the audience they will share with.

5 - Feedback, self-promotion and activity away from attention of peers

When users share “*generally*” there is an expectation that, what is being shared should be worthy of the attention of a large group of peers. As a result, sharing is limited to significant subject matter and broadly relevant life updates, (as this is most likely to receive substantial feedback).

The importance of feedback in personal photography results in perceived social pressure which can shape: the things people share, the tools they use to do so and whether they share an image at all. In some instances; co-construction of self can be seen to stifle true self-expression [12] (e.g. where users are chastised for “*over-sharing*”, or teased for indulging certain interests of theirs in their practices).

Users often enjoy a degree of freedom to indulge a different “*self*” through sharing using tools which are not populated by friends, but a wider public. Tools, such as Twitter (and, to a lesser extent Instagram) are seen to allow the sharing of “*opinion*”; as the audience of images are “*followers*”, who have subscribed to updates from the user. Whilst a proportion of a Twitter user’s follower list may still be personally known to the image creator; unlike “*friends*” on other platforms, subscription to updates is not a mutually exclusive contract. As such – audiences are able to more freely determine the content they are subject to.

Furthermore; Twitter (and Instagram) offer discovery features and access to a public network. As a consequence, the function of sharing changes from solidarity amongst groups of known peers; to publicity and popularity with communities on the network, or the network at large. This is seen through the desire to receive validation of behaviours through an increased follower count, non-verbal interactions (e.g. likes), and redistribution (e.g. retweets) from strangers and friends alike.

Many participants viewed public sharing and currying favour from strangers sceptically – either reflecting badly on the individual (as a form of ‘attention seeking’); or through an inability to determine the benefit of sharing images with (and receiving validation from) strangers. This was especially the case within the youngest cohort whose practices centred on their immediate peers.

Cohort level themes: S2A1, S1B5, S1C2

Notable Consistencies

- What is captured in smartphone personal photography practices, is largely made to be shared. Sharing implicitly demands attention and acknowledgement and affirmation from an audience. This is typically achieved through peer groups of friends and family.
- Despite this; expectation surrounding affirmation and presentation of the self (and aggregate self with peer groups); means deviation or experimentation is less likely

to be affirmed. Thus the difficulty to explore aspirational selves amongst peers (as perceived by Belk) is evinced.

- (See below) Many users enjoy comparable freedom to experiment when sharing upon public networks; away from expectations of known others. Despite this, there remains a desire (albeit less likely to be fulfilled) for affirmation of this individual self-expression amongst the general public.

Notable Transformations

- Outside of the pressure of sharing with their friends; users enjoy a degree of freedom by sharing images on public platforms. Through smartphone use and the growing popularity of these networks; users have the potential to access groups of likeminded people like never before. Despite this; the standoffishness that occurs between unfamiliar actors, limits the immediate emancipatory potential of this activity (see below theme).

Design Principle #8: Making friends out of strangers

Whilst users enjoy relative freedom to experiment with their self-expression and identity when sharing online in public spaces – they often find themselves disappointed with the lack of affirmation (and associated interaction) they receive from the wider public.

This insight could inform the configuration of a tool oriented around public image sharing wherein users are matched and placed within communities of likeminded strangers.

6 – Movement toward “specific” practices in younger cohorts

Within both of the younger cohorts; there was a greater anxiety towards public sharing. As a consequence, many of the stated practices were instead based around “*specific*” sharing practices – where participants were able to precisely target the recipients of their messages.

In the first instance; the youngest group values the ability to talk freely about images that have been shared; but feel stifled in doing so where others can see it. Here there is an implicit awareness that the comments attached to images publicly; function differently from private conversation. Commenting (like sharing images) is itself, also an act which

is subject to social pressure (perceived through an inability to talk at length; or perhaps honestly about what is shared).

This expresses a desire for greater control over personal photography practices; in that the image-creator wants to not only exert influence over the sharing of the image, but also interactions and their impact thereafter.

Cohort level themes: S1A2, S1B2

Notable Consistencies

- Younger groups of users prefer sharing with smaller groups of known others; and away from “general” sharing practices. Key to this is apathy towards sharing with people they do not know. This is likely a consequence of their relatively small peer group; and a rising concern around privacy. It is also similar to a “home-mode” style of sharing – where significant images were reserved for immediate family and close friends.

Notable Transformations

- The impact of this shift away from broader sharing tools (e.g. Facebook) is that it coincides with practices that are based more around provoking conversation; or (as above) amusement and connection within a moment.
- Thus within these practices; the image is incidental to the interaction that occurs; and is disregarded afterwards – meaning that images are not being created and shared to be viewed outside of the immediate context. (Though they may function as accidental memories later on) [80:10].
- Personal photography concerns a wide range of activities that surround the capture, and sharing of an image. This also includes feedback; and as such; images which are shared publically are also typically subject to patina which is public too. In the case of tools where this occurs as “conversation” (e.g. WhatsApp); even if the image is discovered the reaction to the image (and its potential value in memory work) is difficult to relocate or lost.
- Here, a new form of memory work may occur, as users explore and reinterpret sets of images outside of their context; without peripheral substantiating material.

Design Principle #9: Designing memories into conversation

It is unclear whether the shift towards “conversation” and “instant” practices is relevant to wider populations of users.

Despite this; it is clear that these are growing practices that encourage the contextual sharing of images which are largely discarded thereafter.

This insight could inform an approach to increasing the value of images shared contextually after the initial instance of sharing.

With this insight in mind; these images could be stored and represented to users (e.g. those within a conversation) as memories. In addition; conversation that surrounded their initial exchange could be stored and redisplayed alongside the image to encourage collective reminiscence.

7 - Snapchat (reaching out, co-presence, remote friendship)

Within discussions, the two older cohorts placed emphasis on the importance of Snapchat as a means of reaching out to others in boredom. The tool was seen to allow users to leverage ennui and distracted moments into an effective means of social interaction and solidarity through sharing a temporary expression. This was supported by the ability to share inconsequential content quickly.

As above; this temporary expression is a means to and end; to make the recipient laugh, start a back and forth conversation, and thus strengthen friendship.

A number of features are critical within the tool in encouraging this usage style. These include: the ability to annotate images with a “one liner”, the precision with which the image can be shared and the ability to discern whether the images has been received and seen.

Cohort level themes: S2B1, S2C4

Notable Consistencies

- Whilst Snapchat is in its nature a tool made for the purpose of quickly sharing pictures. It remains significant that the tool allows users to also quickly provide an annotation alongside the image that presents their point of view. In this way the image is able to express both an appearance; as well as a coinciding thought and justification.

Notable Transformations

- Snapchat provides an automatic notification through a visual cue to the image-creator which lets them know when their image has been seen. As above, it also notifies users know if the expected disposability of the image is shared is undermined.
- Here; information that the image creator receives is akin to what they would know if they shared an image with someone physically (i.e. if and when they have seen an image). This increases a sense of obligation in the audience to reply – as they themselves are implicitly aware that the sender is aware that they have received the message.

Design Principle #10: Words with pictures

The ability to annotate pictures that are shared is another fundamental aspect of personal photography practices. Here an image signifies something in reality, and the annotation presents the image creator’s interpretation of it.

This broadly correlates to the notion within the framework that images form evidence of experience [89:175]; whose meaning is in actuality determined by the interaction between image creator and audience [26:21].

Whilst images might be shared without verbal substantiation (and thus be an invitation to speculation or deduction of the photographer’s motives) [130:23]; this storytelling aspect of personal photography is critical to most practices.

This insight allows for a potential for creativity. In a humour oriented tool, images might be presented to audiences initially without substantiation – with this then being revealed after the fact (this is similar to how jokes are told).

Equally, an aesthetic or creative tool might remove the ability to annotate altogether as a means of inviting audiences to “read the image” alone.

Design Principle #11: Notifications, obligation and motivation

Notifications are an effective way to maintain a social contract between people sharing images. The knowledge that the image-creator has been alerted when an image has been seen, increased the audience’s perceived sense of obligation to reply (either to acknowledge receipt or react wholeheartedly). This reflects the digitization of certain

cues that trading parties would exchange in reality in instances where images are shared.

Regardless; forms of “soft” notification (e.g. a changing icon, or accessible list of audience members, rather than a direct alert) could be used to encourage timely reply – and an awareness of the audience member’s reception of the image.

For the most part these notifications (and the sense of obligation to reply) is only present in conversational tools rather than general sharing.

They could however be applied within these broader sharing contexts as means to encourage more explicit interaction with images that are shared.

8 - The significance images being displayed as: sets, feeds and singularly

The perceived meaning of images changes whether they are shared as an individual image; a chronological series or part of a compiled set. Each of these configuration options change the meaning of images that are shared and provide a set of advantages and challenges to personal photography.

Images shared individually are perceived as a distillation of an experience into one; privileged image. Here the image does not only function as indexical/iconic evidence of a moment (or series of moments); but are configured as a means to symbolise a larger event it refers to (e.g. a single image from a wedding stands as synecdoche for the entire event) [27:36-37].

Some experiences however are perceived to be too significant or multifaceted to be encapsulated within a single image (e.g. a holiday, rite of passage, celebration).

Sharing a set of images chronologically is, perhaps, the most recognisably and natural way of expressing a larger narrative. This style of sharing is also seen to be essential when communicating a transformation (e.g. a fitness success story). Furthermore, this approach allows smaller stories to then also naturally fit into the overarching narrative of the image creator’s life; automatically created by sharing in chronologically ordered spaces (e.g. feed based platforms) [12].

Images shared as a curated set (e.g. not simply a series of images presented in the order they were taken) are perceived as having a motivated “story” behind them. This stems from the understanding that they were compiled together in a concerted effort to best

communicate an experience. In the case of images within sets; they are all perceived as equal components of a larger expression. Perceptions are supported by an implicit understanding of the actions and motivations that surround the configuration of images in each of these styles.

Cohort level themes: S3A3, SB3, S3C4

Notable Consistencies

- Whether online or offline; the configuration of images on display have implications upon the meaning that is taken from them. Single images are viewed as a privileged, meaningful selection; sets are viewed as even more motivated in telling a story; and chronological sets place structure the recording of an event providing it with an implicit story structure (having a beginning, middle and an end). Despite this; online spaces are characterised by constant renewing spaces – and tend to arrange contributions chronologically, by default.

Notable Transformations

- A common theme established above; the design of software tools can determine the configuration of how images are shared – as such shaping the way in which audiences frame their interpretation of an additional aspect to the intention behind sharing.

Design Principle #12: Encouraging curation and selectivity

Within digital settings, the arrangement of content images chronologically, has become the default. Within the analytical framework it is established that this results in greater emphasis being placed upon new updates.

This default logic which overarches sharing spaces, often extends to series of images that are shared. In this way; the narratives users create through the sharing of images are automatically compiled; and can be a useful means of tracking changes [12].

Despite this; there is much value to be had in the process of consolidating an experience into a single image; or creatively curating and arranging a set of images to impress upon a different meaning.

This insight could be leveraged as a means to encourage users to either: share a single encapsulating image of an event; or curated sets of images. Here deliberate intention in configuring the image or set to best express an event adds an additional dimension of interest for the audience.

9 - Instagram: as an inherently visual network, constructed as ideal

In cohort B and C; Instagram was described as unique; in that it placed primary significance upon the image being shared. Use of the tool is characterised by selection and presentation of singular privileged moments (as above); as well as the use of a set of tools to improve the aesthetic impact of the image.

Because of this; much of the “meaning” that audiences take from the images on Instagram are not simply from the denotive aspects of the image; but instead the connotations that surround the selection of that particular instance; and the motivation behind its aesthetic treatment. As such, the tool is perceived as lacking the “opinion” of the image creator; who instead provides images that are more open to interpretation (both in terms of image content and their treatment) than upon other tools.

As Sontag notes; the photograph, whilst self-evident is subject to speculation and fantasy [130:24] – and it is the audience’s interpretation of Instagram images as a motivated deviation from mundane reality that is significant in this case (and furthermore the capability the software tool grants users to put a “rose tint” on their everyday experiences. Thus users can share everyday happenings; as social significance can be substituted with aesthetic emphasis, and expression. This concerted effort to invest in the image is seen to increase the image’s significance (as it has been selected above others for further investment of meaning through a concerted treatment).

Part of the audience perception of this phenomena is Instagram images are not taken as a “*straight photo*” of a moment (or representing something that has just happened) – but rather its interpretation by the image creator (through aesthetic investment) and visual expression. Despite this; the accumulation of finely curated and selectively edited images about the self can result in critique from the audience that the users had generated an “idealised” online presence – that is not true to life. Thus, to some, Instagram images are perceived as a false reality; and scepticism surround the use of the tool as a means of presenting a falsified of the user’s life and experiences.

Cohort Level Themes: S3B5, S3C1

Notable Consistencies

- As above, Instagram is associated with the use of an individual instance to encapsulate or symbolise a broader experience (whereas in other tools several images might be shared). This places a sense of emphasis upon the individual images shared on Instagram as the best at expressing an experience, or the one that the image-creator perceives as having the most meaning. This is of semiotic interest – as the single image performs the function of symbolizing the whole of an experience.

Notable Transformations

- A valued feature in Instagram is that it grants users a set of powerful editing tools. In effect, these tools allow Instagram users to transform everyday moments (e.g. a meal or cup of coffee) into significant images with deeper meaning; through their privileged selection, and the extended process of aesthetic investment.
- The tools that are available to users are powerful; but also very quickly allow for a series of interactive investments to be made to the image; eschewing extended processes that might dissuade the image creator.
- Thus, within Instagram the “expression” of the image creator occurs not only in the annotation; but the motivated interactions and edits that have been made to the image. Audiences often perceive these as discrepancies between a truthful statement of experience; and a motivated deviation from reality – where perhaps they are more usefully understood as a visual interpretation of experiences.

Design Principle #13: Quick! Motivated Investment

One of the core demands placed upon contemporary photography is instantaneous sharing. Locomotive photography (ubiquitous and connected cameras) allow for moments to be captured and shared globally at any point in time [63]. This has given rise to forms of quick impulsive sharing that are increasingly prominent in personal photography practices.

Sharing individual images that have been “worked on” is also a powerful means of self-expression – but this does not go hand in hand with impulsive sharing.

Thus the provision of powerful image editing tools which are also quickly used can allow for impulsive connection; to be matched with deeper meaning invested into images through prolonged and deliberate aesthetic treatment.

Design Principle #14 - Breaking the Fourth Wall (Editing as Expression)

Platforms that provide image-editing tools (such as Instagram) are often viewed sceptically by audiences as they provide image-creator with a greater ability to present an idealised version of their experience to others.

Despite this; it has been established in the literature review that all photography is inherently “motivated” through various means (e.g. framing and selection). Explicitly embracing and communicating this fact in the design of a creative software tool might draw emphasis away from the denotive aspect of the image; and toward the conative aspect of the treatment of the image (e.g. to convey mood, rather than simply obfuscate or embellish upon lived experience).

10 - Audience intimacy and ideal reactions

Images are shared in order to elicit a desired reaction from audiences. These reactions then solicit interactions that can take place in digital or physical space. In digital space these can take the form of a quantifiable non-verbal interaction (e.g. likes, favourites, hearts etc.), comments, redistribution (retweets, shares), or like for like replies (e.g. an image reply). The principle driver behind personal photography practices is acknowledgement and affirmation of identity by others; resulting in greater overall social solidarity.

Expectations upon these reactions differ between strangers and members of the wider public. For example; the conversation which occurs in comments surrounding an image can be seen to act as a confirmation of the meaning of the image between relevant parties. The unwarranted interaction of a stranger (or more remote acquaintance) can hijack the digital patina – and thus meaning of the image [12].

As such, comments are expected to be reserved for an implicit set of relevant audience members who were either “there” or to whom the image is implicitly directed (and a reaction is expected from). Strangers, or wider contacts’ interactions are viewed as irrelevant or with disdain. As above, this appears to be largely relevant to the notion of digital patina – wherein the addition of comments is seen to contribute and shape the collective construction of idea surrounding a memory – and thus aggregate and

individual sense of self [12]. Where these unwarranted interactions do occur; this rarely results in conversation (as it would with friends) but instead a simple acknowledgment.

Despite this; affirmation is sought from wider audiences, albeit within limits. For this purpose, non-verbal interactions (as below) are an effective means of allowing wider audiences to affirm an image; but without intruding upon the digital patina (which would be constructed by relevant parties).

Cohort Level Themes: S3A2, S3C7

Notable Consistencies

- As above in all other themes; the role of the audience, and their capability to interact with images that have been shared is fundamental to smartphone personal photography.

Notable Transformations

- The desire to share with groups of friends often results in the use of a tools which brings wider attention to the image. (Here, imprecise “general” catch all sharing tends to occur). Whilst an implicit audience of contributors are preconceived, “strangers” or unexpected members of the wider audience can interact with the image – impacting its meaning at both the individual and aggregate level

Design Principle #15: Prioritizing friends in digital patina

As a means to alleviate anxiety associated with peripheral audiences influencing the meaning of an image through unexpected interactions and comments; the desired audience of an image could be prioritized above others.

For example, all comments surrounding an image could be displayed; but those which are contributed by preordained individuals are presented more prominently.

Another option would be to have separate comment sections for “strangers” or the ability to “mute” their comment to other audiences; to preserve the patina.

11 - Ideal responses to images - acknowledgement, validation from relevant audiences

When something is shared but receives no perceptible form of validation, it is viewed as a failed instance of sharing. As such, evidence of validation is from expected audiences is primary driver behind the perceived success of personal photography. When users share,

they have a preconceived expectation of the magnitude and character of the reaction they expect from a sharing activity.

Validation can occur at a range of levels. The most fundamental of this is evidence that the image has been given attention. Following this, non-verbal interactions function as an acknowledgement that the image has been seen; and as a tacit affirmation of approval. This highlights the importance of “likes” and similar interactions in validating user practices (and thus their sense of individual and collective: identity and memory).

Because of this threat of failure; users often curtail their activities, if they perceive that they are unlikely to receive adequate validation. This may occur when a user shares an image that communicates a highly individual interest which runs the risk of a diminished or critical response; as peers do not share this common ground or are more unfamiliar with how best to respond. Here ‘safer’ ground would involve the sharing of images relevant to the collective interest – as this is more likely to result in a greater accumulation of affirmation behaviours from audiences.

Whilst sharing is undertaken in order to achieve affirmation (which can be enacted through various behaviours, digital or otherwise). Sometimes, sharing broadly is avoided; on account of the perception that the image will be presented to audiences who it is not relevant to.

Despite this; less expectation is placed upon instances of sharing in places that are less overtly associated with friend groups; such as Instagram or Twitter. Here, the tools are perceived as performing the function of public “mouth pieces” and places of “opinions”. Thus whilst affirmation is valued in these spaces – it does not stop sharing from occurring.

Cohort Level Themes: S3B4, S3C5, S3C8

Notable Consistencies

- Despite the transposition of personal photography interactions into digital space (where there are less boundaries); social etiquette applies. In the case of this example, comments from strangers are viewed as strange; and troubling to reply to. Despite this, users do value feedback and approval from strangers, as such image creators prefer non-verbal affirmations from strangers.

Notable Transformations

Design Principle #16: Expansion upon non-verbal interactions for strangers

Whilst image-creators do not wish to receive comments from strangers; they do value their acknowledgement and approval. Despite this, the range of acceptable ways for strangers to interact with posts is often limited to simply “liking” the image or not – as comments are seen as overly familiar.

This insight could encourage designs where strangers are offered a greater array of non-verbal tools through which they can interact with images that are shared – within the confines of expected social etiquette.

12 - Aspirations: greater control over distribution, employment mode, “tiered” sharing

In the final section of the focus groups, participants were invited to imagine tools which addressed problems that encountered during their practices of personal photography.

Broadly speaking many of these concerns were centred on removing busy work participants encountered in presenting image content to the correct audience (e.g. having to select audience members individually on Snapchat, as a means to precisely share with many others; or editing privacy settings to share broadly, but omitting certain audiences). Here users found that they had to exert effort to negotiate their use of the technology to achieve their desired outcomes.

Despite the underlying motive of smartphone personal photography being to receive validation in a general sense. Participants’ practices are varied; and the kinds of things they share and disclose in order to vary greatly depending on the audience (e.g. images created and shared to receive affirmation from family would differ from those shared with friends, colleagues and the wider public).

Participants wished to be able to share; and for the tool to automatically discern who the image is relevant to (e.g. by recognising when images are not relevant or appropriate to share with family members). Furthermore; whilst users recognise that different tools can be used to discriminate how they share; they perceive this is busywork too; and aspire towards a single tool that is able to seamlessly fulfil the diversity of their needs.

Key to tools that resonate with users clearly communicate: their unique offering, how they are used, who are holistic and close loops that deviate from expected usage. For example, screenshotting is a native function of smartphones that allow users to capture what is on screen. This fundamentally undermines the expected function of Snapchat. Despite this,

the tool alerts the image creator with a notification if this deviant usage has occurred. This is reflective of holistic design; as identified in the first section of this discussion.

Ultimately; participants wish to be able to continue to increase the control they have over their image sharing activity; and how images they share of their experiences (or images that are shared that they appear in) generate meaning about their lives; and present this meaning to others.

Cohort Level Themes: S4A2, S4B1, S4C2, S4C3

Notable Consistencies

- A key consistency throughout this discussion was the extent to which smartphone software tools have become all-encompassing to certain configurations of personal photography. Despite this; it remains that users practices in reality often place demands upon tools; which contradict the fundamental aspects of their design (e.g. sharing a Snapchat to a large, but precisely determined, audience. Here; the deficiency in the software tool is often addressed through additional effort (and busy work) on the part of the user.
- Whilst users benefit from clearly delineated offerings in smartphone personal photography tools; the inability to reach everybody through each and every tool places a limitation upon the where and how users conduct personal photography.

Notable Transformations

Design Principle #17: More: Control! Speed! Power!

The fundamental issues users have with the tools they use in their image sharing practices stem from busy work they have to undertake in order to work around the affordances and restrictions of the tool.

When sharing “generally” they seek more control over who sees images; when sharing “specifically” they wish they could share with this precision but to many people at a time; and in each case they are inconvenience by the time and effort required to achieve the outcomes they desire.

Summary

This discussion has explored and highlighted the key transformations that are occurring within personal photography as a consequence of the use of smartphone hardware and

software tools. Principle to these transformations has been a further shift into the digitization of personal photography, which has occurred beyond the capture of images and now encapsulates the broader gamut of associated actions and interactions that occur between an image creator and audience when sharing images.

There is a profound design opportunity to not only consider personal photography as a holistic practice where attention should be paid to all associated actions when designing a tool. Moreover, there is a lot of untapped potential in configuring these actions themselves (e.g. curation, selection, affirmations, conversations, review) to provide added value to image creators and audiences alike.

Here most notably; the example of tools which allow for the image to function as a disposable means of provoking solidarity between friends offers an insight into the importance of interactions and meaning that is generated outside of the image itself. In each case the significant domain of influence lies within approaching each touch point (and stakeholder) of the process of personal photography and configuring it toward providing optimal meaning between the image creator and the audience they share with.

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CHAPTER 5: CONCLUSION

Within this thesis there were three core academic contributions. The first consisted of a characterisation of personal photography as a historical practice leading up to the present day. The second contribution consisted of a qualitative exploration into practices of personal photography undertaken using smartphone hardware and software tools contemporaneously. The final contribution was a comparison of historical practices of personal photography, with practices undertaken using smartphone hardware and software tools; as a means to identify key transformations that are occurring – and derive a set of design principles for personal photography as a consequence.

Meeting the research aim and objectives

The core objective of this research was to: identify any critical transformation to practices of personal photography that have resulted from use of smartphone hardware and software tools; and subsequently use insight gathered from this to develop principles for the design of personal photography.

This overall aim was approached through a set of individual research objectives that were outlined in the introduction chapter of this thesis.

Objective 1: To develop a theoretical framework outlining the principles of personal photography prior to the use of smartphone hardware and software tools; through literature review

The literature review (Chapter 3) provided a wide ranging investigation in the formal understanding of photography and personal photography practices. This included examination of relevant photographic history, the ontology and epistemology of photography and the photographic image and the development of formal understandings of personal photography. In addition to this; the profound changes to the epistemology of personal photography incited by the introduction of digital technology were also accounted for: both in terms of its impact upon photography at large; as well as personal photography. The outcome of this activity was the formulation of a theoretical framework characterising personal photography; leading up to contemporary practices – which this research sought to explore directly.

Objective 2: To generate a thematised description of personal photography practices as undertaken contemporaneously using smartphone hardware and software tools through the study of contemporary users

In the summer of 2014, six focus groups (consisting of two groups of: 13-18 year olds, 18-25 year olds and 25-35 year olds), were undertaken with smartphone users to explore how they utilize their devices and software tools for practices of personal photography. Each semi-structured discussion lasted 2 hours; allowing users to freely explore, expand upon and discuss the nature of their activities.

Within the findings chapter (Chapter 4), a distillation is presented of the testimonies provided which offers a wide range of insight into the broad nature of these activities. Through the consolidation process (aligning responses shared across the two groups in the same age cohort; and then again across 2 or 3 of the age cohorts) allowed for the most significant experiences to be highlighted and reported upon.

Objective 3: To identify key transformations by establishing similarities and differences between personal photography before and after use of smartphone hardware and software tools

Within the discussion chapter (Chapter 5) a comparison was made between: the framework developed to characterise the historic principles and development of personal photography; and the key themes that characterised contemporaneous practices undertaken on smartphones identified through the primary research activity. This comparison resulted in a critical analysis that helped elucidate consistencies and transformations that could be attribute to use of smartphone hardware and software tools.

Objective 4: Formulate a set of design principles for personal photography

Through insights describing key consistencies and transformations developed through the above comparison; a set of 17 design principles were generated for personal photography.

Each are based upon either a core consistency or transformation that was identified through the application of the analytical framework to themes that emerged in the focus group activity.

Conclusions from the thesis

Within the literature review it was established that personal photography is fundamentally driven by a requirement for people to record, and share representation

that communicates significant (and interlinking) meaning pertaining to: their memory, their self-identity, and their social connection to others. Historically; this practice was limited by the restrictive materiality of physical images, exchange an interaction. This meant that known practices were typically undertaken in the immediate proximity with small groups of closely related people.

With digital imaging significant epistemological changes occurred in personal photography. Primarily, this resulted in a dramatic expansion of photographic activity – from moments of great personal significance to the recording of the everyday. In addition, the transformation of the photograph into dematerialized data, allowing for many of the actions between image creator and audience to be transposed to digital space. This offered users a range of new ways to connect and generate meaning for the above purposes. With this shift came a greater degree of reach and expanded publicity to personal photography.

Smartphone hardware and software tools may be viewed as a generic continuation of this digitization of the holism of personal photography practices and action. Despite this within the data collection chapter; the epistemological changes resulting from smartphones (understood as increasingly powerful cameras carried ubiquitously, which have seamless access to pervasive networks, and whose software functions can be customized) were found to be varied and profound.

Smartphone software tools have become sites wherein users are able to conduct the entirety of a personal photographic practice (from capture to sharing and sequential interactions) in an increasingly intuitive and seamless process. The configuration of the software tool provides users with a range of possibilities across the entirety of the practice; which change the meanings associated with sharing images with others.

In addition, practices within personal photography are emerging which utilize the photograph as a mechanism for social interaction; here the ability to reach out to others in the moment (afforded uniquely by smartphones as “connected” cameras); provides the opportunity for substantial social connection. This attribute is predicated upon the unique ability for smartphones to be used in the moment to simply connect with others. This emerging mode of personal photography is becoming increasingly prominent as a countenance to conversely diminishing practices based around sharing definitive and lasting statements about oneself to a large imprecisely defined audience of family and friends. Through approaching this particular problem using a design perspective; an early

set of design principles possibilities offer the opportunity to expand and explore these sophisticated and interlinked attributes.

Limitations to the research

This section outlines the limitations of the research data and findings which leads to recommendation for further work later in this section. Perceived limitations of this work include:

- Within the methodology section of this thesis, it was established that this research would utilize qualitative methods for data collection for three key reasons. Firstly; the primary research purpose was an exploration of contemporary personal photography; as such there was a requirement to ensure a large scope to the collection of data for interpretation. Secondly, the research area itself (and particularly the distillation of personal photography into design principles) was a novel area – requiring a wayfinding methodology. Finally, the activity being studied itself (personal photography undertaken using smartphone hardware and software tools) is an embedded and individualistic activity. As such, quantitative methods were seen to lack utility in providing the data required to reach the research goals. Despite this; the research activity and the strength of its findings could benefit from further testing with larger populations of smartphone photography users. This would increase both the validity of the research and the generalizability of the insights uncovered to the broader population.
- Another significant factor related to smartphone-based personal photography is that the hardware and software tools that users utilize are rapidly updated. New hardware models are available annually; and moreover software tools – such as those that are prominently featured in the findings of this research – are dynamic and offer rapidly changing functionality. In this way the thesis provides a snapshot into the research area using eroding data – and could benefit from a measure that tracks ongoing changes longitudinally.
- The final output of this research is a set of design principles for the design of personal photography. Whilst this has been achieved, this is typically only the beginning of formal design practices which would seek to take these insights further forward; both in terms of a design process, and outputs.

Contribution to knowledge

Personal photography is notable as an understudied phenomenon [8] prior to the emergence of digital technology. At that time; study was limited to individual practices that could be easily observed. Equally; the emergence of digital technology and its use for personal photography has revolutionized the epistemology of personal photography – providing an ever expanding set of possibilities for image creators and audiences to explore and enjoy within new digital contexts [92:266]. This rapid expansion of personal photography (not simply comprising of the capture of an image, but all associated and interactions into digital space – has made it equally difficult to make definitive statements about the nature of the activity. Despite this; this research offers a contribution in the form of a theoretical model; which provides an indication of the core principles of personal photography and the significance of their transposition into digital space – and onward into new configurations of the technology (most notably locomotive, ubiquitous configurations in the form of smartphone photography).

Approaching this research concern from the perspective of design allowed the research to explore of the complexity of users' dynamic needs and wants to be approached at the level of meaning. This is notable as personal photography is noted to be a storytelling practice; wherein traded meanings (relevant to the self, social relationships and memory) are the currency of exchange.

Ultimately, the output of research from a design perspective represents the potential beginnings of a substantial effort to explore the unique possibilities offered by design in innovating the field of personal photography through meaning making.

Recommendation for future work

This section outlines some recommendations for future work, which have become notable during the research activity:

Correlating findings with larger population of smartphone users

This research benefitted from taking a qualitative and interpretivist approach; through a broader scope of discovery and exploration with users of smartphone photography. Despite this, a fundamental limitation of this approach is the limited generalizability which the findings can lay claim to. This is exasperated by the dynamism that occurs in the area; with hardware, software and user activities frequently changing (see below). Furthermore, within the methodology section it was established that the selection of focus

groups suffers the weakness of not studying the phenomena of personal photography directly; but instead its interpretation by users. In this way; further work would seek to address these weaknesses within the methodology by establishing a second primary data collection phase wherein practices would be directly observed and quantified. This might take the form of a digital ethnography, or data analysis and characterisation of an image sharing platform.

Longitudinal study of development of key smartphone tools

As above, a key concern within the research is that it only offers a snapshot into the nature of contemporaneous personal photography practices undertaken on smartphones – which are dynamically changing through hardware, software, and changes in user behaviours. As such; the research could benefit from a longitudinal aspect that: noted significant changes to smartphone hardware and software tools; and their impact on usage styles. A separate option would be to maintain contact with the research participants and conduct follow-up interviews for this purpose.

Development and testing of design principles

Within this research; a set of design principles were developed as a consequence of utilizing a framework (characterising personal photography and its development toward digital and ubiquitous photography) and its application to the key themes identified in the findings chapter. Despite this these principles only represent the first iteration within a field that places emphasis upon iteration and continued development with relevant stakeholders.

As such, a continued effort in this research area would seek to perform an iterative design process, working with stakeholder (potentially participants of the initial study) to develop concepts upon these principles further.

Development of prototypes / wireframes based on principles for feedback

As above, the output of this research activity only constitutes the beginning of what would be an iterative and substantial process. Key to this further development would be the selection and development of the most salient of these principles into a concept or wireframe. Here a more substantial exploration of how the principle could be applied could be explored, expanding upon the significance of the core findings of the thesis.

LIST OF REFERENCES

1. Alexander, C., *Notes on the synthesis of form*. 1964, Cambridge: Harvard University Press.
2. Alexander, C., *The State of the Art in Design Methods*. DMG Newsletter, 1971. **5**(3): p. 3-7.
3. Amsterdam (Netherlands). Stedelijk Museum., *De Stijl*. Catalogus / Stedelijk Museum Amsterdam. 1951, Amsterdam: Stedelijk Museum.
4. Barnes, E. *01a.WMATA.ShawStation.WDC.7July2016*. 2016 [cited 2016 24/10/2016]; Available from: <https://www.flickr.com/photos/perspective/27915212470/in/photolist-rh6sC2-rh22kC-ryxG4V-rh58vf-rnvWfx-rytTQj-ryxYf3-rh15DS-s2KAgA-rwhVg3-sigRiM-s2Sra4-rnjxXu-sjharZ-AUYkSD-BrbcmJ-AvXsw-Btsg7z-AUWr6D-B2kBLW-JKomHs-AvXgb9-JRA5C5-JMHx7T-JwLL7J-JMHxRZ-JUC11g-JUE3ea-JKqach-Bm9Kmp-AUWswK-ASCe86-B2kDbu-Br9jmQ-B2kEjS-Aw4AWZ-BmbpeB-uNDvJu-uNCcAN-rnvC92-s2J62d-sh2jm9-sjipEi-s2HU3Q-ryxXGE-rh5963>.
5. Barthes, R., *Camera lucida : reflections on photography*. 1993, London: Vintage.
6. Batchen, G., *Each wild idea : writing, photography, history*. 2002, Cambridge, Mass., London: MIT
7. Batchen, G., *Ectoplasm: Photography in the Digital Age*, in *Over Exposed: Essays on Contemporary Photography*, C. Squiers, Editor. 1999, The New Press: New York, US.
8. Batchen, G., *Vernacular photographs*. *History of Photography*, 2000. **24**(3): p. 262-271.
9. Baudelaire, C. and J. Mayne, *The painter of modern life : and other essays*. 1964, London: Phaidon Press.
10. Baudrillard, J., *Simulacra and simulation*. *The Body, in theory*. 1994, Ann Arbor: University of Michigan Press.
11. Bazin, A., *Ontology of the Photographic Image (Reprinted from Problemes De La Peinture, 1945)*. *Filmkritik*, 1975. **19**(2): p. 51-57.
12. Belk, R.W., *Extended Self in a Digital World*. *Journal of Consumer Research*, 2013. **40**(3): p. 477-500.
13. Belk, R.W., *Possessions and the Extended Self*. *Journal of Consumer Research*, 1988. **15**(2): p. 139-168.
14. Benjamin, W., *The work of art in the age of mechanical reproduction*. 2004, Jahsonic.com,.
15. Berger, J., *Ways of seeing : based on the BBC television series with John S. Berger*. 1972, London: British Broadcasting Corporation and Penguin Books.
16. Bluck, S., *Autobiographical memory: Exploring its functions in everyday life*. *Memory*, 2003. **11**(2): p. 113-123.

17. Boorstin, D., *The Image - A Guide to Pseudo-Events in America*. 1961, New York: Harper Colophon Books.
18. Bourdieu, P., *Photography : a middle-brow art*. 1990, Cambridge: Polity Press.
19. Bowman, S. *Chapter 1: introduction to participatory journalism*. 2003 [cited 2016 24/10/2016]; Available from: <http://www.hypergene.net/wemedia/weblog.php?id=P36>.
20. Boyd, D.M. and N.B. Ellison, *Social network sites: Definition, history, and scholarship*. *Journal of Computer-Mediated Communication*, 2007. **13**(1): p. 210-230.
21. Brideau, K. and C. Berret, *A Brief Introduction to Impact: 'The Meme Font'*. *Journal of Visual Culture*, 2014. **13**(3): p. 307-313.
22. Carpenter, E., *Oh, What a Blow That Phantom Gave Me"*. 1972, New York: Holt, Rinehart & Winston.
23. Cartier-Bresson, H., *Henri Cartier-Bresson: The Decisive Moment*. 1952, New York: Simon and Schuster.
24. Chalfen, R., *'It's only a picture': sexting, 'smutty' snapshots and felony charges*. *Visual Studies*, 2009. **24**(3): p. 258-268.
25. Chalfen, R., *Photograph's role in tourism*. *Social Research*, 1979. **39**(1): p. 164-182.
26. Chalfen, R., *Snapshot Versions of Life*. 1987, WI: University of Wisconsin Press.
27. Chandler, D., *Semiotics : the basics*. 2002, London: Routledge.
28. Chowdhury, M.F., *Interpretivism in Aiding Our Understanding of the Contemporary Social World*. *Open Journal of Philosophy*, 2014. **4**: p. 432-438.
29. Clarke, G., *The Photograph*. 1997, Oxford, UK: Oxford University Press.
30. Cohen, L., Maldonado, A., *Research Methods in Education*. *British Journal of Educational Studies*, 2007. **55**(4).
31. comScore. *The 2015 U.S. Mobile App Report*. 2015 [cited 2016 24/10/2016]; Available from: <https://www.comscore.com/Insights/Presentations-and-Whitepapers/2015/The-2015-US-Mobile-App-Report>.
32. Comte, A. and J.H. Bridges, *A general view of positivism*. New ed. The new universal library. 1909, London: Routledge.
33. Coutts, A. *Apple iPhone 4 to become most-used camera on Flickr*. 2011 [cited 2016 24/10/2016]; Available from: <http://www.digitaltrends.com/apple/apple-iphone-4-to-become-most-used-camera-on-flickr/>.
34. Cox, A.M., *Information in social practice: A practice approach to understanding information activities in personal photography*. *Journal of Information Science*, 2013. **39**(1): p. 61-72.

35. Damisch, H., *Five Notes for a Phenomenology of the Photographic Image*. October, 1978. **5**: p. 70-72.
36. Dawkins, R., *The selfish gene*. 30th anniversary ed. 2006, Oxford: Oxford University Press.
37. Dawson, C., *Introduction to research methods : a practical guide for anyone undertaking a research project*. 4th ed. 2009, Oxford: How To Books.
38. De Souza, C.S., *Semiotic approaches to user interface design*. Knowledge-based Systems, 2001. **14**: p. 415-418.
39. DeGeneres, E. *If only Bradley's arm was longer. Best photo ever. #oscars*. 2014 [cited 2016 24/10/2016]; Available from: <https://twitter.com/theellenshow/status/440322224407314432?lang=en-gb>.
40. Dictionaries, O.L. *Computer*. 2016 [cited 2016 24/10/2016]; Available from: <https://en.oxforddictionaries.com/definition/computer>.
41. Dictionaries, O.L. *Smartphone*. 2016 [cited 2016 24/10/2016]; Available from: <https://en.oxforddictionaries.com/definition/smartphone>.
42. Dijk, J.v., *The network society : social aspects of new media*. 2nd ed. 2006, Thousand Oaks, CA: Sage Publications.
43. Dosi, G., *Technological Paradigms and Technological Trajectories - a Suggested Interpretation of the Determinants and Directions of Technical Change*. Research Policy, 1982. **11**(3): p. 147-162.
44. Drazin, A. and D. Frohlich, *Good intentions: Remembering through framing photographs in English homes*. Ethnos, 2007. **72**(1): p. 51-76.
45. Dynel, M., *"I Has Seen Image Macros!" Advice Animal Memes as Visual-Verbal Jokes*. International Journal of Communication, 2016. **10**: p. 660-688.
46. Eltantawy, N. and J.B. Wiest, *Social Media in the Egyptian Revolution: Reconsidering Resource Mobilization Theory*. International Journal of Communication, 2011. **5**: p. 1207-1224.
47. Fenty, R. *#StuntBackSundays #StillMood*. 2016 [cited 2016 24/10/2016]; Available from: <https://www.instagram.com/p/BG3JMOMhMwA/?taken-by=badgalriri&hl=en>.
48. Finnochio, R. *Nineteenth-Century French Realism*. 2004 [cited 2016 24/10/2016]; Available from: http://www.metmuseum.org/toah/hd/rism/hd_rism.htm.
49. Flickr. *Camera Finder*. 2014 [cited 2015 09/10/2015]; Available from: <https://www.flickr.com/cameras>.

50. Fox, Z. *65% of Time Spent on Social Networks Happens on Mobile*. 2013 [cited 2016 24/10/2016]; Available from: <http://mashable.com/2013/10/24/content-consumption-desktop-mobile/#NJEAN58wOkqK>.
51. Frisius, G.R., *De radio astronomico et geometrico* 1558: Gul Cavellat.
52. Frohlich, D., Kuchinsky. A., Pering, C., Don, A., Ariss, S., *Requirements for photoware*. Proc. CSCW 2002, 2002: p. 166-175.
53. Fuller, R.B., *Utopia or oblivion : the prospects for humanity*. 1970, London: Allen Lane.
54. Gordon-Messer, D., et al., *Sexting Among Young Adults*. Journal of Adolescent Health, 2013. **52**(3): p. 301-306.
55. GSMA. *Smartphones in emerging markets*. 2014 [cited 2016 24/10/2016]; Available from: <https://www.gsmaintelligence.com/research/2014/12/smartphones-in-emerging-markets/450/>.
56. GSMA. *Smartphones to account for two thirds of world's mobile market by 2020 says new GSMA intelligence study*. 2014 [cited 2016 24/10/2016]; Available from: <http://www.gsma.com/newsroom/press-release/smartphones-account-two-thirds-worlds-mobile-market-2020/>.
57. Guba, E.C., Lincoln, Y.S., *Competing paradigms in qualitative research*, in *Handbook of qualitative research*, N.K. Denzin, Lincoln, Y.S., Editor. 1994, Sage: Thousand Oaks, CA. p. 105-117.
58. Harjani, A. *Oh Snap! Digital camera market in 'free fall'*. 2014 [cited 2016 24/10/2016]; Available from: <http://www.cnn.com/2014/11/05/oh-snap-digital-camera-market-in-free-fall.html>.
59. Hearn, A., *'Meat, Mask, Burden' Probing the contours of the branded 'self'*. Journal of Consumer Culture, 2008. **8**(2): p. 197-217.
60. Hesse-Biber, S.N. and P. Leavy, *Handbook of emergent methods*. 2008, New York ; London: Guilford Press.
61. Hirsch, R., *Seizing the light : a social history of photography*. 2nd ed. 2009, New York, NY: McGraw-Hill Higher Education.
62. Hjelm, S.I. *Semiotics in Product Design*. 2002.
63. Hjorth, L., *New visualities and the digital wayfarer: Reconceptualizing camera phone photography and locative media*. Mobile, Media & Communication, 2014. **2**(1): p. 40-57.
64. Howard, P.N. *Opening Closed Regimes: What Was te Role of Social Media During the Arab Spring?* 2011.

65. IDC. *Smartphone OS Market Share, 2016 Q2*. 2016 [cited 2016 24/10/2016]; Available from: <https://www.idc.com/prodserv/smartphone-os-market-share.jsp>.
66. Johnson, D. *Been gettin' after it and trainin' hard since I was 14yrs old. Years later I'm still trynna look cool while exhausted and ready to pass out*. 2016 [cited 2016 24/10/2016]; Available from: <https://www.instagram.com/p/BlupwCxj2LQ/?taken-by=therock&hl=en>.
67. Johnson, D. *Regardless of where we're at.. when #2 happens with my baby girl.. I'm the #1 man for the job. #TheWorkinMan #DaddysGotU #JustKeepPlayinWithYourToysMama #IWillDealWithMyBackSpasmsLater* 2016 [cited 2016 24/10/2016]; Available from: <https://www.instagram.com/p/BlaAJsSj3sy/?taken-by=therock&hl=en>.
68. Johnson, D. *Somewhere along this crazy road I learned (often times the hard way) the most important things I can do is be authentic, trust my gut, be the hardest worker in the room, celebrate the mistakes, be a grateful man and always remember that it's nice to be important, but it's more important to be nice*. 2016 [cited 2016 24/10/2016]; Available from: <https://www.instagram.com/p/BJIBSDji0ET/?taken-by=therock&hl=en>.
69. Jones, J.C., *Conference on Design Methods*. 1963, Oxford, UK: Pergamon Press.
70. Jones, J.C., *How my thoughts about design methods have changed during the years*. *Design Methods and Theories*, 1977. **11**(50-62).
71. Kardashian, K. . 2016 [cited 2016 24/10/2016]; Available from: <https://www.instagram.com/p/BJt2Qf6hmXG/?taken-by=kimkardashian&hl=en>.
72. Kardashian, K. *Closed eyes, see things*. 2016 [cited 2016 24/10/2016]; Available from: <https://www.instagram.com/p/BJ0Td9HBr0V/?taken-by=kimkardashian>.
73. Kardashian, K. *I ❤️ my family*. 2016 [cited 2016 24/10/2016]; Available from: <https://www.instagram.com/p/BJyzMhcBm4-/?taken-by=kimkardashian>.
74. Kardashian, K. *#LostFiles #FamousExhibition* 2016 [cited 2016 24/10/2016]; Available from: <https://www.instagram.com/p/BJ-TN82BSSA/?taken-by=kimkardashian>.
75. Kardashian, K. *Love finding pics like this in my phone! Shout out to Steph for taking it* 2016 [cited 2016 24/10/2016]; Available from: <https://www.instagram.com/p/BJ-R4qeBBQ-/?taken-by=kimkardashian>.
76. Kardashian, K. *My Instagram is definitely my expression and what I love to show the world. My snap is kinda my silly sarcastic alter ego*. 2016 [cited 2016 24/10/2016]; Available from: <https://twitter.com/KimKardashian/status/709459582037262336?lang=en-gb>.
77. Kardashian, K. *My sweet baby girl* 2016 [cited 2016 24/10/2016]; Available from: <https://www.instagram.com/p/BJ6wM5VhJWv/?taken-by=kimkardashian>.

78. Kazmierczak, E.T., *Design as meaning making: From making things to the design of thinking*. Design Issues, 2003. **19**(2): p. 45-59.
79. Keat, R., *The Critique of Positivism*, in *Social Theory: Habermas, Freud and the Critique of Positivism*, R. Keat, Editor. 2013, Blackwell/University of Chicago Press: IL, U.S. p. 12-37.
80. Keightley, E. and M. Pickering, *Technologies of memory: Practices of remembering in analogue and digital photography*. New Media & Society, 2014. **16**(4): p. 576-593.
81. Kember, S., *The Shadow of the Object + the Implications of a Shift from Digital Enhancement to Digital Creation - Photography and Realism*. Textual Practice, 1996. **10**(1): p. 145-163.
82. Khondker, H.H., *Role of the New Media in the Arab Spring*. Globalizations, 2011. **8**(5): p. 675-679.
83. King, N., *The qualitative research interview*, in *Qualitative methods in organizational research: A practical guide*, C. Cassell, Symon, G., Editor. 1994, Sage: Thousand Oaks, CA.
84. Krippendorff, K., *On the Essential Contexts of Artifacts or on the Proposition that "Design is Making Sense (of Things)*. Design Issues, 1989. **19**(45-59).
85. Krippendorff, K., *The semantic turn : a new foundation for design*. 2006, Boca Raton, Fla. ; London: CRC.
86. Kuhn, A., *Photography and cultural memory, a methodological exploration*. Visual Studies, 2007. **22**(3): p. 283-292.
87. Kuhn, T.S., *The structure of scientific revolutions*. 2nd ed. International encyclopedia of unified science. 1970, Chicago ; London: University of Chicago Press.
88. Kumar, R., *Research methodology : a step-by-step guide for beginners*. 3rd ed. 2011, Los Angeles: SAGE.
89. Langford, M., *Suspended Conversations: The Afterlife of Memory in Photographic Albums*. 2008: McGill-Queen's University Press.
90. Lankshear, C. and M. Knobel, *New literacies : everyday practices and classroom learning*. 2nd ed. 2006, Maidenhead ; New York: Open University Press.
91. Lasen, A., Gomez-Cruz, E., *Digital Photography and Picture Sharing: Redefining the Public/Private Divide*. Knowledge, Technology & Polict, 2009. **22**(3): p. 205-215.
92. Lee, D.H., *Digital Cameras, Personal Photography and the Reconfiguration of Spatial Experiences*. Information Society, 2010. **26**(4): p. 266-275.
93. Lenman, R., Nicholson, A. '*photography*', *etymology of*. 2006 [cited 2016 24/10/2016]; Available from: <http://www.oxfordreference.com/view/10.1093/acref/9780198662716.001.0001/acref-9780198662716-e-1206>.

94. Liebhold, P., *George Eastman: A biography*. Technology and Culture, 1998. **39**(4): p. 784-785.
95. Lister, M., *A Sack in the Sand: Photography in the Age of Information*. Convergence, 2007. **13**(3): p. 251-274.
96. MacCannell, D., *The Tourist — A New Theory of the Leisure Class Staged Authenticity: Arrangements of Social Space in Tourist Settings*. American Journal of Sociology, 1973. **79**: p. 589-603.
97. Manovich, L., *The Paradoxes of Digital Photography*, in *Photography After Photography, Exhibiton Catalog*. 1995: Germany.
98. Marwick, A., Boyd, D., *To See and Be Seen: Celebrity Practice on Twitter*. Convergence, 2011. **17**(2): p. 139-158.
99. McCarthy, N. *Most Social Networks Are Now Mobile First*. 2014 [cited 2016 24/10/2016].
100. McCouat, P. *Early Influences of Photography on Art - Part 1*. 2012 [cited 2016 24/10/2016]; Available from: <http://www.artinsociety.com/pt-1-initial-impacts.html>.
101. McKim, R., *Experiences in Visual Thinking*. 1972, Monterey, CA: Brooks/Cole.
102. Meeker, M. *Internet Trends 2015 - Code Conference*. 2015.
103. Merriam-Webster. *photography*. 2016 [cited 2016 24/10/2016]; Available from: <http://www.merriam-webster.com/dictionary/photography>.
104. Merriam-Webster. *"Social Media"*. 2016 [cited 2016 24/10/2016].
105. Mitchell, W.J., *Reconfigured eye : visual truth in the post-photographic era*. 1994, Cambridge, MA: MIT Press.
106. Mnookin, J.L., *The Image of Truth: Photographic Evidence and the Power of Analogy*. Yale Journal of Law and the Humanities, 2013. **10**(1).
107. Mulvey, L., *Visual Pleasure and Narrative Cinema*, in *Film Theory and Criticism: Introductory Readings*, L. Braudy, Cohen, M., Editor. 1999, Oxford UP: New York. p. 833-844.
108. Nadin, M., *Interface Design - a Semiotic Paradigm*. Semiotica, 1988. **69**(3-4): p. 269-302.
109. Newhall, B., *The History of Photography: from 1839 to the Present Day*. 1949, New York: The Museum of Modern Art.
110. Pask, G., *The conception of a shape and the evolution of design*, in *Conference on Design Methods*. 1962, Pergamon Press: London.
111. Peres, M.R., *Focal encyclopedia of photography : digital imaging, theory and applications, history, and science*. 4th ed. 2007, Amsterdam ; London: Focal.
112. Popper, K.R., *The logic of scientific discovery*. Routledge classics. 2002, London: Routledge.
113. Pressler, C.A., Dasilve, F.B., *Sociology and Interpretation*. 1996: SUNY Press.

114. Ritzen, F., *After Photography*. 2008: W.W Norton.
115. Rittel, H.W.J. and M.M. Webber, *Dilemmas in a General Theory of Planning*. Policy Sciences, 1973. **4**(2): p. 155-169.
116. Robinson, L., Schulz, J., *New fieldsites, new methods, New ethnographic opportunities*, in *The Handbook of Emergent Technologies in Social Research*, S.N. Hesse-Biber, Editor. 2011.
117. Robson, C., *Real world research : a resource for social scientists and practitioner-researchers*. 2nd ed. 2002, Oxford: Blackwell Publishers.
118. Robson, C. and K. McCartan, *Real world research : a resource for users of social research methods in applied settings*. 4th ed. 2016, Chichester: Wiley.
119. Ronaldo, C. *Mood*. 2015 [cited 2016 24/10/2016]; Available from: <https://www.instagram.com/p/BJahB9gAml/>.
120. Sandler, M.W., *Photography: An Illustrated History*. 2002, Oxford, UK: Oxford University Press.
121. Sarantakos, S., *Social research*. 1994, Basingstoke: Macmillan.
122. Schutz, A. and M.A. Natanson, *Collected papers*. 2nd unchanged edition. ed. Phaenomenologica. 1967, The Hague: M. Nijhoff.
123. Schwartz, D., *Camera Clubs and Fine Art Photography - the Social Construction of an Elite Code*. Urban Life, 1986. **15**(2): p. 165-195.
124. Seligmann, C., *What Is a Door, Notes toward a Semiotic Guide to Design*. Semiotica, 1982. **38**(1-2): p. 55-76.
125. Senft, T., 22. *Microcelebrity and the Branded Self*, in *A Companion to New Media Dynamics*, J. Hartley, Burgess, J., Bruns, A., Editor. 2015, Wiley-Blackwell. p. 246-354.
126. Senft, T., *Camgirls: Celebrity and Community in the Age of Social Networks*. Digital Formations. 2008, US: Peter Lang Publishing.
127. Siddiqui, S., Turley, D., *Extending the Self in a Digital World*. Advances in Consumer Research, 2006. **33**: p. 647-648.
128. Simon, H.A., *The sciences of the artificial*. 1969, Cambridge, Mass.: M.I.T. Press.
129. Slater, D., *Consumer culture and modernity*. 1997, Cambridge: Polity Press.
130. Sontag, S., *On photography*. 1978, London: Allen Lane, Penguin Books.
131. Szarkowski, J., *The photographer's eye*. 1980, London: Secker and Warburg.
132. Terre Blanche, M., Durrheim, K., Painter, D., *Research in Practice: Applied Methods for the Social Sciences*. 2 ed. 2008: UTC Press.
133. Terzidis, K., *The etymology of design: Pre-socratic perspective*. Design Issues, 2007. **23**(4): p. 69-78.

134. Times, T.N.Y. *Henri Cartier-Bresson: "There Are No Maybes"*. 2013 [cited 2016 24/10/2016]; Available from: http://lens.blogs.nytimes.com/2013/06/21/cartier-bresson-there-are-no-maybes/?_r=0.
135. Van House, N. *The Social Uses of Personal Photography: Methods for Projecting Future Imaging Applications*. 2004.
136. Verganti, R., *Design-Driven Innovation: Changing the Rules of Competition by Radically Innovating What Things Mean*. 2009: Harvard Business School Press.
137. Vickery, J.R., *The curious case of Confession Bear: the reappropriation of online macro-image memes*. *Information Communication & Society*, 2014. **17**(3): p. 301-325.
138. Vranica, S. *Behind the Preplanned Oscar Selfie: Samsung's Ad Strategy*. 2014 [cited 2016 24/10/2016]; Available from: <http://www.wsj.com/articles/SB10001424052702304585004579417533278962674>.
139. Wakabayashi, D. *The Point-and-Shoot Camera Faces Its Existential Moment*. 2013 [cited 2016 24/10/2016]; Available from: <http://www.wsj.com/articles/SB10001424127887324251504578580263719432252>.
140. Worldpanel, K. *The Smartphone Purchase Experience*. 2014 [cited 2016 24/10/2016]; Available from: www.kantarworldpanel.com/dwl.php?sn=news_downloads&id=593.
141. Zuromskis, C., *Ordinary pictures and accidental masterpieces: Snapshot photography in the modern art museum*. *Art Journal*, 2008. **67**(2): p. 103-125.

APPENDIX

Research Protocol

The Social Camera: Exploring What Is Different About Smartphone Image-Sharing

Name of group:

Date of Session:

Time of Session:

Introduction and icebreaker:

- Hello. My name is Martin Douglas Hendry and I am a PhD Candidate in the School of Design at the University of Leeds. I will be conducting today's study.
- We are unaware of any fire-alarms taking place today. However, should the alarm go off, the exit is *<location of fire exit>*. Toilets can be found *<location of toilets>*.
- How are we all feeling today?
- *<Response>*
- Did everyone manage to find their way here easily?
- *<Response>*
- Today's conversation is about how we share pictures using smartphones. Your inputs are valuable to me as they will help me understand what's new and interesting about image-sharing today. Besides helping the world understand how and why images are shared, your responses will also help designers better design image-sharing apps. There are no right or wrong answers – so please feel free to say whatever you think or feel, as the more an open discussion we have, the more ideas we'll uncover.
- Please remember – you are free to say as much or as less as you feel like. There is no pressure to respond to any questions asked, either by myself or other participants.
- Do you have any questions at this point?
- *<Response>*
- The discussion will be 2 hours long and is separated into four parts. Each part will be discussed for roughly 25 minutes each. There will be a small comfort break halfway.
- We will begin by exploring the kinds of image-sharing we do on smartphones
- Then we'll talk about the reasons we use certain apps for certain types of sharing
- We will then discuss some of the problems we encounter when sharing images
- Finally, we'll talk about changes we could make to improve our experiences
- Do you have any questions at this point?
- *<Response>*

End of Section: Move to section 1

SECTION 1

Firstly, what we are looking for is to identify as long a list as possible of the different ways that we share images through our smartphones.

So – for the first twenty minutes or so we are going to try and answer following question:

Can you to give me as many examples of ways that we share images using smartphones as possible? What happens to these images (before, during and afterwards)?

Again please remember – you are free to say as much or as less as you feel like. There is no pressure to respond to the questions asked, either by myself or other participants.

Probes for this section

- What are the main apps that we use to create images and share them?
- Do we use different apps from the ones we share on to look at other people's images?
- What is it that we enjoy the most about using these applications?
- How do we use these apps to connect with other people?
- What are the kinds of things do we capture and share when using these applications?
- Which of these applications do we use the most?
- How often do we use these applications?
- When was the last time that we used these applications?
- What do we look for in a new application to share images on? (What excites us?)
- What applications have we heard of which we don't use? Why don't we use <app x>?
- Are there any new applications that we're excited about?

End of Section – Move on to Section 2

SECTION 2

Ok – thanks. So now we’re going to move on to the next question. Let’s start to look at some of the reasons behind using one application or another to create and share images.

For the next twenty minutes, we’re going to try our best to answer the following question:

What are the reasons we use one or many photo-sharing apps?

Again, please remember – you are free to say as much or as less as you feel like. There is no pressure to respond to the questions asked, either by myself or other participants.

Probes for this section

- What are some of the different reasons why we create and share images?
- What exactly is it that we seek to gain from image sharing using these applications?
- How do these applications help us achieve these goals?
- Do we share images to express ourselves? How do we achieve this using apps?
- How do image-sharing applications help us connect with friends and strangers?
- Why wouldn’t we use <app x> to perform the function of <app y>?
- Is there anything about using <app x> that’s just fun to do?
- Would the same image mean different things when sent through different apps?
- <App x> can connect us with people across the world. Does anyone have experiences of interacting with users from different countries? What is this like?

End of Section – Move on to Break

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Brilliant – ok, let’s take a 10-minute break to refresh and recharge.

End of Break – Move on to Section 3

SECTION 3

Ok – are we ready to start again? For the next 20-25 minutes we’re going to explore in more detail the kinds of opportunities and issues we face when using different applications to share images with people.

What we’re looking for in particular is anything special about these applications that motivate us to create and share images. We’re also going to try and think of anything unique about these smartphone apps that stop us from image-sharing.

So for the next twenty minutes, we’re going to try and answer:

What is it about your favourite photo sharing app that you like or don’t like? I want you to think about features that help you, or come in the way of what you want to achieve.

Again, please remember – you are free to say as much or as less as you feel like. There is no pressure to respond to the questions asked, either by myself or other participants.

Probes for this section

- What is it about <app x> that makes us think to take a picture and share it?
- Is there anything about using <app x> that stops us from creating and sharing?
- Is it important that we share moments straight after they happen when using <app x>?
- How do we feel about images a week/month after they’ve been shared using <app x>?
- Does it make a difference if people we share our images with see the image displayed on its own/in a set/in the order they were made?
- What do we feel about seeing our images alongside images made by other people?
- Have we ever shared an image, and found that people didn’t respond to it as we wanted or expected? Which apps do we find this experience happens most frequently on?
- When we share on <app x> we said we want <function x>. Are there any occasions where this didn’t happen? Do we respond in this way to other people’s images?
- Do we expect different reactions to our images from people we know, and strangers?
- Images say a lot about us – are there times where we stop sharing an image because we are worried about this? How does this make us feel?
- What is it about using <app x> that makes it more easy to share images than <app y>?

End of Section – Move on to Section 4

SECTION 4

Ok great work so far everybody! We're nearing the end now – only one more section to go.

In this part we're going to have some fun, thinking about what we could improve about image-sharing if there were no rules. We'll be trying to solve all of the problems, and improve all of the opportunities we've identified so far. Let your imagination run wild, this is about coming up with some crazy ideas.

For this part, we'll be splitting ourselves into two groups, and you will be working with <illustrator a> and <illustrator b> to draw up some of our ideas visually. We will then share these ideas with each other in 15 minutes' time.

So for the final twenty minutes, we're going to try and answer:

"If we could change smartphone photo-sharing apps to suit our particular needs, what would those changes do and look like?"

Again, please remember – you are free to say as much or as less as you feel like. There is no pressure to respond to the questions asked, either by myself or other participants.

Probes for this section

- We've found out that we use image sharing to <image sharing function x,y,z>, how would the perfect device, service, or product work to achieve this?
- Through our discussion we also found that image sharing has a number of problems. These include <image sharing barrier x,y,z>. How would we be able to solve this?
- We also found that certain things make us share images more. These include <image sharing enabler x,y,z>. What could we make to improve this?
- If we were to have this in the form of a smartphone app – how might that work?
- What do we think this application would look like?

End of Section – Move on to Conclusion

CONCLUSION

- Right, let's have a quick run through of the ideas we have come up with. <Group A> if you would like to go first, what solutions have we come up with?
- <Response>
- Ok great - now, let's see what <Group B> have come up with.
- <Response>
- Ok - with that we have now come to the conclusion of the study. Thanks for time and contribution today everybody. At this point are there any questions?
- <Response>
- We would like to stay in touch with you and let you know how the research progressed. Would you like to be kept informed?
 - o In person through an additional workshop in the University?
 - o Through the post? (take postal address)
 - o Through email? (take email address)

Screeener Questionnaire

The Social Camera

Exploring what is Different About Smartphone Photo-Sharing

SAMPLE QUIZ

Name:

Email:

Address:

City:

County:

Post Code:

1. How old are you?

2. Which brand and make of smartphone do you currently use?

3. How long have you owned a smartphone?

Less than 3 months ½ Year Year Years 3+Years

4. How often do you take pictures on your smartphone?

Daily Weekly ery other week Monthly Rarely

5. How often do you use your smartphone to share images with others in any way?

Daily Weekly ery other week Monthly Rarely

6. Which apps do you use to share images?

7. Do you use any other kinds of cameras to create and share images? What are they?
8. How many smartphone apps do you have installed which you use to share photos?
9. In the past year, approximately how many images have you created and shared in any way using your smartphone (e.g. Email, Facebook, Instagram, Twitter, Flickr.)
Less than 20 0-50 51-100 100-200 2+
10. Are you currently participating or scheduled to participate in any market research projects with any company?
11. How long ago, if ever, was the last time you participated in an academic focus group?
12. How many times total have you, yourself participated in an academic research discussion group?
13. What is your gender? (Circle appropriate)
- Male
- Female
- Other
- Prefer not to say

Information Sheet

The Social Camera: Exploring What Is Different about Smartphone Image-Sharing

PhD Research by Martin Douglas Hendry in School of Design, University of Leeds

Email: m.d.hendry06@leeds.ac.uk, Tel: 07776282529

You have been asked to participate in a PhD research project. Before you decide whether to take part, it is important that you understand what the research will consist of and why it is being done. Please take time to read the information on this sheet carefully and discuss the contents with others if you wish. Please do not hesitate to contact Martin Douglas Hendry if there is anything on this sheet that is unclear, or if you have any further questions about the research. You are entitled to take as much time as you wish to decide whether or not you would like to take part in the research. Thank you for reading this.

What is the purpose of the project?

Over the course of history, photography has played an important part in helping us record and share important moments in our lives with others. Today, we create more images than ever before – and the majority are being made and distributed using smartphones. Smartphones are different from older cameras. They offer us a number of ways to capture and share our experiences through choice of different applications (or apps) – all accessed from the same device. The aim of this research is to collect first-hand data about how we use smartphones to capture and share photos and identify any barriers (and enablers) that we find when using our favourite apps. The research will be carried out in Summer 2014 (June). Results from the study will be used to inform a set of solutions and principles for designing better ways to share photos using smartphones.

Why have I been chosen?

We are recruiting participants between the ages of 13 and 35 because our research wants to find out and improve the different ways people in this age range use smartphones to share photos.

Do I have to participate?

You are not obliged to take part in the study. If you do decide to take part, you will be given this information sheet to keep (and asked to sign a consent form). After the consent form is signed you may still withdraw from the research activity at any time. You do not have to give a reason.

What will happen to me when I take part?

Your role in the study will consist of taking part in conversation with other smartphone users in your age group (groups of either 13-18, 18-25 or 25-35). The researcher will

conduct a discussion with the group over the course of two hours to explore and understand your experiences of smartphone image sharing. This will involve four broad questions, which will be explored with the group for roughly 25 minutes each. For the final section you will also be asked to work alongside an illustrator who will help by sketching your ideas for new smartphone image sharing apps. We will analyse the information gathered and use it to inform further research. It will also be used to help design ideas for better image-sharing smartphone apps.

What are the possible disadvantages and risks of taking part in the research?

We do not anticipate any disadvantages or risks in taking part.

What are the possible benefits of taking part?

There are no immediate benefits for those taking part in the study. However, involvement in the focus group will introduce the participant to a range of interesting ideas related to: how and why we create photos with smartphones and share them with others. Data collected from the focus group will be anonymous – and will be impossible to trace back to the participant. What we find out will then help us identify important issues we face today in when using smartphones to create and share images. This will also help us develop a set of principles and designs to improve how we use smartphones to share photos. Finally, this will form the basis of the researcher's PhD thesis.

How will the information I give be used?

All of the information that we collect about you during the course of the focus group will be kept confidential. Your personal information will not be collected as part of the data set. You will not be identified in any of the research reports or outcomes (such as publications, designs, blog posts etc.) that come out of the research. Where data collected involves images or sound recordings, we will make sure that you cannot be identified from the data that is published. For example, your face will be blurred in images and no mention of your name will be kept in audio recordings. No personally identifiable data will be published in print or digital format without your express permission.

How will the data be recorded, and how will it be used?

Audio from the focus group will be recorded in a digital format. The information will be transcribed anonymously so that what you have said cannot be traced back to you. The recordings themselves will be used only for: analysis, to inform design activities as well as for illustration purposes in publications, conference presentations and lectures. No other use will be made of them without your express written consent. No one outside the project will be allowed access to the original recordings.

Who is organizing the research and what is it for?

This research is being organized as part of a PhD candidacy through the School of Design at the University of Leeds.

Who should I contact for further information?

For further information, please contact:

Martin Douglas Hendry

School of Design

University of Leeds

Leeds, LS2 9JT

Telephone: 07776282529

Email: m.d.hendry06@leeds.ac.uk

Or

Dr. Kishore Budha

School of Design

University of Leeds

Leeds, LS2 9JY

Telephone: 0113 343 8082

Email: k.n.budha@leeds.ac.uk

Thank you for taking the time to read the information sheet. If you decide to participate in the research, then you will be given a copy of this information sheet and a signed consent form to keep.

Participant Consent Form

The Social Camera: Exploring What Is Different About Smartphone Image-Sharing

I confirm that I have read and understand the information sheet dated _____ explaining the above research project and I have had the opportunity to ask questions about the project,

I understand that my participation is voluntary and that I am free to withdraw from the study at any time without giving any reason and without there being any negative consequences. In addition, I understand that should I not wish to answer any particular question or questions, I am free to decline.

I understand that my responses will be kept confidential. I give permission to Martin Douglas Hendry, PhD Candidate in the School of Design, University of Leeds and relevant supervisory staff to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from this research.

I agree for the data collected from me to be used in future research and educational activities.

I agree to take part in the above research projects and will inform the researcher or one of the research investigators named in the information sheet should my contact details change.

Participant's Name:

Participant's Address:

Researcher's Name:

Participant's Signature: Researcher's Signature:

Date:

Date: