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The photograph, Flusser, and early childhood education

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Abstract

In Aotearoa New Zealand, teachers frequently use photography to gather data for assessment. The practice of taking photographs of children to make their “learning visible” has become normalised and common practice. New technologies have made visual documentation easier to produce through digital cameras, personal computers, and printers. Increased use of photographs for documentation purposes has led to increased photography of children. This thesis argues the ethics of this practice of photographing young children is undertheorised and an argument is made for critical analysis of photography use in early childhood.

Philosophical consideration of photography use for documentation and assessment is crucial in developing ethical practice. Communication with photographic images has, as Vilém Flusser predicted, become a defining aspect of the post-industrial world. The photograph has infiltrated most areas of society, and education is no exception. Flusser offers provocative arguments and a way to theorise the upsurge of photographic images in the last part of the 20th century and the beginning of the 21st.

Working with an eclectic set of theoretical lenses this research uses philosophy as method to question the processes and practices of photography use in early childhood education. Flusserian concepts significant to this thesis are: *apparatus*, *information*, *technical image*, *abstraction*, *program*, and *freedom*. Pedagogic photography is examined through the constructs of camera-apparatus, archive-apparatus, and state-apparatus. Combined with a concern for visual materiality and a Foucauldian curiosity in history and social practices, these concepts offer a way to think about the processes involved in producing and consuming photographic images. This thesis contends an ethics of pedagogic photography must go beyond concerns of privacy, surveillance, and consent, to also consider questions pertaining to the power of apparatus behind information creation. The ways photographs are made and used are influenced by apparatus. Moving beyond the programmatic affordances of the apparatus is an expression of human freedom, one which opens up possibilities to engage with photography ethically.

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Chapter 1.

Introduction

Use of digital cameras to view and record the world has become so mundane it is now largely unquestioned. Photographs are used in early childhood education to collect visual evidence. These photographs are then used as supporting evidence to document learning and teaching. Fraser and McLaughlin (2016) identified two key trends in early childhood education and care (ECEC) assessment in Aotearoa New Zealand: the use of photographs, and the use of ePortfolios. Uploading photographs into ePortfolios is a new kind of photograph consumption for ECEC. Traditionally, photographs were taken, printed, and archived into learning portfolios. Bringing critical attention to the processes of photographic production and consumption in ECEC motivates this research of photograph use and the camera's role in making and consuming pedagogic information.

Vilém Flusser (1920–1991) is most commonly referred to as a media theorist. However, this thesis argues his work holds untapped potential for education theorists. In *Towards a Philosophy of Photography*, Flusser¹ (2000) defined the photograph as a “technological or mechanical image created by an apparatus” (p. 85). Flusser (2011b) suggested technical images have supplanted texts in the role of informing society and citizens. His book *Into the Universe of Technical Images* (2011b) provided a more in-depth analysis of the photographic image and its explosion into all areas of human experience. He suggested that as the photograph has progressed within societal and technological changes it has also changed, becoming a technical image. Flusser saw the technical image as presenting two different paths to humanity. One direction allowed for a playful and creative route, whereby technical images hold a dialogical and democratic potential; the other led in the direction of a programmed and programming totalitarian society (Flusser, 2000).

¹ Chapter 3 introduces Flusser and his work.

The curriculum documents *Kei Tua o te Pae: Assessment for Learning: Early Childhood Exemplars* ([KTP], Ministry of Education [MoE], 2004–2009,) and *Te Whāriki: He Whāriki Mātauranga mō ngā Mokopuna o Aotearoa* (MoE, 1996, 2017b) place significance on “making learning visible” through photographs. The prevalence of the phrase *making learning visible*, along with the assumed benefits of photographing children for pedagogical purposes, is explored in this thesis with the suggestion that these practices, if used uncritically, raise critical and ethical concerns.

The thesis problematises the use of photography and photographic images as pedagogic tools in early learning. Photographs are now routinely used by early childhood teachers to visually document children’s experiences in Aotearoa New Zealand. Curriculum documents published by the MoE (1996, 2004–2009, 2017b) promote teachers’ use of photography and photographs for documentation of learning, assessment, and planning. It is now normal for teachers to take photographs daily. Normalisation of photography and photograph use is evident in wider society as well as within early learning settings. This thesis argues it is timely and important to problematise this normalised use. It does so through philosophic engagement with the photography and photograph use in ECEC in Aotearoa New Zealand.

While there is research about the use of photography and the photograph as pedagogic tools, there are few critical studies on the ethics of photographing young children. It is timely to consider how the photograph is positioned within early education. Digital technologies have simplified taking photographs through easy-to-use cameras and software. This has resulted in more photographs being taken of children than ever before. Digital cameras mean no wait time for photographs to be developed, no restraints on the number of photographs taken, and the ability to edit images, while ease of sharing is at the push of a button. These factors all contribute to the normalisation of photograph use. However, the ease with which digital cameras can be used belies the complexity of the photograph and the activity of taking and using photographs.

The photograph in Figure 1 was sourced from a digital photographic image-sharing forum. The photographer was from America and the photograph is now being used in

Aotearoa New Zealand. The three other photographers would have taken photographs of the child from a different perspective; perhaps they also uploaded their photographs into a digital platform to make them accessible to a global audience. The photograph shows how images can now be easily made, shared, and viewed thanks to digital affordances. It is also a powerful image representative of the focus of this thesis: photographing the child subject.



Figure 1. Multiple photographers surround a young child. By JamesDeMers, 2013 (<https://pixabay.com/photos/photographers-model-child-baby-89482/>). In the public domain.

Flusser (2011b) theorised the photograph as a technical image produced by the camera apparatus². He proposed historic technical literacy was required to be able to understand the programmatic nature of the photograph. Importantly, Flusser considered the camera-apparatus to hold its own power in determining the photographs the photographer could take. Similarly, the programs behind digital archives hold a productive power over the photograph and the photographer (Gómez Cruz & Meyer, 2012). The photograph is reconsidered within this research as a material object influenced by immaterial concepts, ideologies, and organisational systems (Flusser, 2011b; Rose & Tolia-Kelly, 2012).

² I work with the construct “camera-apparatus” in this thesis, while inspired by the work of Flusser it is of my own creation.

Positioning Myself in the Research

Yanow (2014) suggested methodology “enacts a researcher’s ontological and epistemological presuppositions concerning the subject of study and processes of knowing it, along with knowledge claims issues arising from these” (p. 168). She differentiated methods as the tools which “put those methodological presuppositions into play in everyday data generation activities and, later, in explicit, directed data analysis” (p. 168). Looking at Yanow’s statement through a Foucauldian lens shows how knowledge works productively upon the knowing subject: What I have previously learnt will inform the ways I develop new knowledge, consider (as) findings, as well as what I will assert to be true.

Jackson and Mazzei (2012, 2013) suggested “plugging in” various theories and theoretical positions to look at the same data. They proposed this was a way to destabilise research and keep data fluid and responsive rather than static and finite. This fosters theoretical space within research projects by relieving researchers of the necessity to find the “one” answer. This embraces a philosophic approach to research that allows for “movement and diversity” in thinking (Koro-Ljungberg, Carlson, Tesar, & Anderson, 2015, p. 618). Philosophy as method was explored by Koro-Ljungberg et al. (2015) as an “engagement, an ethical relationship with thought” (p. 617). Using philosophy as method, resonance was found between the work of Flusser and my endeavours to think differently about the practice of photography in ECEC.

Drawing on Jackson and Mazzei, I worked between my preconceptions of photography and the photograph through new ideas and theories from the work of Barad, Daston, Galison, Derrida, Elkins, Foucault, Flusser, and many others. In this way my research activities became core to the research through data generation and analysis as action. The result was the pulling together of *apparatus*, *visual materiality*, and *historiography* as theoretical lenses which could be looked “through” to examine photography and photograph use in different ways. Changing the lens afforded a different view.

My understandings around the photograph and the practice of photography have been derived from years of taking photographs, being photographed, and being a viewer of images within my everyday life experiences. My personal experiences of pedagogic photography come from both my position as a parent to young children,³ and as a practising teacher in ECEC. Working as a research assistant on an ethnographic project about children's experiences in urban Auckland, I utilised visual research methods such as photo elicitation, photo story, and data collection through both still and moving images. Prior research in my honours degree also explored and drew on visual research methods in a critical analysis of how children were represented in images in policy publications (Hopkins, 2013).

In researching and writing this thesis, my personal presuppositions about photography and the photograph were challenged further. To expand my thinking required finding the edges of my knowledge and then transgressing into new territory; engaging in philosophising which sought to "*think the unthinkable*" (Koro-Ljungberg et al., 2015, p. 615). The work of Vilém Flusser was invaluable in this. Flusser's approach to photography theory inspired me think in different, new, and challenging ways, not only about the photograph, but also about the technological developments which have occurred in the last 20 years, human relationships with the material world, and a possible change to human consciousness.

Reviewing other literature showed the troubled and contested state of taking photographs of the other (Buchanan, 2011; Flannery Quinn & Manning, 2013; Henning, 2004; Kind, 2013; Sparrman & Lindgren, 2010; Tarr & Kind, 2016); using photographs as evidence (Flannery Quinn & Manning, 2013; Sturken & Cartwright, 2018); issues of visibility and historical knowledge and ways of knowing produced through apparatus (Barad, 2007; Crary, 1990; Flusser, 2000, 2012; Gómez Cruz & Meyer, 2012); as well as material issues of tangibility and temporality which are symptomatic of photograph production and consumption (Flusser, 2011b, 2015; Lister, 2007). These new ways of thinking about what the photograph

³ When my children were attending kindergarten, 13 plus years ago, the use of photography in learning story assessment was developing as standard practice.

is, its use, and what it does, challenged and changed my understandings about photography and the photograph.

This research is motivated by concerns about the rapid incorporation of photography into early childhood teachers' practice. As highlighted, teachers routinely visually document the learning of young children in Aotearoa. One concern is that the photograph's use as evidence of teaching and learning takes away from the potential of the moment. This could mean valuable relationships and experiences are not being supported or strengthened. As a teacher I often found myself focused on getting the photograph, of making a visible record of an event. This led to questioning how the child was positioned in the teacher–learner relationship. This in turn raised questions about power, about child participation, and about privacy. Re-looking at the pedagogic practice of photography I began to wonder if it influenced children's experience of early education, and teachers' experiences of teaching.

The routine incursion of teachers into children's daily experiences in early childhood spaces became increasingly troubling for me. I observed my own and other teachers' constant photographing of children and our requests for children to show us what they were doing, to smile, to move their bodies. I reflected on the actions we undertook in matching learning to the curriculum, in particular looking for moments to photograph that showed connections to learning goals and outcomes. I also noticed the slippage of photographs of children beyond the space of the centre. Sometimes photographs were taken with personal phones and taken home, at times to be illicitly shared with others. I experienced inadvertently sharing photographs with my own family as I worked on learning stories at home. I watched children consuming photographs of themselves and then the shift to digital portfolios⁴ and resultant loss of access for children to their archived photographs.

Considering the ethics of photography in ECEC prompted concerns about how children experience being photographed and how children interact with photographs of themselves. Buchanan (2011) questioned if children looking at images of themselves as learners were able to “know and conduct themselves as other than learning subjects” (p.

⁴ A recent trend in Aotearoa is the uptake by ECEC providers of ePortfolios, digital platforms in which learning stories are archived. This is discussed further in Chapter 10.

107). This line of thinking points to the power teachers hold when creating photographic narratives about children. Epistemological tensions are evident when photographs are presented as a certain way of knowing, especially if this is a practice which happens to children rather than with them. The later chapters of this thesis examine the complexity of taking and using photographs of young children in ECEC.

Promoting critical and ethical use of photography, through philosophic discussion about children and childhood, necessitates going beyond images themselves to question the practices, intentions, and contextual factors of their sites of production (Fairclough, 1989; Flusser, 2015; Kress, 2012; Pauwels, 2011; Rose, 2007). The processes of image production are complex and not entirely the work of the human photographer (Flusser, 2000). Recently, scholarly focus has returned to the material quality of human life through a new focus on the interaction between human and non-human. Taking a new-materialist approach, theorists have questioned the vibrancy of matter (Bennett, 2010). Agency is reconsidered as an active process of intra-action between matter and humans rather than something which is possessed (Barad, 2007). Disrupting the dominant perspective, that only humans process agency, new materialism proposes that material is also agential (Coole & Frost, 2010).

In light of this theoretical shift, Bennett (2010) proposed that a new ethics is required—one which needs us to “cultivate the ability to discern non-human vitality, to become perceptually open to it” (p. 14). While new-materialist theories strike a resonance within the work of this thesis, I keep to the edges of the growing discipline. Flusserian theories are at the core of this doctoral research of photography use in ECEC. When it makes sense, I look towards new materialism to deepen my thinking about the camera with Flusser. In the terms of new materialism, the camera has vitality and acts agentially. Ethically then, consideration of the camera is needed which is responsive to its agential materialism (Barad, 2007). Flusser (2000) argued that, to understand the photograph, we must first look to the camera. The camera is a cultural object, an object made by the thoughts and actions of humans. Flusser (2000, 2011b) proposed the camera operator

functions as a functionary to the camera program, and the camera holds an agency of its own.

Therefore, looking critically at the ethics of photographing for evidence requires questioning the productive force not only of the teacher, but also the camera, and the archives which are used to collate and contain information. While I consider both the camera and the archive to enact productive power, I hesitate at the step which would lead me to theories of posthumanism. Staying with Flusser, I wonder instead about the materiality of abstraction. Flusser's (2011b) theory of abstraction argued that, through concepts, technology immaterialised information. For Flusser (2000), the apparatus of camera and archive are governed by programs which in turn govern information. The human ability to create provides the antidote for automated apparatus. How to access this creativity is an ongoing project requiring intentional choices.

Locating the Research

This thesis argues there is a need for critical analysis of photography use in early childhood assessment practices. It argues promoting philosophic consideration of photography for early childhood assessment is crucial in developing a more ethical practice. Internationally, discussions of visual documentation practices have considered questions of subjectivity and subjectification, visibility and surveillance (Lindgren, 2012; Sparrman & Lindgren, 2010); questioned the ethics of photographing children (Lindgren, 2012; Flannery Quinn & Manning, 2013); and how to work against the historical inheritance of unequal power relations between photographer and photographed (Kind, 2013). Importantly, Lindgren (2012) commented that while there is a "focus on teachers creating the documentation; very little is said about how the increased interest in raising children's visibility through documentation affects children and childhood" (p. 330).

The learning story was formally implemented into the professional practice of early childhood teachers in Aotearoa New Zealand 15 years ago with the first series of the KTP

(MoE, 2004) booklets. Published by the MoE (2004–2009),⁵ KTP provides exemplars of assessment in early childhood education settings. The learning story is a form of assessment that narrates children’s learning in relation to the national curriculum document *Te Whāriki* (MoE, 1996, 2017b) via learning dispositions (MacArthur, Purdue, & Ballard, 2003). KTP (MoE, 2004–2009) advocates for a formative and participatory approach to assessment in which children are empowered as learners on a journey into the future. The assessment method has much in common with action research (Carr, 1998a; Carr, 1999, cited by Smith, 2007). The learning story approach draws on action research methodology and therefore teachers need support to develop the specific skill set required to apply the method (Carr, 1998a). The learning story assessment method presented in KTP (MoE, 2004–2009) positions the photograph as a valuable pedagogic tool. In KTP, taking and using photographs of children is encouraged as an aid to learning and teaching and to support planning and assessment of learning and teaching.

The revised early childhood curriculum (MoE, 2017b) reemphasises KTP (MoE, 2004–2009) as a key resource in teachers’ practice of assessment. KTP is consequently a key source of information for teachers on how to practise photography and use the photograph to document learning and teaching. Both KTP and the early childhood curriculum, *Te Whāriki* (MoE, 1996, 2017b), are key source documents for analysis.

In learning story assessment, photographs are valued for the visibility they offer to stories and their audiences (Carr, 2001). Carr and Lee (2012) noted digital technology has influenced the ways teachers write learning stories, so that they are “often, now, image based” (p. 113). Exemplars in KTP (MoE, 2004–2009) frequently use photographs. Mitchell’s (2008a) study showed that 96% of early childhood teachers surveyed in 2007⁶ used

⁵The resource was distributed to early childhood centres and is available on the Ministry’s webpage. Recent updates to the website have made the pages more interactive through the provision of smaller PDFs itemising booklet content. The resource was released at four points, 2004, 2005, 2007, and 2009. Each release was of several booklets, other than the single booklet released in 2005.

⁶ Mitchell (2008b) explained that “NZCER surveys go to a representative sample of about 15 percent of licensed ECE services, stratified by type and educational region. In October 2007, we sent surveys to 601 ECE services. Overall, there was at least one response from 53 percent of the services sampled. There was some under-representation in the responses of home-based, *kōhanga reo*, and privately owned ECE services and some over-representation of kindergarten, playcentre, and isolated ECE services. Response rates were 45 percent parents, 43 percent teachers, 39 percent committee members, and 37 percent management” (p. 1).

photographs to gather data about children's learning. This showed a small increase of 6% since 2003 when 90% of teachers identified photographs as a data collection method. There is nothing to suggest that teachers' use of photography for assessment has diminished since then. Indeed, the MoE (2017b) has called for increased use of multimedia documentation for assessment.

Early childhood assessment practice quickly absorbed digital visual technologies (Carr, Hatherly, Lee, & Ramsey, 2003; Carr & Lee, 2012; Lee, Hatherly, & Ramsey, 2002). However, it has been argued, policy guiding teacher's assessment practices lacks critical discussion of photograph use (Perkins, 2009, 2012). While Carr (1998a) emphasised the need for continued professional development and support for teachers to use learning stories as a method of assessment, there has been a lack of governmental support to the sector recently, resulting in limited professional development on assessment (Cameron, McLachlan, & Rawlins, 2016). Furthermore, in teacher-led services in the sector, only 50% of teachers employed are required to be qualified (MoE, 2019). This means only half of the workforce are required to have professional knowledge gained from an accredited education provider. What those teachers are taught is, of course, another factor influencing photography use in ECEC. Perkins (2009) suggested a need for further critical analysis of visual documentation and a consolidation of knowledge to inform its practice. This thesis positions critical knowledge of photography and photograph use as vital for teachers.

Theoretical Framing

This thesis examines what information is provided in KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 1996, 2017b) for teachers on taking and using photographs of children. In search of a theoretical grounding to this research (Pauwels, 2011), the literature review ventures into art history, image studies, information studies, media studies, new materialism, photography theory, philosophy of science, science and technical studies, surveillance studies, and visual studies. The works of Vilém Flusser presented the most challenges to this doctoral research. Other theorists have been drawn on to explore, expand, and explain his theories and arguments. From photography theory, and media and visual studies,

seminal works by John Berger, Jonathan Crary, James Elkins, Susan Sontag, and John Tagg were found; from the new materialists, Jane Bennett and Karen Barad; and from philosophy of science, Lorraine Daston and Peter Galison.

From the diverse disciplines came different ways to look at photography and the photograph. Art history, photography theory, media studies, and visual studies provided information on the visual image, in particular the photographic image, allowing for a short history of photography to be written. Adding to this was a history of the camera, drawn from the fields of art, philosophy of science, and science and technology studies. The camera is a hybrid joining art and science; looking at it as such allowed a more critical view to develop. Media and information studies offered the research insights into the image as a source of information, and into recent technological advances in image production and consumption. New materialism and surveillance studies gave the research new ways of thinking about the camera and the practice of photography.

The research focus is the use of photography and the photograph in ECEC. It does not consider documentation and assessment other than where these activities are related to photography use. A focus on information and communications technology (ICT) is also beyond the scope of the research, excluding direct connections to the use of digital cameras, archival software systems, digital photographs, and the like. While the recent move to archiving learning story assessment in ePortfolios is of interest, once again this is only discussed in connection to the production and consumption of the photographic image. Similarly, societal changes in the way information is consumed and controlled in digital spaces is beyond the scope of this thesis. Surveillance capitalism, biometrics, livestreaming, and social media fall outside the parameters of this research. When it makes sense to the research's directive these topics are touched upon. There are many similarities between photograph use in pedagogical documentation and visual research methods such as photo elicitation and photo story. While identifying parallels and drawing on theoretical approaches from visual research, what the photograph is, how it is used, and what it does, remain as core concerns.

The research is concerned with the politics and ethics of representation, in relation to pedagogic use of photography and photographs to provide evidence. This thesis does not attend to interpretation of the representations presented in the photograph. Rather it questions the apparatus, processes, and beliefs involved in producing and consuming representations. While aiming to expand understandings of the photographic image as a valuable pedagogic tool, it also argues for the development of visual documentation practice which is explicitly critical and ethical. It is suggested one value of the photograph lies not in its ability to provide visual evidence of reality but, on the contrary, in its failure to do so. Realising the photograph as an abstract product of historic discourse, discursive practice, and technologies reveals its immaterial form (Flusser, 2011b). In recognising the photograph as immaterial it becomes possible to see the imprints of power and ideologies which have worked upon it, and work through photographers, and the processes of abstraction which remove photographs from the material realm.

This thesis argues the practice of photographing children to make learning visible is situated within a complex web of production, consumption, and abstraction. As identified earlier, a primary concern underpinning this research is the ethics of taking photographs of young children in early childhood spaces. Sparrman and Lindgren (2010) explored how children are currently exposed at multiple points and times across their lives to recording devices producing images. They ask two questions relevant to this research:

What might it mean to be brought up in an environment where being repeatedly looked at and monitored by video lenses is regarded as normal? Could the visual documentation practices used in everyday childhood institutions be regarded as training children to uncritical acceptance of surveillance techniques that are used with increasing frequency in western societies? (Sparrman & Lindgren, 2010, p. 248)

The normalised photographing of young children in ECEC essentially equates to normalised surveillance. Foucault (2000a) marked the emergence of examination and supervision (*surveillance*) with new concern for normality. This was framed around questions of what was normal (correct) behaviour, if subjects were achieving those norms, and, therefore, what the rules of how to act were. In ECEC, photography is part of good practice, and teachers

are expected to photograph children as part of documentation and assessment (MoE, 2004–2009, 2017b). It is now possible for constant surveillance of children to occur; with advances in technology, it is possible to view children in education spaces via webcams, track children’s food choices at school tuck shops, or track children’s physical whereabouts with either GPS microchips or apps installed on cell phones (Dowty, 2008). These surveillance technologies, Dowty (2008) suggested, impact not only children’s privacy but also their autonomy. More than ever, children are being watched and consequently made visible.

Recently, society has become increasingly information oriented, surveillance cameras are in operation across almost all areas of public life, data is gathered about us through various apps in digital spaces, we are tagged and geo-tagged by ourselves, our family, friends, and acquaintances. Corporations and governmental agencies alike gather this information to track the population and consumption. Photographic images are the algorithmic traces of evidence gathered, archived, and consumed in an information society (Flusser, 2011b). Digital photographs are included in our digital footprints. The social media phenomenon of “Sharenting”⁷ sees parents posting photographs and private details of their children online from birth, or before. These trends of high use of photography are reflected in early childhood educations’ use of the photograph to provide information through making learning visible in photographs.

Jay (1986) argued that “vision has been accorded a special role in Western epistemology since the Greeks” (p. 176). This, he suggested, can be seen in the English language with a prevalence of words connecting vision to knowing. It is this relationship between what is seen and what is known which defines this thesis’s concern for the powerful gaze at play upon the child learner. In *Discipline and Punish*, Foucault pointed out that it is the “apparent neutrality and political invisibility of techniques of power . . . [which] makes them so dangerous” (quoted in Gordon, 1994, p. xv). Theorising the “assessing gaze” as a technique of power at play upon the young child leads to questioning children’s participation

⁷ Sharenting is the oversharing by parents online about their children. Young children’s digital footprint often begins while they are still in utero with ultrasound scans of them being shared. Parents may even set up social media accounts for their children. The ethics of this phenomenon are complex and beyond the scope of this thesis.

in assessment. Are they powerful contributors or object/subjects upon whom assessment is made? Epistemological questions also are evident. What sort of knowledge about the child is formed from observing their learning? If the child performs as a “learning subject” (Buchanan, 2011) under the gaze of the assessing teacher then does that gaze become normative and the child normal or abnormal?

The practice of archival photography, specifically the “ways in which people are represented, arranged for the camera, made available to be gazed at, and placed in a system of signification which codes and classifies them” (Henning, 2004, p. 166), provides another perspective with which to analyse gaze and image in learning story assessment. The use of photography, to make children’s learning visible, necessitates children being “made available to be gazed at” (Henning, 2004, p. 166). This leads to concerns about children’s participation: are children powerful contributors or passive objects? Also, concerns for child privacy arise: are children able to refuse the assessing gaze and maintain and experience a private self? For Flusser (2011b), freedom was essentially the ability to reject, to refuse, fundamentally to say no. Tarr and Kind (2016) asked teachers to consider if they had formally discussed with children if they wanted to be photographed and explained they had the right to refuse. These concerns are explored in Chapters 7, 8, 9, and 10.

Thesis Organisation and Chapter Outlines

The thesis comprises two parts. The first part (Chapters 1–7) provides the theoretical framework, investigates the fields of photography theory and media studies, and photographing the human subject. The second part (Chapters 8–10) draws these perspectives and theoretical threads into the early childhood context. Chapters 1 and 2 introduce and position the research. Chapters 3 through to 7 are theoretical works. Chapter 7 marks a crossover to early childhood and the chapters becoming successively more focused on ECEC. The earlier chapters pick up several key Flusserian theories. These theories become core themes in the thesis. The following is a brief outline of each chapter:

Chapter 1 has set out the focus of the thesis and introduced key ideas and theories. Motivating concerns have been identified and the scope of the research defined.

Chapter 2 introduces and discusses the theoretical framework and sets the research questions. The framework comprises theories from a range of disciplines: apparatus, visual materiality, and historiography.

Chapter 3 explores Vilém Flusser's philosophy (1986, 2000, 2011b, 2013, 2015). Flusser's work on photography adds critical dimensions to this examination of the practice of photography and use of the photograph in ECEC. In *Towards a Philosophy of Photography* (2000) Flusser argued for philosophic engagement when practising photography. In this chapter, Flusser's (2000, 2011b) theories of *apparatus*, *information*, *technical image*, *abstraction*, *program*, and *freedom* are introduced.

Chapter 4 explores how scopic regimes have governed ways of seeing and knowing the world. Philosophy has a long and intricate relationship with vision. Looking back to the Renaissance, late Enlightenment, and early modern periods, examples from art history are used to extend analysis of the relationship between looking and knowing. This thesis argues the way we look can affect not only what we see and represent, but also how we see and what is valued as knowledge. Using the scopic apparatus of *Alberti's window*, *camera obscura*, *thaumatrope*, and *stereoscope* as examples, it is argued there is a conditional element to looking through apparatus: the views gained are never set and static but rather fluid, polymorphous, and dependent on apparatus.

Chapter 5 provides a history of the photograph, outlines the contemporary context, and identifies challenges inherent to photography and the use of the photograph. Differentiation is made between traditional chemical photography and current digital photography and between the act of taking a photograph and the artefact produced: the photographic image. The processes that occur in producing a photograph are extensive: selection of what to photograph, choice of a focus within this selected moment in time, followed by further selection of which photograph to choose for use, and so on. As the chapter identifies, the many processes involved in a photograph's production and consumption are highly systematic and concurrently subjective.

Chapter 6 examines the historic practices of atlas making and archiving. Both activities are explored as productive processes that use photography and the photograph for

evidence. The productive power of the atlas and archive are examined as apparatus through a historical review. The practice of pedagogic photography creates photographs—photographs that then need to be sorted, collated, and displayed in some manner by teachers to provide evidence and make learning visible. This practice is a highly selective process which has many commonalities with the practice of archiving. Using the notion of mechanical objectivity (Daston & Galison, 2007) the chapter explores how technology, such as the camera, has been looked to as a means of providing objective “true” evidence. Once again photography and the photograph are exposed as highly systematic and subjective and, thus, productive and prescriptive.

Chapter 7 explores how the camera influences interactions between the photographer and the subject photographed through Foucault’s (1977) theory of panopticism. Photography and the photograph have a troubled past, emerging from scientific discourse and unequal power relations between photographer and those photographed (Kind, 2013; Sontag, 1977; Sturken & Cartwright, 2018). This historic inheritance informs a problematisation of the use of photography and photographs in ECEC. This chapter asks, after Cederman (2008), what it may mean for children if, in their interactions with teachers, there is a camera between them. This chapter also examines the rhetoric of making learning visible. Being visible is theorised as a condition created by photographing—the child is made visible to teachers, the self, and others, through the gaze of the camera and photographs.

Chapter 8 develops an ethics of image use in early childhood education. Looking to photography theory, visual studies, and early childhood education literature, theories about photography and the photograph are re-viewed. Common ways of using photographs are explored, compared, and contrasted. This results in identification of two discrete ways the photograph is commonly used: to provide evidence or to aid inquiry. Drawing on Flusser (2011b), connections are then made to the use of the photograph as redundant or informative.

Chapter 9 narrates the socio-political history of photographing children for assessment purposes. Links are made to other pedagogical projects of the time, within the global context, to explore the theoretical basis of KTP (MoE, 2004–2009). The original

intention of learning story assessment was to provide a method for involving and empowering the child (and family, and teachers) in the assessment process. This chapter looks through Flusser's theories of apparatus and techno-imagination at a range of documents in the KTP series (MoE 2004–2009) and Te Whāriki (MoE, 1996, 2017b). In doing so, insight into how photography and the photograph are positioned is sought. A reading of how multiliteracies, photography, and the photograph are discussed in the documents leads into an analysis of the tension between children's 'participation' in photography and their right to privacy.

Chapter 10 problematises photography for assessment in connection to Article 16 of the *United Nations Convention on the Rights of the Child* (United Nations [UN], 1989) which protects the right of the child to experience a private life. This chapter also highlights the importance of children participating actively in photo-based documentation, on their own terms. Through problematising photographing the child it becomes possible to consider children's right to privacy in a more critical way. By doing so, the possibility for power sharing becomes more tenable. Five tensions in current practice are discussed: a lack of professional development, the power of the photographer, children's participation in assessment, archived learning stories, and the visibility of young children.

Chapter 11 concludes the thesis with a summary and suggestions for practice of photography and use of the photograph in early learning settings.

Chapter 2.

Theories and concepts

This chapter identifies the focus, motivation, and aims of the research, the field of data the research works with, and how, and sets out the theoretical framework. The research is a philosophical enquiry of photography and the place it has come to hold in pedagogy within ECEC. The research draws heavily on Flusserian theory and philosophy. In conducting this research, an initial reading of KTP (MoE, 2004–2009) and scholarship around photography and the photograph was undertaken. From that exploration came the development of a framework through three theoretical lenses. The lenses were used to develop a methodological “apparatus.” Apparatus is a key Flusserian theory, and one the research works with variously as camera-apparatus, archive-apparatus, curriculum-apparatus, and state-apparatus. The methodological apparatus introduced at the end of this chapter is akin to a scopic device in that the different lenses are changeable and provide diverse ways to view the research topic.

The lenses are: apparatus, visual materiality, and historiography. The lenses are used to examine apparatus of photograph production and consumption, the complexity of visual materiality, and the historic layers of current knowledge, beliefs, and misconceptions about photography and the photograph. Pauwels (2011) emphasised the importance of grounding visual research projects theoretically, suggesting this must go beyond methods of visual analysis to also address the area of study. In the case of this thesis, the area of research is the photograph, in the form of digital photography, and its everyday use to gather and provide information about young children in ECEC in Aotearoa New Zealand.

This philosophic enquiry into the use of photography and the photograph as a pedagogic tool explores Flusser’s (2011b) theory that post-industrial human has slipped into an imaginary zone of concepts and abstractions. The epistemological tensions of this research are therefore themselves an object of study. Philosophy as method thinks with and about thinking (Koro-Ljungberg et al., 2015). The notion of photographic truth, i.e., that the

camera does not lie (Fairclough, 1989; Goldstein, 2007) is contested. In doing so, the relationships between what can be known and the knower are examined. This thesis argues for the importance of philosophy in education and what it can bring to ECEC use of photography and the photograph.

Research Focus and Motivation

This research focuses on the practice of photography and use of photographic images in early childhood spaces in Aotearoa New Zealand. As noted in the previous chapter, KTP (MoE, 2004–2009) was published as a resource for early childhood teachers. While early childhood teachers readily embraced digital technologies in their assessment practices (Carr et al., 2003; Carr & Lee, 2012; Lee et al., 2002) the Ministry has not provided ongoing professional development for teachers on assessment (Cameron et al., 2016). Furthermore, policy guiding teachers' practice of this photo-based method in Aotearoa has been argued to lack ethical or critical discussions of visual elements (Perkins, 2009, 2012). Internationally, scholars have raised concerns that the increased visibility of children "through documentation affects children and childhood" (Lindgren, 2012, p. 330) and that the possibility of power inequality between the photographer-teacher and the photographed child perpetuates power imbalances (Flannery Quinn & Manning, 2013).

Advocacy for children's expression of autonomy and agency, and the ability to maintain a private self within ECEC spaces, motivates this research. Te One (2008) suggested that while KTP (MoE, 2004–2009) was aligned with children's rights, children's rights were more often "assumed" (p. 40, citing Te One, 2004, 2005, 2006) rather than explicitly referenced. Young children in ECEC are inevitably within spaces governed by regulatory frameworks requiring teacher's assessment of their learning. This is increasingly done with the aid of photographs. This research is driven by concerns that photography and photograph use in ECEC lacks critical depth. Not engaging with pedagogic photography from a critical perspective may undermine ethical use of the medium, perpetuate power imbalances, and neglect to optimise the great potential photography and the photograph hold for enriching learning and teaching.

Research Aims

First and foremost, this research sought to critically investigate use of photography and the photograph in early childhood education; with a particular focus on the ethics of pedagogic photography. In doing so it has pursued insights into what the photograph is, how it can be used, and what it does. Vilém Flusser's philosophy of photography has provided new ways to think about photography and photograph use in ECEC. While Flusser is well known as a media theorist, this thesis argues that his work is a valuable resource for education. Working with photographic images has, as Flusser (2011b) predicted, become the new normal of the post-industrial world we now live in. The photograph has infiltrated most areas of society and education is no exception. Understanding the photograph aids in realisation of its potential as a pedagogic tool. Understanding the photograph also assists in ethical use of this powerful medium.

Secondly, this research aimed to examine how photography and photographs are used, and suggested to be used, in KTP (MoE, 2004–2009) and the early childhood curriculum document *Te Whāriki* (MoE, 1996, 2017b). This examination sought to find out how MoE positions photograph use in ECEC. It also questioned if an ethic of photography underpinned use, and suggestions for use, of photography and the photograph in the documents.

An initial review of the teaching resource KTP (MoE, 2004–2009) aimed to discern what information is provided to teachers on the use of photography and the photograph for visual documentation and assessment. Finding a lack of explicit support for using photography critically, the research then looked outside the discipline of early childhood education to discover theories and concepts important to an ethical practice of photography and use of the photograph. The findings from that inquiry were then introduced into the research as theoretical lenses to examine pedagogical photography and photograph use (i.e., apparatus, visual materiality, and historiography). They then contributed to the examination to the documents KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 1996, 2017b). Several questions were asked of the documents: What resources did they make available to

teachers to foster critical use of photography and the photograph? How did these documents suggest photography and the photograph to be used? Analysis was therefore looking for pedagogical discussion clearly engaged in the critical and ethical dimensions of photography and photograph use.

Research Workings

In designing the research several difficulties arose around how to select and analyse data. The solidity and knowability of data have increasingly been questioned as researchers move towards new ways of looking at how to make meaning (Jackson & Mazzei, 2012, 2013; Koro-Ljungberg, 2016; Koro-Ljungberg, Löytönen, & Tesar, 2017; Mazzei & Jackson, 2017). The nature of the photograph is similarly a contested site of knowledge. Rather than becoming overly focused on the meaning “contained” within photographic images this research takes a wider view to include the apparatus of photograph production. Of interest is the discourse informing practices of photographing children and using photographs pedagogically, and the productive power, that is, the agency, of the camera and archive.

Because a defining concern of this research is ethical use of photography and photographs in ECEC, how to enact an ethical study of photographs of children became an issue of concern. This provoked a different way of looking at the photographs and text explaining their use. The realisation came that to enact an ethical study of the photographs, even if they were in the public domain, meant moving beyond the content of the images. Therefore, the answer was to not study photographs of children, rather to look behind the photographs to the ways they were organised, the types of images presented, and the way photography and the photograph were positioned within ministerial discourse.

So, instead of focusing on photographs as pieces of data, the research refocused through a wider view of the documents—in doing so connections between the documents KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 1996, 2017b) were made. For example, use of headings, written text, font, images, and colour tied the pages of KTP (MoE, 2004–2009) together across the booklets. Also, intertextual referencing to the early childhood curriculum *Te Whāriki* (MoE, 1996) was made through the motif of woven flax and the discursive

themes running through the written text. Thinking about the use of the flax motif prompted a reconsideration. It encouraged looking at the bigger picture, and therefore also beginning to think about the apparatus “behind” the documents, in this case the MoE and historic discourse informing current practices.

The pages of KTP (MoE, 2004–2009) are framed by a motif of woven flax similar to the cover and internal pages of the original *Te Whāriki* (MoE, 1996). Within the booklets, the official voice of the document uses a more formal font than the learning story text which is instead reproduced in a font more like handwriting. The solution to not becoming overly focused on the meaning of photograph content came through comprehension of the photograph as a part of the program of a larger operational apparatus (Flusser, 2000). With this understanding, photographs were viewed to see what types of photographs had been selected for use, how they worked in combination with the discursive text, and what they did within the documents.

Pauwels (2011) discussed how visual research methods often focus on the represented content within images (i.e., the meaning); however, processes of image production, both technical and socio-political, are equally important and can offer further insights for researchers. Considering the instruments and systems behind image creation provides valuable data about “norms and values of the image makers and their commissioning institutions” (p. 13). Similarly, Gee (2011) described how images also act as discourse. Looking past the image itself to systems of production can reveal the intentions of image use. Gee suggested images can be used to create ideas about what is of value within societies.

Flusser’s (2015) metaphor of the bow describes these two aspects, photograph content and the processes behind production, as the meaning and the intention.⁸ Flusser described the tip of the arrow as containing the meaning within the image, with the action of releasing the arrow from the bow representing the producer’s intention behind the image’s creation. Focusing on either one of these components in its singularity ultimately results in

⁸ Flusser’s communication theory is discussed further in Chapter 3.

an interpretation of data which produces analysis relative to the selected data and approach. This means that partial analysis and results are produced.

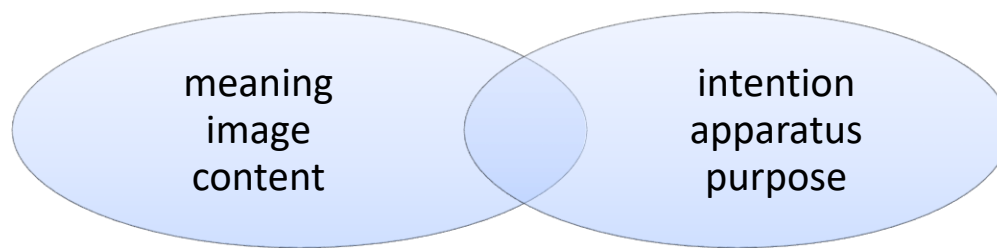


Figure 2. Two possible areas of analysis of images.

Both data, content of images and processes of production by apparatus, offer divergent information—as illustrated in Figure 2. The diagram also shows the potential to focus on the point of overlap, which provides and allows for complexity (Koro-Ljungberg, 2012, 2016), difference, and multiplicity; and illustrates the division of meaning and intention (Flusser, 2015). Also, it shows Pauwels' (2011) distinction between visual research which focuses on the content within images and the processes behind the production of content. Rose (2001) made a similar distinction. Drawing on Foucault, she proposed two differing approaches to discourse analysis of images:

discourse analysis I . . . tends to pay rather more attention to the notion of discourse as articulated through various kinds of visual images and verbal texts than it does to the practices entailed by specific discourses . . . It is most concerned with discourse, discursive formations and their productivity.

discourse analysis II . . . tends to pay more attention to the practices of institutions than it does to the visual images and verbal texts . . . It tends to be more explicitly concerned with issues of power, regimes of truth, institutions and technologies. (p. 146)

While this division is not absolute, it is noticeable in social science research. Therefore, Rose (2001) discussed the two independently due to their different approaches and results. Pauwels (2011) commented that, while the two types of data collection and analysis can be distinguished, both are similarly significant and offer potential to generate

new understandings for researchers. While also valuing both approaches, Rose (2001) noted several points of weakness of each: both tend to focus tightly and therefore create limitations on the research. For example, discourse analysis I, through its focus on the image itself as the site of research, does not look at the context of institutional production, i.e., the intentions of the producers and subsequent effects of images generated by these. In contrast, discourse analysis II seeks to uncover the productive discourses of “institutional apparatuses and institutional technologies” (p. 195) rather than images themselves. This results in research which does not take the image into consideration, thus neglecting a potentially rich data source.

The initial research activity pulled together theories and concepts to think about the politics and ethics of representation in pedagogic use of photography and photographs. This provided ways to think about the apparatus behind photograph production. It also gave the research insights into the multiple ways photographs could be studied. The content of an image theorised through the purpose of the image creates an overlap. By focusing on the point of overlap between the two, a more detailed and fecund analysis can be conducted.

“Data selection.”

While the focus of this thesis is philosophical inquiry, it draws on a strong empirical component—largely that of the KTP (MoE, 2004-2009) and *Te Whāriki* (1996, 2017b). This philosophical project has drawn data from personal teaching experiences in the field, as introduced in Chapter 1. The photograph as object has also been theorised as data. Two governmental publications have provided the research field: 20 booklets of assessment exemplars comprising KTP (MoE, 2004–2009); and two versions of the early childhood curriculum *Te Whāriki* (MoE, 1996, 2017b).

KTP (MoE, 2004–2009) was developed to work with the New Zealand early childhood curriculum; as such it is an “assessment framework consistent with *Te Whāriki*” (MoE, 2017b, p. 64). The publication informs early childhood teachers’ professional knowledge of practising learning story assessment in the Aotearoa New Zealand context and, consequently, the practice of pedagogic photography and use of photographic data.

The series of booklets constitutes a “professional development resource” (MoE, 2004a, p. 2) for early childhood teachers. KTP was selected due to these booklets being universally accessible to ECEC teachers.⁹ The decision to analyse KTP was also based on its appropriateness for answering questions about the use of photography in early childhood practices and settings. To begin with, all booklets were examined. From this initial work two stories were selected that resonated with the research focus. They are discussed in Chapter 9 in connection to children’s participation and privacy.

Both versions of the early childhood curriculum *Te Whāriki* (MoE, 1996, 2017b) served as key intertextual documents in this research. An intertext is a text, other than the primary text of analysis, which the community of users sees “to be of particular relevance to the interpretation of the given text” (Jewitt, 2009, p. 299). *Te Whāriki* is an important intertext to refer to when analysing KTP. *Te Whāriki* is of “particular relevance” in analysis of KTP, not only due to its use by the community of early childhood teachers in Aotearoa New Zealand, but also because KTP was developed in direct connection to the curriculum document *Te Whāriki* (Carr, 2001, 2012; Carr et al., 2003; Cullen, 2003). The revised curriculum now makes direct reference to KTP as an assessment framework “consistent with *Te Whāriki*” (MoE, 2017b, p. 64).

Comparison between the revised and original curriculum allowed data to be gathered showing changes to discourse informing the use of photography and the photograph in early childhood learning and assessment. The most relevant section of the revised document is “Assessment, planning and evaluation” (MoE, 2017b, pp. 63–65), presented in the earlier iteration as “Planning, Evaluation, and Assessment” (MoE, 1996, pp. 28–30). The selection was based, once again, on the potential of comparison for tracking changes to discursive practices of photography and photograph use in ECEC. The documents were also selected to show what resources for the ethical and critical practice of photography are evident in the documents.

⁹ KTP (MoE, 2004–2009) is a key resource for practising learning story assessment in early childhood education in Aotearoa as indicated in the early childhood curriculum (MoE, 2017b). All early learning contexts should have a hardcopy of the document due to its distribution by the Ministry and teachers are able to access it online in webpage or PDF format.

As noted above, the decision was made to not use photographs of children as data; rather, this research sought to look behind the images themselves to the way photographs were organised, presented, and positioned within ministerial discourse. Therefore, analysis was of the systematic use of photographs, not the decoding of meaning held within photographs.

“Treatment of data.”

This research takes a philosophic approach to reflect on photography use in ECEC. The selected documents, KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 1996, 2017b), were viewed to discern how photography use was presented to teachers in Aotearoa. Data from personal teaching experiences of using photographs in ECEC spaces was examined through tensions identified in the practice of pedagogical photography and the photograph as object. The photographic object as data was examined through the theoretical framework introduced in the following section and the theories of Vilém Flusser.

To make meaning and develop understandings, data was viewed through the various theories informing the research (Jackson & Mazzei, 2012, 2013). Working with data in this manner required cultivating an openness to variability and the ability to pause, refocus, and rethink. Data was considered as “something to be continuously changing, interrogated, and critically examined” (Koro-Ljungberg et al., 2017, p. 2). As much as data was “worked with,” data also worked on both research and researcher (Koro-Ljungberg et al., 2017). Flusser’s (2000, 2011b) theories of apparatus and abstraction became salient in interactions with data.

Initially, a process of identifying and recording textual data identifying, discussing, or suggesting the use of photography in learning story assessment was undertaken. This allowed commonalities and inconsistencies to be discovered across all the booklets of KTP (MoE, 2004–2009) and the two editions of *Te Whāriki* (MoE, 1996, 2017b). The key words focusing this process were photo-, photograph/s, photographer, photographing, photography, visual, image, priva-, ethic-. Systematic key-word searches of documents established an overview of how multiliteracy, use of photography, and photographs were positioned in the documents. Using “Ctrl+F” allowed all uses of the words to be located

within the text. The text surrounding the key word was then collated into a table. The table also noted frequency of key-word use. Analysis resulted in further words being added to the search: photographic and camera. The basis for key words being selected was informed by the focus on photography and photograph use within the documents.

Photographs were examined with a similar aim. Photographs in both KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 2017b) were reviewed to discover how photography and photographs were used, and how photographs were suggested to be used. This examination sought to understand the level and type of photography use in ECEC sanctioned by the MoE. Looking at the content of the photographs brought the intentions behind the selected images into focus.

Theories and Concepts Informing the Research

An eclectic set of theories from diverse disciplines and fields informs the methodology of this thesis. Following Jackson and Mazzei (2012), an attempt is made to think through the different theories forming the theoretical framework. According to Jay (2009), to be critical, an inquiry must “be willing to sacrifice theoretical purity in the service of interpretative fecundity” (p. 165). Theories allowing for different ways of thinking were drawn together in creating the framework. Jackson and Mazzei (2012) advocated using theory to think about data or using data to think about theory. Drawing on Deleuze and Guattari (1987) they suggested “plugging in” (Jackson & Mazzei, 2012, p. 1) as a process to accomplish this. Within this thesis, the notion of theoretical lenses is used. Changing the material form of glass, through grinding different shapes into its surface, such as in the telescope, microscope, or camera, shows how the view achieved through each optical apparatus is dependent on the shape of its lens. Similarly, changing theoretical lenses allows for different ways of looking at the research topic.

From the disciplines of photography theory, visual studies, and media studies, theories and ideas about the image and its contradictory abilities and limitations as a material object were sourced. The work of Vilém Flusser provided theories on photography and the technical image, the theory of apparatus, a way to theorise abstraction through the

posthistorical technical image, and ways to rethink freedom and creativity in connection to photography and the photograph. The concept of visual materiality is explored as a set of relationships which circle around the nexus of “photographic image.” This provided ways to theorise what the photograph is and what it does, how the camera and photograph work and are used, and possible human experiences of interacting with the camera and the photograph.

Foucauldian theory provided ways to think about the specificity and particularity of history and its ultimately productive power. Theories concerned with the provenance of discourse and discursive practices, archives, and the “subsoil” (Foucault, 1994, p. 263) formed by ways of knowing and enacting knowledge, provided the research with another way to think about photography and the photograph. Figure 3 shows an overview of these key concepts, which are explained in the following subsections. The three key concepts loosely connect to chapters within the thesis. These connections are made in the following sections explaining the key concepts.

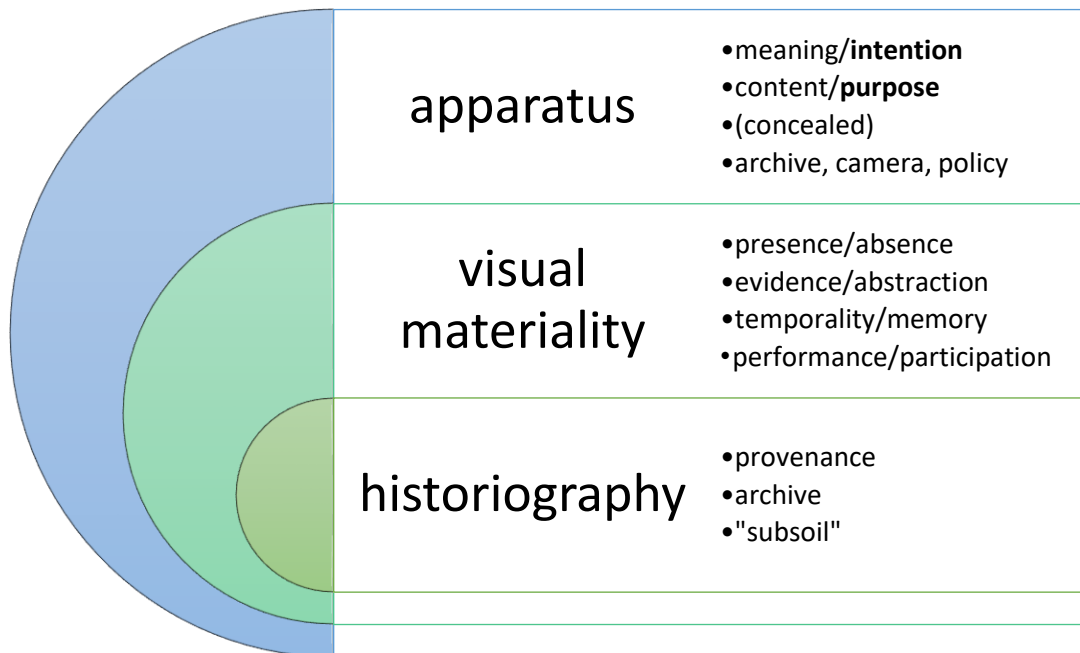


Figure 3. Key concepts of framework.

Apparatus.

Flusser (1986) argued that understanding the photograph requires first understanding the camera. Flusser (2000) theorised the camera as an *apparatus*. An apparatus “calculates probabilities” (Flusser, 1986, p. 330). Apparatus is discussed in the next chapter, where Flusser’s core theories are introduced. Examples of apparatus are management systems such as those informing governments or businesses, microchips informing the workings of technology, and the program allowing the camera to function (Flusser, 2000). Assessment tools such as the learning story and policy governing curriculum and assessment provision in ECEC, are also examples of apparatus. The photographer, or any functionary to the program of an apparatus, is considered by Flusser (2000) to be “inside their apparatus and bound up with it” (p. 27).

Flusser’s (2000, 2011b) binding of the human with apparatus, and the apparatus with the human, is in keeping with his argument we are in post-industrial times. We no longer stand beside the machines we use, rather we have entered closely integrated relationships. There is much scope here to develop Flusser’s thinking and propose a cyborg teacher-camera who captures photographs of pedagogic significance. However, this is beyond the boundaries set for this research. Instead, in later chapters, the construct of teacher-photographer is played with. This keeps the focus on photography and the photograph.

Flusser’s theories afford a historical view of image theory, and indeed a different view on history itself. Flusser (2002a, 2011b) argued invention of the photograph irreversibly changed the nature of history, i.e., understandings of history, and systems of ordering and recording historical knowledge. He conceptualised the analogue photograph as a “technical image.” He saw the changes to communication and information representation through technical images as a crisis society must address. He argued this must be done for humans to be able to directly relate once more with a world unmediated by codes and abstraction. At the crux of Flusser’s (1986) theories of photography and the technical image is the proposition the photographic image has no value itself—rather the information which the photograph carries is of value.

Flusser's (2000, 2011b, 1986) philosophy of photography argued abstraction occurs when images are used to represent information through apparatus. The information, or evidence, the photograph holds has historically been accepted as a true, real, and accurate mechanical record (Berger, 1972; Daston & Galison, 2007; Gómez Cruz & Meyer, 2012). However, more recent theorising reveals complications with this belief and suggests photographs are a powerful force and do not provide value-free representations of all that is before the camera lens (Fairclough, 1989; Flusser, 2012; Goldstein, 2007; Rose, 2001). Flusser's theory of abstraction is explored in Chapter 3 through what he termed the *posthistorical technical image*. There, use of the photograph as photographic evidence is contested by theories of abstraction and program.

Critical consideration of the visual image necessitates going beyond images themselves to question the practices, intentions, and contextual factors of their sites of production (Fairclough, 1989; Kress, 2012; Pauwels, 2011; Rose, 2007). Flusser's theory of apparatus acts as a provocation to look past the photographic image to the systems dictating the functioning of the camera and the photographer. The wider understanding of apparatus extends to the systems of organisation within which photographs are taken, controlled, and consumed. In Chapter 6, the use of the photograph as a technology of truth is examined. The historic use of the photograph to provide "truth" and organise systems of knowledge into atlases and archives is traced. For Flusser (2000), the apparatus operated through "intentions and interests concealed behind" (p. 24). The key point is that behind an apparatus is information and systems of operation. Finding what this information is, and what it does, or seeks to do, is imperative.

Visual materiality.

Drawing on the disciplines of photography theory, visual studies, and media studies, the photographic image and its contrary capabilities and limits as a material object are explored. Rose and Tolia-Kelly (2012), in the collection "Visuality/Materiality: Images, Objects and Practices", discuss the visual turn and the material turn in combination. Thinking through this theory allows for the photograph to be theorised as both visual *and* material.

Visual materiality is used by this research as an expression of the complexity of the photograph and its embeddedness in processes and technologies of its production. This complexity is examined in Chapters 5, 6, 7, and 8. Visual materiality is explored through a collection of arrangements grouping two aspects together, not in binary opposition but rather in a complex conglomerate around the nexus of “photographic image.” The arrangements developed from theories of image found to resonate with this research’s aim to discover critical theories for developing an ethical practice of photography and photograph use. The arrangements are: presence/absence, evidence/abstraction, temporality/memory, and performance/participation.

The camera’s ability to produce an image of whatever is present in front of the lens often denies what is absent from the image. The specific focus of the photographer and the programmatic limitations of the camera result in highly selective representations of reality being created. Also, while the photograph holds upon its material form visual representations of physical matter—bodies, landscapes, objects—the information is formed by abstracted concepts and symbols (Flusser, 2000, 2011b, 2012).¹⁰ The photograph provides a material object which stands in for people or things (Lister, 2007) showing that which is no longer with the viewer, or events which happened at a different time (Harper, 2002).

Used as a mnemotechnological tool, the photograph defies the temporality of human time and at times our cognitive retention. The photograph is also considered able to extend observers’ abilities to capture and record time, thus providing a repository for memory. However, the plausibility of the photograph also has a troubling ability to create false memories (Hessen-Kayfitz, Scoboria, & Nespoli, 2017; Strange, Hayne, & Garry, 2008). Berger (1972) suggested although the camera takes the “burden” of remembering, it records only to forget. The photograph’s ability to “store” memory was argued by Flusser (2011b) to be in defiance of the second law of thermodynamics because photographs: “are reservoirs of information that serve our immortality” (p. 18).

¹⁰ Chapters 3, 5, 7, and 8 think through these ideas to further explore the photographic object.

Gee (2011) suggested through images' organisation and interaction with words, places, and artefacts, they let "people enact or recognize different sorts of socially-significant identities and activities (practices)" (p. 189). In Chapter 7, the power of the photograph is explored as an active force that works upon bodies. Barthes (1980/2000) described being photographed as a performance, one where he constituted himself in readiness of being photographed as an image of himself. Buchanan (2011) offered a critique of the performative force children experience when they are photographed for learning story assessments, arguing children are produced as subjects in the process. Chapter 6 explores how the human subject has historically been photographed, while Chapters 7 and 10 ask what systematic observation and photographing by cameras may mean for the child in ECEC.

Historiography.

While the research takes a Flusserian approach, Foucauldian perspectives are used to further examine several tensions around the collection of photographic evidence: what knowledge is privileged through its selection, and how do systems of knowledge organisation add further layers of privilege? Foucault's (2000a, 2000b) theorising on power/knowledge, and how certain practices come to be important, also adds to the research. The key theories and concepts comprising the methodological framework grapple with the power inherent in systems and apparatus behind photographic image production, as much as they do the contradictory nature of the photograph and its role in knowledge production—of the self, as well as other people, places, and things.

Foucault (1971) suggested ruptures, changes, differences, and gaps as important occurrences to look for when undertaking an archaeological review. Flusser (2000, 2011b) identified such a rupture with the coming of the technical image. He proposed the technical image changed the way humans work with information because the technical image (the photograph) was different from traditional images. For Flusser, the technical image changed the tools we use, the ways we think, and the way we experience the world (Flusser, 2000, 2013, 2011b). Flusser's work is explored in depth in the next chapter. The following chapters draw on his ideas as they trace the history of photography and the photograph and examine

use of the photographic image to provide evidence, document corporality, and ascertain veridicality.

Foucault's (1971, 1972, 1977) methodologies of archaeology and genealogy offer researchers ways of looking at the past for answers to questions about the present. Koopman (2008) argued against the common division of archaeological from genealogical, suggesting instead their amalgamation creates a methodological expansion he conceptualised as historiography. While neither an archaeology nor genealogy, this thesis works within a Foucauldian curiosity of history and social practices. As such, it uses historiography as a theoretical lens to think about the history of photography and the photograph. Use of the photograph in early childhood spaces comes with inherited theories, concepts, and practices; photography is not historically neutral (Kind, 2013), and neither is the photograph a neutral object (Fairclough, 1989; Goldstein, 2007; Rose, 2001). The historic body of knowledge, as with all other socio-technological phenomena, inevitably forms the subsoil of discursive practices (Foucault, 1994). This history consequently informs photography use and photograph consumption, even if that historical residue is not explicitly identified, known, or understood (Kress & van Leeuwen, 2001).

The provenance of discourse and discursive practices (Kress & van Leeuwen, 2001) informing photography and photograph use are discussed in Chapter 5 which traces the development of photography. Chapter 6 examines the use of photography and the photograph in connection to photographing the human subject; while Chapter 9 explores the theoretical lineage of the use of the photograph in early childhood spaces in Aotearoa. Chapter 6 discusses archives and archival photography practices in connection to Flusser (1988, 2000, 2011b, 2012, 2015), Derrida (1995), and Foucault's (1972) theories.

Summary

The research seeks to think through the theories (Jackson & Mazzei, 2012, 2013) of apparatus, visual materiality, and historiography to examine photography and the photograph in connection to ECEC. The research questions that have guided this thesis emerged from the initial question and preliminary exploration of how photography and the

photograph are used and promoted in ECEC in Aotearoa New Zealand. From this, significant concerns were identified which led to the next question: Are teachers provided with enough resources to support the critical use of photography in their pedagogy? This then became a focus of philosophical inquiry: what theories can support a critical understanding and ethics of pedagogic photography in ECEC?

Chapter 3.

Into Vilém Flusser's universe of the technical image

This chapter focuses on the photograph and the programmatic power of the camera-apparatus upon the photographer through the work of Vilém Flusser.¹¹ His philosophy of photography offers vital arguments and intriguing challenges for analysing the dramatic upsurge of photographic images in the last part of the 20th and early-21st centuries. Flusser's *Toward a Philosophy of Photography* (2000) is a unique, and arguably underutilised, contribution to photography theory (Finger, Guldin, & Bernardo, 2011). Flusser's philosophical work provides this thesis several key theories and concepts: apparatus, information, technical image, abstraction, program, and freedom. These become central theories to the thesis.

Poster (2011) proposed Flusser travelled a path of investigation other theorists of his time neglected. Compared to his contemporaries he “stands out, with only a handful of others, as one who presciently and insightfully deciphered the codes of materiality disseminated under the apparatus of the media” (p. xi), especially as his arguments differ from those of popular photography theorists (Ströhl, 2002). Flusser's conception of the photograph as a technical image looked beyond the prevalent notion of the photograph as a “mimetic image aiming for objectivity” (Finger et al., 2011, p. xxii) and instead focused on the abstraction of information into technical images by apparatus and the resulting change to human consciousness. His work provides valuable theories with which to theorise the use of photography and the photograph in ECEC.

Flusser's (2000) philosophy of photography comprises the concepts technical image, apparatus, program, and information. Technical image refers to a “technological or mechanical image created by apparatus” (p. 85). Apparatus refers to a “plaything or game

¹¹ Vilém Flusser (1920–1991) was a Czechoslovakian-born philosopher. He fled Prague in 1939 and sailed to England and later Brazil with his wife-to-be, Edith Barth, and her family. Flusser's contribution to academia is mainly within Portuguese, German, and French publications. He did publish in English and more of his works are becoming available to English readers. Primarily thought of as a media theorist in Germany, and known for his works on communication, language, and art by a Portuguese audience, Flusser's work is introduced in this thesis as an untapped resource for the philosophy of education.

that stimulates thought . . . organization or system that enables something to function” (p. 83); and program refers to a: “combination game with clear and distinct elements [*trans.* A term whose associations include computer programs, hence the American spelling]” (p. 84). Using these concepts, Flusser (2000) defined the photograph as means to *inform*, as “an image created and distributed by photographic apparatus according to a program, an image whose ostensible function is to inform” (p. 76). These concepts are discussed later in this chapter.

Flusser was a polyglot who used translation between languages to assist his process of theorising and writing (Ströhl, 2002). His use of the word *ostensible* in his definition of the photograph is therefore a meaningful choice of word. It illustrates Flusser’s concern that redundant information created through the program of the camera-apparatus is uncritically accepted by consumers of photographic images. The technical image “ostensibly” provides information because the manipulative and programming power of the photograph acts to “suppress our critical awareness” (p. 64) so that we remain functionaries of the camera-apparatus. The “information” is not informative in a Flusserian sense as it is created within the program of the camera’s possibilities.¹²

The concept of apparatus is a key thread in Flusser’s thinking. Exploring the etymology of the word apparatus, Flusser (2000) returned to the Latin verb it is derived from, *apparare* (to prepare), to arrive at a definition of the apparatus as a “thing that lies in wait or in readiness for something” (p. 21). With the camera-apparatus waiting to be used for photography, suggesting etymology is not enough to explain his use of the term apparatus, Flusser extended his definition through ontological consideration. This resulted in an enclosure of the apparatus as it exists within the world, with Flusser arguing that apparatus are cultural productions. Therefore, the camera-apparatus is not only an element of culture, but the culture which produced it is identifiable within the camera. Apparatus is explored further in the following section along with the other key concepts this thesis works with.

¹² Later chapters discuss this important point in more depth.

A Philosophy of Photography: Identifying Key Concepts

Flusser's (1986, 2000, 2011b) philosophy of photography argued abstraction occurs when photographic images are used to represent information through apparatus. Flusser's central ideas are introduced here, in large part, through the lexicon he introduced in *Towards a Philosophy of Photography* (2000) and expanded on in *Into the Universe of Technical Images* (2011b). This thesis's philosophic engagement with the practice of photography and the consumption of photographic images is concerned with how images are created: the intention, technologies, and purposes of image production. As identified above, key concepts significant to this thesis are: apparatus, information, technical image, abstraction, program, and freedom. These concepts are important as they offer a way to think about the processes involved in producing and consuming photographic images. They are discussed in turn in the following section.

However, first Flusser's theories of communication and post-history are outlined—these theories are important in understanding Flusser's work. Both theories are discussed throughout the following sections in conjunction with the key concepts. After outlining Flusser's theories of communication and post-history, the key concepts identified above are then discussed. These key concepts run through this thesis. Later chapters pick up the ideas and apply them in an analysis of what the photograph is, how it is used, and what it does.

Theories of communication and post-history.

Flusser's (1998) theory of communication is presented in *Kommunikologie*. As no English translation of the text has been published to date contributions of those scholars engaging with Flusser's work provided welcome insight into his thinking.¹³ Several chapters from *Kommunikologie* have been translated into English in edited collections, and due to Flusser's practice of translation across languages, several texts in English have the genesis of *Kommunikologie* (or perhaps vice versa). Flusser's theory of post-history is explored in *Post-History* (2013), in a collection of essays, as well as pervading most of his other works.

¹³ While many works are in German there is growing use and critique of Flusser's works in English texts.

Theory of communicology.

Flusser introduced the neologism *communicology* in a series of lectures over 1977–1978 before the consequent publication of the text *Kommunikologie* (Lanigan, 2008). Flusser’s theory of communication drew on Husserl’s reductive phenomenology (Ströhl, 2002), and his philosophising was grounded in phenomenology (Finger et al., 2011). Communicology is the study of the structure of meaning, the “how” rather than the “what” of human communication. Flusser was interested in how information was produced, processed, stored, and transmitted. Specifically, the codification and abstraction of information through programs prescribed by apparatus. For Flusser (2002b), communication is essentially an “artificial process . . . [through] symbols ordered into codes” (p. 3). However, due to the everyday occurrence of communication we tend to forget we are engaged in artifice or, as Flusser suggested, being “unnatural” (p. 3). At the core of his theory is the idea that communication structures have changed over time in relationship to the way information is recorded and shared.

Theory of post-history.

Flusser’s (2011b, 2013) theory of post-history detailed changes to how information is communicated in connection to technologies of representation. Central to Flusser’s theory is that history is no longer linear but rather circular and that writing has been replaced by the technical image. Flusser (2011b) stated the “linearity of history is turned against the circularity of technical images” (p. 57). The model he developed to show this change is discussed further in the section exploring abstraction. Maltez Novaes (2013) commented that Flusser’s *Post-History* theorised there had been a “shift in our worldview due to the impact of the technical apparatus” (p. xii). Maltez Novaes suggested Flusser saw the concept of “program” as the condition of our time. Apparatus are operated by programs, so, “history transcoded into program becomes eternally repetitive” (Flusser, 2013, p. 97). This is key in Flusser’s theory of post-history.

However, Flusser (2013) cautioned us to not waste time on working out who the programmers are but rather to accept the absurdity of the situation and become players of the game. In his words: “Whether we continue to be ‘men’ or become robots depends on

how fast we learn to play: we can become players of the game or pieces in it” (p. 26). To become a player, the rules of the game must first be established. Therefore, this part of the thesis traces the history of the photograph to discover what the photograph is, seeks critical insights into how photographic images are used, and develops understandings of what the photograph can do. Flusser argued for development of a “technological imagination” (p. 98) as an antidote to the programming apparatus. This provides the ability to decode technical images.¹⁴

A Philosophy of Photography: Introducing the Key Concepts

According to Ströhl (2002), Flusser wanted humanity to create the “specific communicative and technological conditions for a society of free, independent, and responsible citizens” (p. xiv). Flusser (2000, 2011b, 2013) advocated for philosophers and critical thinkers to actively engage with the changing ways technical images and apparatus presented and produced information. He strongly believed that the communicative relationship between discourse and dialogue needed to be a rebalanced (Flusser, 2013). This could be achieved, in this thinking, if actions were taken to play against the apparatus we operated and were functionaries to. The following sections explore the concepts of apparatus, information, abstraction, program, the technical image, and freedom as Flusser theorised them.

Apparatus.

Flusser (1986) argued that to understand the photograph the camera must first be understood. He theorised the camera as an apparatus (Flusser, 1986, 2000). For Flusser, there is no division between the photographer and the camera (Flusser, 2000), rather an “apparatus-operator complex” exists (Ströhl, 2002, pp. xi–xii). In *Towards a Philosophy of Photography* (2000) Flusser argued for philosophic engagement when practising photography. This allows for the realisation that “there is no place for human freedom within the area of automated, programmed and programming apparatuses” (p. 81). Flusser

¹⁴ Techno-imagination is explored further in Chapters 6 and 9.

asserted it is only through philosophic enquiry and awareness of photography, and the camera-apparatus, that it becomes “possible to open up a space for freedom” (pp. 81–82) beyond the automated and automating limitations of the apparatus.

Examples of apparatus are seen in management systems such as those informing government or businesses, or in microchips which inform the workings of technology (Flusser, 2000). Digital cameras, smart phones, assessment tools such as the learning story and national curriculum, or digital archiving software, are also examples of apparatus.

Flusser provided a definition of his use of this term in the glossary of *Towards a Philosophy of Photography* (2000); explaining apparatus as a

plaything or game that stimulates thought [*trans.* An overarching term for a non-human agency, e.g. the camera, the computer and the “apparatus” of the State or of the market]; organization or system that enables something to function. (p. 83)

Another dimension of Flusser’s (2000) apparatus is its embedded, and concurrently encompassing, nature within the processes of production and consumption. Flusser put forward two types of cultural objects: “ones that are good for consumption (consumer goods) and the ones that are good for producing consumer goods (tools)” (p. 22). When considering the camera-apparatus as a tool Flusser was cautious. This was due to the capacity of the photograph to hold information. Questioning if the photograph is a consumer good and the camera-apparatus a tool, Flusser asked if the camera-apparatus is a certain type of tool since information is contained within the photograph. Defining tools as “extensions of human organs” (p. 23), alongside a review of the changes brought about by the Industrial Revolution (whereupon tools became more technical and known as machines), Flusser asked is the camera a ““seeing machine’?” (p. 23). While this would appear to be a good definition of the camera, Flusser was not confident of its accuracy in explaining the camera as an apparatus due to the function of the camera-apparatus to produce information.

Flusser (2000) argued these questions do not comprehend the “basic function” of the apparatus “because they arise out of the industrial context” (p. 24). So, while the questions

he asked provide several insights into apparatus,¹⁵ Flusser reasoned we must think in post-industrial ways about the apparatus in forming a definition. The tools and machines of the Industrial Revolution acted to take and remake objects, to change them. However, the apparatus does not operate that way, the “intention is not to change the world but to change the meaning of the world. Their intention is symbolic” (Flusser, 2000, p. 25). He argued the photographer does not work with the camera in the traditional pre-industrial understanding of the word. Instead, the photographer works with the camera to “create, process and store symbols” (p. 25). Flusser suggested that in analysis of cultural issues the “category of ‘work’ must be replaced with the category of ‘information’” (p. 25).

Photographers were considered by Flusser (2000) to be “inside their apparatus and bound up with it” (p. 27). He developed this view of the photographer in contrast to his positioning of “manual workers surrounded by their tools and industrial workers standing at their machines” (p. 27). The motivation of the photographer, suggested Flusser, is not based on a curiosity about the world through the camera, but a desire to explore, and test, the camera-apparatus and its potential to produce information. Yet he also saw the camera not as a tool but as a toy, a “plaything.” However, the photographer does “not play with their plaything but against it” (p. 27). It is only through playing “against” the camera that freedom can be found. Playing against the camera requires photographers to move beyond the possibilities offered by the camera program in a bid to transgress this boundary and create new possibilities for information creation.

Flusser (2000) suggested taking photographs has become a mania resulting in a “blinding” of humanity. The more frequent and automated taking photographs becomes, “the more difficult it becomes to decode photographs: Everyone thinks there is no need to decode photographs, since they know how photographs are made and what they mean” (p. 59). He argued this is not the case. Knowing cameras take photographs is normalised knowledge. The normality of taking photographs makes it difficult to critically engage with the act and its results, i.e., the programming nature of the camera-apparatus and the technical

¹⁵Specifically, that: “Apparatuses simulate technological organs . . . Human beings function as a function of apparatuses . . . There are intentions and interests concealed behind apparatuses” (Flusser, 2000, p. 24).

images produced. Flusser contended the reason it has become so difficult to decode photographs is that people have come to “think photographs are an automatic reflection of the word” (p. 59). However, Flusser argued to the contrary, suggesting the camera-apparatus produces photographs which

represent transcoded concepts that claim to have been reflected automatically from the world onto the surface [of the photograph]. It is precisely this deception that has to be decoded so as to identify the true significance of the photograph, i.e. programmed concepts. (p. 44)

When the existence of a program behind the production of photographs is identified, it becomes possible to better analyse the camera-apparatus (Flusser, 2000). Thinking past the images presented on surfaces (paper and/or screens), the photograph can be understood as a “symbolic complex made up of abstract concepts, dealing with discourses and re-encoded into symbolic states of things” (Flusser, 2000, p. 44). The symbolic complex includes the intentions of not only the camera-apparatus but also the discursive practices and understandings of the photographer and the surrounding environment.

Information.

Flusser (2011b) suggested the way information is contained and shared has changed due to increased use of photographic images and digital networks. With the increase of image production, the processes of information abstraction have also increased. Flusser suggested that information has become immaterial in the sense that information has left the material bounds of the image-object and entered the realm of conceptions, calculations, and symbols.

The photograph, as technical image, is defined by Flusser (2000) as a “flyer like image created and distributed by apparatus” (p. 84). Flusser’s conception of the photograph as a “flyer” is based on his understanding of the photograph as a copy of the information contained upon it. Because the original film negative, or digital raw file, of the photograph can be used to produce and distribute countless copies of the image, the photograph itself becomes of little value. It is an “immobile and silent surface patiently waiting to be distributed

by means of reproduction” (p. 49). This distribution is a simple task, and, as many photographs can be created from the information held within the photographic negative, photographs can be distributed with no concern for losing the information they hold on their surfaces. So, for Flusser, while the images presented on advertising billboards, for example, are visually powerful, the power remains with the entity which produced, or holds the copyright for, the image as they retain the original information—therefore being able to reproduce, at will, the photographic images displayed.

Flusser’s (2000) study did not deal with snapshots, nor with “redundant” photos. Redundant photos “carry no new information and are superfluous” (p. 26). Rather, his analysis focused upon photographic images produced to hold information. These informative photographs are produced by photographers who play against the program of the camera-apparatus. The camera-apparatus, like other apparatus, “produces symbols: symbolic surfaces that have in a certain way been prescribed for it” (p. 26). Flusser theorised this prescription of symbols as a copious but limited scope of potential photographs existing within the program of the camera, suggesting, with the taking of “every (informative) photograph, the photographic program becomes poorer by one possibility while the photographic universe becomes richer by one realization” (p. 26).

Flusser (2000) classified the photograph as “the first of all post-industrial objects” (p. 51), stating that the defining feature of the post-industrial epoch is the value of information over the material object. Because the information held within the photograph “sits loosely on the surface and can easily be conveyed to another surface . . . the photograph demonstrates the defeat of the material thing and the concept of ‘ownership’” (p. 52). Flusser argued this shift means it is now not the owner of the photograph but the creator of the information it shows who has the power. Flusser suggested concerns of “ownership and distribution of objects (capitalism and socialism) are no longer valid, evading as they do the question of the programming and distribution of information (the information society)” (p. 51). He went on to argue we must now reconsider “our traditional economic, political, moral, epistemological and aesthetic values” (p. 52) in light of the new value of information and the power of the programmer of the information presented in photographic images.

Due to apparatus changing the “meaning of the world” (Flusser, 2000, p. 25), rather than the material of the world, Flusser argued for re-evaluating how “work” is understood in the posthistorical world. As the photographer does not work with the camera-apparatus in the established sense of the word, but rather uses the camera-apparatus to “create, process and store symbols” (Flusser, 2000, p. 25) the past notion of work has evolved to that of information creation.

The technical image.

The phrase technical image was used by Flusser (2000, 2011b) to differentiate between traditional and technical images. The change from traditional to technical images is attended to in the following section on abstraction. As the technical image is core to Flusser’s theories it is also discussed through other key concepts in numerous places.

Flusser (2000) defined the technical image as a “technological or mechanical image created by an apparatus” (p. 85). Flusser discussed the technical image in a short chapter in *Towards a Philosophy of Photography*, before expanding this critique in the publication *Into the Universe of Technical Images* (2011b). Flusser (2011b, 2013) suggested technical images have supplanted texts in the role of informing society and citizens. He considered technical images ontologically different from traditional images, claiming “tradition images signify phenomena whereas technical images signify concepts” (Flusser, 2000, p. 14). Flusser proposed traditional images are first-order abstractions and technical images are third-order abstractions.

Flusser (2011b) entitled the preface to *Into the Universe of Technical Images* “Warning.” He cautioned readers that the society forming around the technical image will be a utopia. He used the word in the sense of “groundlessness, the absence of a point of reference” (p. 3). Claiming that in the future “existential interests . . . will focus on technical images” (p. 4), he suggested the coming utopia “will no longer be found in any place or time but in imagined surfaces, in surfaces that absorb geography and history” (p. 4). This change in human consciousness is based on a change in what is of value to society: information becoming the most valuable commodity. This can be seen in current concerns about big

data, data privacy, data sharing, data capitalism, and “leaking” of information from governmental or corporate organisations into the public arena. The utopia Flusser (2011a) wrote of in 1985 is relatable to the current time. Surrounded by technical images, knowledge generation and comprehension are now often “based” upon the photographic images produced by, about, and for us.

Abstraction.

Abstraction is a core concept to Flusser’s thinking. Creating technical images causes abstraction from the concrete lifeworld, resulting in images which are symbolic calculations derived from theory. Flusser (2011b) proposed an understanding of abstraction was crucial in developing an understanding of the photographic universe. Being in the photographic universe means we experience, know, and “evaluate the world as a function of photographs” (Flusser, 2000, p. 70). This section provides an in-depth exploration of Flusser’s thoughts on the process of abstraction.

Flusser (2011b) theorised perceptions and experiences of reality changed due to a change in human consciousness. He argued this began with the first use of the hand to physically hold back or seek to change reality. This theory underpins the following discussion, while Flusser’s call for a move beyond the classifications of “true-false, real-artificial, or real-apparent in favor of such categories as concrete-abstract” (p. 38) provides a hanging point.

Into the Universe of Technical Images (Flusser, 2011b) introduces a conceptual model with five components. Flusser used a metaphor of a ladder with five rungs to help explain how he understood the abstraction process from text to image: a ladder upon which the human being has climbed further and further away from the concrete into the abstract. Flusser suggested this resulted in the “alienation of human beings from the concrete” (p. 6). The model provides this thesis a way to think about the photograph and its use. Positioning the photograph as an abstraction of materiality allows for reconsideration of the use of photographs. Later chapters of this thesis use Flusser’s model of abstraction to examine the photograph in connection to its use for providing evidence, documenting corporality, and

ascertaining veridicality. These uses are materially based. That is, they seek to define the material reality of something. Flusser suggested the photograph is no longer a material object. In later chapters (Chapters 5, 8, 10), this thesis explores what this may mean in relation to the practice of photographing the child subject for assessment purposes.

The model was presented by Flusser not as a historical timeline, but rather to demonstrate the movement from one rung to the next; show the difference between traditional images and technical images in their relationship to concrete reality; and importantly, to highlight that technical images are a completely different media than that of traditional images. Flusser suggested this changes the very nature of the meaning contained within technological images, precipitating a cultural revolution. The model is presented here in full before a discussion of its steps, spaces, and exchanges.

- *First rung:* Animals and “primitive” people are immersed in an animate world, four-dimensional space-time continuum of animals and primitive peoples. It is the level of concrete experience.
- *Second rung:* The kinds of human beings that preceded us (approximately two million to forty thousand years ago) stood as subjects facing an objective situation, a three-dimensional situation comprising graspable objects. This is the level of grasping and shaping, characterized by objects such as stone blades and carved figures.
- *Third rung:* *Homo sapiens sapiens* slipped into an imaginary, two-dimensional mediation zone between itself and its environment. This is the level of observation and imagining characterized by traditional pictures such as cave paintings.
- *Forth rung:* About four thousand years ago, another mediation zone, that of linear texts, was introduced between human beings and their images, a zone to which human beings henceforth owe most of their insights. This is the level of understanding and explanation, the historical level. Linear texts, such as Homer and the Bible, are at this level.

- *Firth rung*: Texts have recently shown themselves to be inaccessible. They don't permit any further pictorial mediation. They have become unclear. They collapse into particles that must be gathered up. This is the level of calculation and computation, the level of technical images. (Flusser, 2011b, pp. 6–7)

The first step of abstraction: Division of the world and the subject.

Flusser's (2011b) model of the abstraction process begins with the human being "immersed in an animate world, four-dimensional space-time continuum" (p. 6). The first rung on Flusser's theoretical ladder saw the early human as existing within the environs, experiencing life in a "concrete" (p. 6) manner. Words with a similar meaning to concrete help in analysing this statement. Words such as: real, tangible, existing, actual, material, solid, and physical are all synonyms for concrete. Thinking laterally, the word *concrete* also speaks of binding and coalescence. These meanings are suggestive of the conception of early human's immersion in a world without divisions. Of particular relevance is a definition of concrete as "existing in a material or physical form: not abstract" (Soanes & Stevenson, 2015, p. 360), alongside the definition of abstract as "existing in thought or as an idea but not having a physical or concrete existence" (Soanes & Stevenson, 2015, p. 7).

Flusser (2011b) made a distinction between other species and human beings, whereby human beings have hands that can be used to separate the subject from the completeness of the lifeworld. This difference means the human can mediate the environment she exists within, she can "hold it at bay, bring it to a stop (so the environment is no longer relevant)" (p. 8). The human on the first rung of Flusser's conceptual ladder takes the first step towards abstraction when she extends her hands in an active way "against the world" (p. 8). Flusser theorised this moment as an action which consequently created the fissure between the human subject and the objects and environ which surround her. By her action she forms a division to reality, what Flusser calls the "lifeworld . . . into two areas: the area of the fixed, understood object and the area of the 'one who understands'" (p. 8). This act "abstracts the subject from the lifeworld, brackets the subject out, and what remains is the three-dimensional universe of graspable objects, the problem to be solved" (p.

8). This disunion of the “universe,” into the subject as knower and object as knowable, constructs, for Flusser, a division between subject and object.

The second step of abstraction: Through the eye of the hand.

For Flusser (2011b), the second point of abstraction occurred through the eye of the human subject with the surrounding environment and objects. Along with the hands, interactions by the eye are understood by Flusser to be fundamental to our relationship with the world. He believed the “hands do not handle things blindly but are monitored by the eyes” (p. 8). The relationship between these two sensory faculties is complex. The eye can see before the hands take action to touch, yet the hands can feel when the eyes cannot see. And while the eye sees “only the surfaces of objects to be grasped” (p. 8), it can also see beyond that which the hands can hold. He proposed synchronisation between “hand and eye, doing and seeing, practice and theory is a fundamental principle of existence” (p. 8).

It is at this second step that a human concern with grasping, both objects and understandings, occurred. This resulted from a new focus on observation and measurement of the environs and the objects within it; the eye being the foremost “tool” at this point for these activities. Another capability of the eye is that it sees relationships. It is also instrumental in the construction of representations through its gathering of information. Writing of the processes of the eye, Flusser (2011b) described another organisation of the subject/object binary: the human subject and the situation. Flusser called the situation the eyes see a “worldview” and noted this worldview can be carefully observed for the purpose of “producing from it a two-dimensional realm of images between the situation and the subject: the universe of traditional images” (p. 8). This step changed human beings’ experience of the material world. At this point, the human began to transition into the space between self and object.

Taking the third step: Reaching beyond the surface of the image-object.

On the third rung of Flusser’s (2011b) model of abstraction the human being “slipped into an imaginary, two-dimensional mediation zone between itself and its environment” (pp. 6–7). At this third step, images come to “stand before things . . . [meaning we] must therefore reach through images to change things” (p. 8). The idea that images are now

positioned in front of things, be those things people, places, or objects, suggests life is experienced and mediated through image. Thinking about this interaction between image-object and the subject it is helpful to take a step backwards to the second rung of the ladder.

The previous section quoted Flusser's (2011b) positioning of the traditional image within a two-dimensional zone which is "between the situation and the subject" (p. 8). Here, on the third step, he again placed the image within an in-between place, suggesting the human subject must now enter and pass through the image before change can be made in the world. Flusser stated this place is an "imaginary . . . zone" (p. 6). This further establishes the universe of the technical image as he conceptualised it, which is discussed further in the following section on the fourth and final step of abstraction.

For now, focus remains on what it might mean to reach through images we can hold in our hands. Flusser (2011b) detailed the paradoxical nature of this quest when he explored the image and its tangibility—while images seem to be a solid object they are not "graspable. They have no depth; they are only visible" (p. 9). However, the image can be held: "their surfaces can be grasped with fingers" (p. 9). Not only can the image's surface be grasped, human hands that take these "representations out of the surface to grasp them can count them and account for them" (p. 9). This suggests that the image can be reached through so that what is on the surface becomes available.

However, reading this notion of "reaching through the image" when considering the idea of change reveals another possible layer of meaning in Flusser's words. When he writes we "must therefore reach through images to change things" (2011b, p. 8) could he mean we now reach the world through the image? In other words, do we change, or grasp and touch, the world through the image itself? In contemplating this first let's return once more to Flusser, quoting his thoughts at length.

Grasping and acting follow from representational images, and since images are two-dimensional, the representations in them form a circle, that is, one draws its meaning from the next. Such a relationship of exchangeable meanings is magical. Grasping and changing the environment through images is magical action. To return to things without mediating through images, to take the magic away from the action,

representations must be torn out of the magical context of the pictorial surface and set to another order . . . Grasping involves a translation from representations into concepts, an explanation of images, an unravelling of pictorial surfaces, reducing the image to a linear one-dimensionality. The result is a conceptual universe of texts, calculations, narratives, and explanations, projections of an activity that is not magical. (2011b, p. 9)

As seen in the above extract from *Into the Universe of Technical Images* (2011b), Flusser considered the circle of interpretation between images as magical. Also, the image itself was magical, and the action of mediating through the image was a magical act. The act of grasping images, of lifting them “out of the surface” (p. 9), was an act of violence against this magic. He considered this an action that took the magic out of the image, resulting in the represented meaning being conceptualised and explained. One gets the sense from Flusser’s thinking that the image is explained away through this process.

Flusser (2011b) stated further abstraction “reduces” the image and leaves only concepts, suggesting the process of abstraction leaves us with a flat and dull residue of a once rich and meaningful image. This leads to a concern of how to reach through the image in an enriching manner. This suggests that it is maybe to our detriment to grasp, decode, classify, calculate, and explain the essence of meaning contained within any image. Perhaps this speaks to the warning Flusser (2011b) issued readers at the beginning of *Into the Universe of Technical Images*, in that it reveals a “fundamental tendency” (p. 4) of humanity which is problematic and therefore must be questioned.

The image abstracts from the concrete—the material world. Putting photographic images between the human and the environment creates a disconnect. The photograph may seem to be a direct depiction of the people, places, or things it shows on its surface, but it is not. It is an abstraction. Placing confidence in the photograph to provide evidence, document corporality, and ascertain veridicality misunderstands the photograph. To do so is an act of hostility towards the material and temporal embodiment of human existence.¹⁶ The

¹⁶ Perhaps in denial of our inevitable death. Or, as Flusser would have it, in defiance of the second law of thermodynamics: “technical images are reservoirs of information that serve our immortality” (p. 18).

fundamental tendency to conceptualise and codify makes it easy to forget we are engaged in artificial relationships with human bodies, natural phenomena, and objects when looking at images of them. Remembering the technical elements of photographs allows this to be realised (Flusser, 2012, 2013, 2015). As this awareness develops so too does our capability to critically and ethically engage in the practice of photography and the consumption of photographic images.

The fourth step: Into the imagined universe.

At this final step of the abstraction process, Flusser (2011b) theorised the orthographic rules¹⁷ which historically governed creation of texts, through the metaphor of the abacus. The beads of the abacus stand for concepts presented in texts, and the rods which hold the beads represent the ordering of the concepts in line with orthographic rules. At this fourth step of abstraction, Flusser stated traditional rules conferred a structure onto the text. Therefore, the information contained within texts was held and formed in alignment with these rules. This had been much the same for images, both being meditational devices. However, he suggested that over time these rules were revealed to be socially constructed, meaning they are inherent to written texts only because they were made so. That insight has resulted in a loss of confidence in the rules, and realisation that the possibility for different rules existed. At this forth step:

the orderly threads [the rods of the abacus] finally fall apart and the concepts lose coherence. In fact, the situation disintegrates into a swarm of particles and quanta, and the writing subject into a swarm of bits and bytes, moments of decision, and molecules of action. (Flusser, 2011b, p. 10)

Flusser (2011b) went on to argue these “are particles without dimension that can be neither grasped nor represented nor understood. They are inaccessible to hands, eyes, or fingers” (p. 10). This last step of abstraction removes the image-object from the reach of not only the hands of the human, but also beyond traditional ways of understanding. Yet, while unable to been seen by the human eye, or held by the human hand, “they can be calculated . . . and

¹⁷ Orthographic rules are conventions of writing, such as spelling or punctuation, etc., which provide the correct way to write a language.

can, by means of special apparatuses equipped with keys be computed” (p. 10). Becoming matter and energy—particles and quanta—would seem to close the circle as it were, returning to the one-dimensional material world with which Flusser begun his abstraction process. However, Flusser suggested that the fourth step is a zero-dimensional realm of pure information.



Figure 4. A digital photograph playing with the crossover point between physical and digital realms. By GimpWorkshop, 2013 (<https://pixabay.com/photos/child-baby-cute-sweet-toddler-3665694/>). In the public domain.

The digital photograph in Figure 4 shows the abstraction possible in technical images. An infant, seemingly from within the digital image on the computer screen, crawls out on to the keyboard. The digital photograph has clearly been manipulated. This child exists within Flusser’s (2011b) zero-dimensional universe. This photograph has been created by an apparatus that “makes mosaic-like combinations of particles possible, technical images, [within] a computed universe in which particles are assembled into visible images” (p. 10).

Summary.

Within the changing dimensionality of human experience, which he described through his model of abstraction, Flusser (2011b) explored how the image has changed along with its human creators. Flusser suggested society must move beyond the

classifications of “true-false, real-artificial, or real-apparent in favor of such categories as concrete-abstract” (p. 38). In moving away from the first categorisations towards thinking through the notion of “concrete-abstract,” Flusser attempted to theorise how the information held within technical images, such as the photograph, “abandons its material basis” (Flusser, 1986, p. 331). Flusser (2000) argued the technical image changed human kind’s relationship with the material world. He suggested the technical image is responsible for the devaluation of the material. Because the technical image is made from abstract codes, the “material basis of information has completely disappeared” (p. 52). Below are synopses of the dimensional shifts as Flusser proposed them.

Four-dimensional—in space-time continuum: This experience of the environment has the human being firmly embedded and entangled in the world; there are no divisions and no sense, or desire, for the possibility of a division of and from the whole.

Three-dimensional—of graspable objects: Three dimensions, width, height, and depth exist in this dimensionality. This experience of the world sees the human subject as an active agent in a world of objects which can be manipulated by the subject. The human exists outside of the environment and its contents.

Two-dimensional—the realm of traditional images: A two-dimensional space has two dimensions: width and height, for Flusser, a surface. The traditional image uses imagined symbols to provide a model to others who can read them. “Images don’t show matter; they show what matters” (Flusser, 2011b, p. 11).

One-dimensional—the line: One-dimensionality means having height, width, *or* length; essentially a line. An example is the number line, which locates a number on the line in relation to the other numbers. For Flusser (2011b), this is the dimension of written texts, of taking information from surfaces of traditional images and calculating and explaining it. Of “grasping . . . translation . . . [and the] unravelling of pictorial surfaces into lines” (p. 9). Written texts are in the one-dimensional space.

Zero-dimensionality—the dimensionless universe: the imagined universe of technical images. In this last step of abstraction, the traditional image gives way to total abstraction, existing beyond the “imaginary, two-dimensional mediation zone between itself and its

environment” (pp. 6–7) of the second rung. The image is now seen by Flusser as being technical, composed of pure information and manifested through apparatus. This technical image is believed by Flusser to be “emerging into a posthistorical, dimensionless state” (p. 6), posthistorical in that the technical image has gone beyond any linear structuring of historic time keeping, into zero-dimensionality. The society this creates “will no longer be found in any place or time but imagined surfaces” (Flusser, 2011b, p. 4). This creates a utopia, a programmed utopia: the universe of the technical image.

Several questions arise from Flusser’s theorising. If the abstraction process results in counting and accounting for what is held within the surface of images, and if the information gained and collated through such activity is of such value to society, why would we seek to see beyond the surface of the image? And if this was desirable and acted upon, what could we potentially find? Flusser (2011b) argued that taking a “closer look at the technical image shows that they are not images at all but rather symptoms of chemical or electronic processes” (p. 34). So, is it then possible to “reach through” (p. 8) the image’s surface? Perhaps this question is redundant and should be reframed to acknowledge that abstraction removes the human subject from the four-dimensional material realm. So instead should the question be *how* to reach through the image? The answer to this question is found through exposure of the programmed concepts which have produced the technical image.

Program.

Flusser (2000) argued the human being has become programmed, or more accurately, operates within programs. He proposed that we now “think in photographic categories: because the photographic universe has programmed us to think in a post-historical fashion” (p. 78). As explained earlier, Flusser’s notion of post-history proposed that the introduction of the camera-apparatus changed how history was recorded, and therefore experienced. Before the technical image history existed within written word. It was lineal, progressing in one direction, from past to present to future. With the introduction of the photograph, history was released from the ties of linearity. This posed an existential problem that had not been grappled with before then. This problem, Flusser argued, was

fundamentally about freedom: which is what “any philosophy of photography has to concern itself with” (p. 79). Before discussing freedom, it is necessary to examine further apparatus, and in particular the apparatus program.

Flusser (2000) contended apparatus have permeated every aspect of society and are now “programming our life through rigid automation . . . most of society is starting to be employed in the ‘tertiary sector,’ i.e. playing with empty symbols . . . ‘life’ is coming to mean feeding apparatuses and being fed by them” (pp. 79–80). This feedback loop is symptomatic of the programmatic apparatus: “Apparatuses are playthings that repeat the same movements again and again. Programs are games that combine the same elements over and over again.” (p. 76). Flusser suggested apparatus are a plaything because they “play” at thinking.

Within the context of this thesis, one apparatus is the early childhood curriculum, *Te Whāriki* (MoE, 1996, 2017b), with which functionary-teachers perform the program of “curriculum.” The construct of functionary-teacher expresses the teacher operating within the state-apparatus through programs such as the curriculum. An aspect of the program of curriculum is the “competent and capable child” (MoE, 2017b). In this example, the early childhood functionary-teacher is fed the symbol of competent and capable child, the early childhood functionary-teacher then feeds the early childhood curriculum-apparatus documentation of the idealised (symbolised) competent and capable child learner. Later chapters use the notion of state-apparatus to explore the workings of curriculum-apparatus on the functionary-teacher. Flusser (2013) argued that we are now within the epoch of the program. We have entered into a “cybernetic system composed of functionaries and apparatus” (p. 33). For the programmers, “man is a functionary to be programmed to live in a symbolic context. Man is a being that is to be symbolized” (p. 33).

Yet Flusser (2013) cautioned that programmers are “not always aware that *they are themselves programmed to program.*” (p.33). He also warned that if we try to find the “purposes behind the programs that govern us, we will fall fatal victims to this absurd programming” (p. 25). To follow this fatalistic path, we risk becoming blinded to the more important issue: “the fact that programs, despite being projected by programmers, become

autonomous. *Apparatus always function increasingly independently from their programmer's intentions*" (p. 25). So, Flusser argued, breaking open the black box, which is the apparatus-operator complex, is futile. The path to freedom is apolitical and requires us instead to play the games of apparatus, to accept the absurdity of our circumstance and use it. This is our way to break free from the functionalism of apparatus.

Freedom.

Flusser contended "only a malfunctioning functionary can hope for freedom. The essence of freedom is unpredictability" (Ströhl, 2002, p. xii). In *Towards a Philosophy of Photography* (2000) Flusser argued for photographers to engage with the practice of photography philosophically. He asserted it is only through this philosophic enquiry that an awareness of the program of photography, and the camera-apparatus, will become apparent. With this realisation it becomes "possible to open up a space for freedom" (pp. 81–82) outside the automated and automating limitations of the apparatus. Information which is unpredictable (to the program) is an expression of human freedom. A functionary that identifies the limits of the program and then actively pushes against the program in creative ways is malfunctioning.

Flusser (2000) explored how to play against the program of the camera-apparatus. Experimental photographers who explicitly attempt "to create unpredictable information, i.e., to release themselves from the camera, and to place within the image something that is not in its program" (p. 81) are expressing freedom from the camera-apparatus. They are malfunctioning functionaries. However, while celebrating the experimental photographer, he observed that "even they are not conscious of the consequence of their practice" (p. 81). On a deeper level, their efforts speak to the "question of freedom in the context of apparatus in general" (p. 81). Finger et al. (2011) discussed how Flusser focused on the intersubjective relationships between human and technology. This allowed him to examine the ways in which media influences our lived experience.

According to Ströhl (2002), Flusser aspired for humanity to create societies able to support the experience of freedom and independence. To do so required the creation of

particular ways to communicate through technology. Furthermore, Flusser (2013) held that to do so we must rebalance the relationship between discourse and dialogue. He thought the only way to challenge, and thus change, the programmatic power of apparatus was through a “complete transformation of the technical and material forms of discursive structures into dialogical forms” (Ströhl, 2002, p. xix). Flusser (2011b) proposed two possible outcomes of the universe of technical images: a programmed society or a telematic one.

To enter a telematic society will require recalibration of the purpose of society. Flusser (2011b) suggested the telematic society “would be the first to recognize the production of information as society’s actual function and so to systematically foster this production: the first self-conscious and therefore free society” (p. 92). A telematic society would produce a certain type of information. The information would be informative rather than redundant. Flusser made this distinction due to the role of apparatus in information production. The more creative and improbable the information the more informative it is. To make such information means placing something within the photographic image which is not in the program of the camera-apparatus. Flusser (2000) argued the photographer “can force the camera to create the unpredictable, the improbable, the informative” (p. 80). This act is an expression of human freedom.

Concluding Comments

This chapter has introduced Vilém Flusser and identified several concepts significant to this thesis: apparatus, information, the technical image, abstraction, program, and freedom. The key concepts are used to theorise the processes involved in producing and consuming photographic images in later chapters. Flusser suggested technical images made by apparatus have changed human relationship with the material world. The technical image arises from a new manifestation of human consciousness (Flusser, 1988, 2011b, 2015). This is largely due to the immaterial nature of the technical image.

Flusser’s theory of abstraction is a crucial element in understanding photography and the photograph. For Flusser, the photograph is an abstraction of the material world. The photograph is a highly conceptual and abstracted “object.” Yet, its abstract state is

oftentimes not identified or examined. Rather, the photograph is looked at with uncritical acceptance. The photograph in Figure 5 exposes the complicated relationship between the abstract image and the material world. The image is a photograph of a photograph being made with a smartphone of yellow flowers growing in a natural landscape on a sunny day. The image disrupts interaction with the photograph by plainly showing the mediation between image and object by the camera-apparatus.



Figure 5. A digital photograph of an image showing the mediation of the phenomenal world through the camera of a smartphone. By Stokpic, 2014 (<https://pixabay.com/photos/flowers-cell-phone-plant-natural-622533/>). In the public domain.

This thesis argues for critically questioning the photograph and the processes of abstraction. It does not elude me that my use of a conceptual model to discuss the theory of abstraction is also highly abstract. But this is exactly what Flusser was pointing to. There is no escaping this, but there is a need to bring awareness to it. In doing so, it becomes possible to see the workings of abstraction. I, as *Homo sapiens*, exist within the space between the phenomenal world and my material body in my subjectivity. My analysis of the ontology between human, camera, and image requires me to codify information.

In this case I am using the alphabetic code to express my ideas in a conceptual framework. Flusser (2015) called this “first degree imagination” (p. 26). In terms of images, first degree imagination is used when producing “images that represent the concrete world”

(p. 31). However, I am also using a computer with a word processing program with which I save and send my conceptualising into the digital cloud, pull it down again, and so on, and so on (all without leaving my chair in front of my screen). This requires me to operate within the zero-dimensionality of code and program. Second degree imagination takes us into the realm of technical images. Second degree images “confer meanings . . . They do not represent: they model” (p. 31). To decipher these technical images, we therefore need to move beyond consideration of what they represent, to how they are used to represent information. This means asking how images are created: what the intentions, technologies, and purposes are, behind image production.

Flusser’s (2011b) theories are used in subsequent chapters where the history of the photograph and its postmodern manifestations are explored. Now truly a technical image, the photograph has been released from its vestiges as a material object into the digital realm. Flusser’s philosophy of photography is a valuable contribution to the field of philosophy of education and early childhood education. The themes he tackled, such as power, media, materialism, and the relationships between humans and technology, are especially pertinent now.

Chapter 4.

Questions of vision: Regimes and apparatus

The camera-apparatus provides a specific view to photographers. The camera program operates upon the photographer by allowing certain types of photographs to be produced. This means certain ways of looking are more available than others. Yet, there are also opportunities for freedom through creativity if photographers seek new ways of looking (Flusser, 2000). To demonstrate the connection between apparatus and availability of view, this chapter explores how several past scopic regimes governed ways of seeing and knowing the world. *Scopic regime* is a term used by Jay (1998) to describe discursively formed ideas and practices related to the visual. This chapter also considers how scopic regimes have operated in combination with scopic apparatus. This thesis questions the apparatus, processes, and beliefs involved in producing and consuming images. It is useful for ECEC theorists and practitioners to understand the contingent nature of scopic regimes and scopic apparatus. With this understanding, insights into the limitations and influence of scopic regimes and apparatus are gained.

This chapter continues the philosophic inquiry begun with Flusser in the previous chapter. Firstly, an investigation of “image” shows how production has changed over time. Secondly, drawing on Flusser’s (2011b) theory of abstraction, three scopic regimes are used to explore how ways of looking, through material apparatus and discursive positions, can shape knowledge construction. Thirdly, a review of visual studies adds another perspective to the theoretical lenses of this thesis. The chapter concludes with an examination of three scopic apparatus. There the contingent, changeable, and polymorphous nature of scopic apparatus is exposed.

Scopic regimes and scopic apparatus have influenced philosophical views of the world. Think of how Galileo Galilei’s (1564–1642) work with higher powered telescopes influenced how we view the universe and the Earth’s place in space (Foucault, 1986). And, currently, consider the internet and how the photographic image has greatly changed the

way we think about ourselves and our place in the world. Looking back to the Renaissance and late Enlightenment periods, examples from art history support an analysis of how ways of looking can affect not only what is represented, but also how we see, and what is valued as knowledge. As Sturken and Cartwright (2018) suggested “form and method do not simply convey meaning and epistemic values; they produce them” (p. 148).

Art produces artefacts which have been influenced by methods, tools, and ways of looking. While the camera and the photograph are recent inventions, the theories underpinning and defining these are informed by historic discourse (Crary, 1990; Gómez Cruz & Meyer, 2012; Flusser, 2012; Sturken & Cartwright, 2018). Changing ways of viewing and representing our environment are seen over time (Jay, 1988). Looking back to early optical apparatus the chapter works its way forward into the present, bringing insights from the past.

The Image

The word image derives from the Latin *imāgō* meaning a copy or a likeness. A photograph is a type of image. Traditionally, analogue photographs were made by a camera and chemical processes. Now photographs are created, from data stored in binary code, as digital images. Before the invention of the photograph, images were more commonly made by, for example, oil painting, wood cuts, or lithographs. Originally, images were used by religious institutions to present their ideals, and by artists to depict the human being in its environment (Sturken & Cartwright, 2001). In the mid-fifteenth century, the technique of perspective became established, whereby the mechanics of translating three-dimensional space to a two-dimensional surface governed the creation of images. This modification to the processes of representation gave images a more realistic appearance by adding depth through scale and a central point of perspective. However, this technique was also an extremely reductive and abstracting practice (Sturken & Cartwright, 2001).



Figure 6. An early woodcut showing the velo in use. From “Draughtsman Making a Perspective Drawing of a Reclining Woman,” by A. Dürer, c1600 (<https://www.metmuseum.org/art/collection/search/366555>). In the public domain.

The well-known print in Figure 6, by Albrecht Dürer (c 1600), depicts the artist looking through a grid, using an eye marker, and translating his view onto the drawing surface marked with an equivalent of the viewing grid.¹⁸ Sturken and Cartwright (2001) suggested artists who used this technique believed it was a “scientific approach that helped them to create objective images of reality” (p. 114). Sturken and Cartwright considered the invention of the perspectival technique a fulcrum of change not only in producing images but in ways of looking at the world. They suggested that while images created by this technique “may seem to be a realistic depiction of the world, perspective is a highly reductive, abstract form of representation” (p. 114). Images, a copy or likeness of reality, which use techniques such as perspective, fuse science and art in their creation (Sturken & Cartwright, 2001).

Photographic images are no exception. In Flusser’s (2000) words, photographs are a “technological or mechanical image created by an apparatus” (p. 85).

Literature from the field of visual studies reveals several theoretical concerns specific to the discipline. These revolve around vision and the notion of a viewer (Elkins, 2013; Foster, 1988; Mirzoeff; 2006; Rose, 2007). Also central to visual studies is consideration of the ocularcentric tendency. Theorists suggest ocularcentrism developed through early Renaissance concerns for correct perspectival representation in images (Jay, 1988), and was cemented by Descartes’ (2001) championing of the visual sense in his early essay

¹⁸ The grid is an example of Alberti’s window, the velo.

Optics (Crary, 1988, 1990). While the work of René Descartes is beyond the scope of this research, a foray into the scholarly fields of visual studies and art history, informed by Jonathan Crary (1990), James Elkins (1996, 2013), Martin Jay (1988), and Anne Friedberg (2006), guides this chapter's study of visual techniques and past theories of perspective, subjectivity, corporality, and the veridicality of images.

Jay (1988) suggested when considering the topography of visual history “we confront again the ubiquity of vision as the master sense of the modern era” (p. 3). Here is still felt a tremor of Descartes' (2001) advocacy for the sense of sight. Jay (1988) traced modern ocularcentrism back to Descartes, arguing consequent over-valuing of the sense of vision has created epistemological and perceptual biases. Descartes (2001) argued that because our sense of sight was the “most comprehensive and the noblest . . . there is no doubt that the inventions which serve to augment its power are among the most useful that there can be” (p. 65). The partiality of human experience, weighted in favour of vision and language, has increasingly been challenged by multimodal theorists who argue for integration of other ways of knowing, such as the kinaesthetic and aural elements of human experience (Jewitt, 2009; Kress, 2003, 2009, 2012; Kress & van Leeuwen, 2001).

As stated above, deeper engagement with Descartes' work is beyond the scope of this thesis. However, Descartes' belief that optic instruments were of greatest use is applied in a divergent fashion later in this chapter. There Alberti's window, the camera obscura, thaumatrope, and the stereoscope are used to problematise accepted ways of looking and knowing.

The Ocularcentric World and Modern Scopic Regimes

This section uses Jay's (1988) discussion of three scopic regimes to explore how ways of looking, through apparatus and discursive positions, can shape how knowledge is constructed. Returning to Flusser's (2011b) theory of abstraction, visual regimes are discussed in terms of the relationship between the material and the visual. Using the term scopic regime¹⁹ to describe the discursive formation of ideas and practices, pertaining to the

¹⁹ For which he credits Metz (1982)

visual, Jay foregrounded three past regimes to demonstrate his argument. The first scopic regime Jay (1988) wrote of, Cartesian perspectivalism, held a fascination with creating instruments and tools to further the sense of sight. The second, identified in Dutch art typical of the 17th century, focused on creating a richly detailed description of what was seen. The third, during the Baroque period, saw the intensification of represented detail but with an openness and haptic quality.

Jay (1988) suggested the multiplicity of past scopic regimes requires theorists to consider the current regime as “contested terrain, rather than a harmoniously integrated complex of visual theories and practices” (p. 4). The scopic regimes Jay highlighted do not follow an exact chronology, nor do they have a systemic linear evolution—rather there is blurring and changes to ways of viewing and seeing the world.

Olscamp (2001) described Descartes as the “inventor of analytical geometry” (p. ix), while Jay (1988) refers to him as the namesake of “Cartesian perspectivalism” (p. 4). Cartesian perspectivalism is described by Jay as the coming together of Renaissance concerns of perspectival techniques with Descartes’ philosophy of taking a subjective and rational approach to truth. Jay noted this as a historic point with a certain ocular significance. The perspectival techniques introduced below are examples of Renaissance methods for assisting realistic representation in images. Use of the camera obscura,²⁰ and grids to support perspectival correctness, such as the one pictured in Figure 6, illustrating Alberti’s *velo*, were intrinsic to image making of that time. Jay (1988) stated the development and privileging of ocularcentric practices in modernity gained their strength as they “best expressed the ‘natural’ experience of sight valorized by the scientific world view” (p. 5). This is explored further in Chapter 8 which examines Daston and Galison’s (2007) notion of mechanical objectivity and use of apparatus to produce images free from subjectivity.

According to Jay (1988), the late-medieval metaphysical interest in light—in particular the distinction between *lux* (divine light) and *lumen* (visible light)—developed into a perspectival technique which came to “symbolize a harmony between the mathematical

²⁰ The camera obscura is discussed further in the section on scopic apparatus. Figure 7 provides an illustration.

regularities in optics and God's will" (pp. 5–6). The metaphysical connection to light is seen in the halos given to holy figures such as saints, or the Madonna and child. Over time, as religious power waned, perspectival techniques used in the creation of religious images came into their own power (Jay, 1988). The "displacement" of power from the content of images to techniques of spatial representation resulted in the development of new understandings of space as:

geometrically isotropic, rectilinear, abstract, and uniform . . . The three-dimensional, rationalized space of perspectival vision could be rendered on a two-dimensional surface by following all of the transformational rules spelled out in Alberti's *De Pittura* [sic]. (Jay, 1988, p. 6)

Alberti's *De Pictura*, written in 1435,²¹ set forth a geometric optics with which to calculate three-dimensional space onto a two-dimensional surface (Friedberg, 2006). *De Pictura* introduced the *velo* (veil), also known as Alberti's window, to assist the process (Friedberg, 2006). Thinking about this new approach to the relationship between matter and space, through Flusser's (2011b) theory of abstraction, three points can be made. Firstly, it is noticeable that a focus on conceptualising material and space into a "rational" theory brings the human experience into a two-dimensional realm—where objects are depicted on a surface. Secondly, this action uses information embedded within an apparatus—the program of the *velo*—resulting in extremely specific outcomes in images. Thirdly, as Flusser (2011b) suggested, images do not show matter, rather they show what matters. In the case of the *velo*, images are produced which show a concern for rational, regular, and realistic representations. What mattered to image makers of this period was achievement of objective images.

The second scopic regime identified by Jay (1988) was Dutch art typical of the 17th century. Painting of this period focused on creating a richly detailed description of what was seen by the painter. The methods and focus centred on "description and visual surface" (p. 12). Jay suggested this world view was significantly different to the scopic regime of the

²¹ First published in Latin in 1435, it was reprinted in Italian in 1436 as *Della Pittura* (Sturken & Cartwright, 2018).

monocular viewer, looking at a spatially correct image, seen through theories of perspective. In its place, importance was vested in the “prior existence of a world of objects depicted on the flat canvas, a world indifferent to the beholder’s position in front of it” (p. 12). This scopic regime could be said to take a step backwards on Flusser’s (2011b) model of abstraction. Concern with the world of objects, the material world, placed the artist into the third-dimensional space with its “graspable objects” (p. 8). However, the focus on creating representations showing the richness of the material world relied on apparatus such as *velo* and *camera obscura*, as well as on treatises painstakingly describing techniques of painting. So again, this regime sits within the two-dimensional realm of conceptualisation and grasping.

Grasping involves a translation from representations into concepts, an explanation of images, an unravelling of pictorial surfaces, reducing the image to a linear one-dimensionality. The result is a conceptual universe of texts, calculations, narratives, and explanations, projections of an activity that is not magical. (Flusser, 2011b, p. 9)

The third scopic regime Jay (1988) explored was the Baroque period. Jay marked the Baroque as “the second moment of unease in the dominant model” (p. 16). The style of visual representation typical of the Baroque was “recessional, soft-focused, multiple, and open” (p. 16). Its divergence from the dominant visual model of Cartesian perspectivalism, with its focus on rational, regular, and realistic representation, is immediately noticeable. The aim of utilising various perspectival techniques, offered by instruments to assist sight and measurement of spaces, was to provide an accurate and “true to nature” representation. However, the scopic regime of the Baroque period “self-consciously revels in the contradictions between surface and depth, disparaging as a result any attempt to reduce the multiplicity of visual spaces into one coherent essence” (Buci-Glucksmann, 1984, 1986, cited in Jay, 1988, p. 17).

So how does the Baroque period sit in Flusser’s (2011b) model of abstraction? Jay (1988) drew on the work of French philosopher Christine Buci-Glucksmann (1984, 1986) who compared Dutch artists’ focus on description and their “belief in legible surfaces and the faith in the material solidity of the world” that their paintings presented, with the Baroque

enthrallment with “opacity, unreadability, and the indecipherability of the reality it depicts” (cited in Jay, 1988, p. 17). The differences between the approaches to the information contained within images produced shows a different understanding of images in each scopic regime. While the Dutch painters had “faith” in the materiality of the world and the images they produced, the Baroque artists and thinkers had moved beyond belief in the images’ ability to hold reality upon their surface, and were more interested in playing with, or against, the images’ materiality. This suggests Baroque thinkers were engaged in moving between the dimensions and had critical insight into the processes of abstraction occurring in image creation.

Flusser (2011b) argued humans must now “reach through images to change things” (p. 8). The previous chapter deliberated on what Flusser may have meant by this, and indeed what it may mean to reach through an image. It considered whether reaching through images was how to reach the material world to enact change. Rethinking this, here, I suggest reaching through the image could mean engaging with the concepts of abstraction which create the image. Reaching the material world requires identifying the abstract conceptual ideas of the world represented on an image’s surface. Baroque artists seemed to be doing so through awareness of both the material world and the abstracting nature of the image.

Jay (1988) used the material qualities of glass to provide insight to Baroque episteme. Glass mirrors ground to either a concave or convex surface distort the “visual image—or more precisely, [reveal] the conventional rather than natural quality of ‘normal’ specularly by showing its dependence on the materiality of the medium of the reflection” (p. 17). The way light enters, moves through, and leaves the glass lenses affects the images seen. This example highlights once again the intertwining of materiality and discursivity in images seen through apparatus (Barad, 2007). Jay (1988) suggested that because of a heightened “awareness of that materiality . . . baroque visual experience has a strongly tactile or haptic quality, which prevents it from turning into the absolute ocularcentrism of its Cartesian perspectivalist rival” (p. 17). Here Jay is positioning the material and the visual in a binary dichotomy.

The questions this thesis poses about the apparatus involved in producing and consuming images is answered in part here. Realising how manipulation of the angle of the ground glass changes the image produced blurs the unquestioned conventions of sight and seeing. This example clearly shows the mediation of the visual through apparatus designed to provide a “natural view.” Descartes (2001) suggested inventions which enhanced the noble sense of sight were the most useful. While later discounting the senses as unreliable in the search of true knowledge (Descartes, 1637/1984), Descartes provided modern systems of thought with the notion that the “intellect *inspects* entities modelled on retinal images” (Rorty, 1979, p. 45, quoted in Jay, 1988, p. 5). This maintains the value of the sense of sight in formation of knowledge. Descartes’ promotion of optic instruments as useful is applied in a divergent fashion in the following section.

Jay (1988) reminded us scopic regimes “are themselves no more natural or closer to a ‘true’ vision” (p. 19) and cautioned us to remain open and curious about deviating scopic regimes. Jay argued there are many ways to look and see. Therefore, multiplicity becomes an important methodological tool in navigating through the diverse terrain of visual studies. Loosely following this advice, the next section turns from scopic regimes to explore examples of scopic apparatus which play against the optic qualities of the human eye and the notion of a “natural” view. Alberti’s window provided a rigid formula for image production; the camera obscura transitioned over time from a tool of observation to one of accurate image production; while the thaumatrope and stereoscope used the optic effect of after-images to trick the mind into seeing an image which was not naturally occurring but, rather, an illusion.

Visual Theories

Visual studies scholars are interested in the visuality of human experience (Elkins 2013). Elkins provided a comprehensive genealogy of the discipline in his introduction to *Theorizing Visual Studies: Writing Through the Discipline*. There Elkins maps the discipline’s development over 2 decades from the early 1990s to 2010. What began as a straightforward project focused on the media of television, advertising, photography, and mass media, has

become complex and multifaceted. Initially, visual studies were to be complementary to art history. However, the discipline looked further afield than theories used in art history to theorists such as Foucault, Benjamin, Barthes, and Lacan. While originally thought to have developed out of British cultural studies in the 1960s, increasingly, it has come to be understood as an international development with multiple histories.

The use of images in visual studies is different to art history. In art history, there is a greater focus on the image itself, its composition, use of colour, space, form, and so on. In art history, the image is examined and interpreted through more formal analysis (Elkins, 2013). In comparison, visual studies are concerned with the values contained within images. Elkins (2013) urged scholars interested in perusing visual studies to “take images as examples of political, gender, and other issues. When that happens, cultural and philosophical criticism can take centre stage” (p. 28). This focus allows for a more considered analysis of the wider social influences present in images. This is important because

vision and its effects are always inseparable from the possibilities of an observing subject who is both the historical product *and* the site of certain practices, techniques, institutions, and procedures of subjectification. (Crary, 1990, p. 5)

Visual studies make a distinction between what is seen, via *vision*, and *visuality* (Foster, 1988; Mirzoeff; 2006; Rose, 2007). Therefore, *visuality* is described as the socially embedded experience of sight, or as Foster (1988) explained, the “datum of vision and its discursive determinations . . . how we see, how we are able, allowed, or made to see, and how we see this seeing or the unseen therein” (p. ix). However, Foster also pointed out there is no clear division of the two: *vision* is also defined by the historical and social conditions which inform sight, and *visuality* is also an embodied and spiritual experience. Crary (1990) wrote of the observer as enmeshed within a scopic regime, a subject upon whom the power of vision plays, as much as she is a visual participant. Rose (2003), moreover, suggested that *visualities* are “never neutral” in knowledge production, rather they “have their foci, their zooms, their highlights, their blinkers and their blindnesses” (p. 213). Rose introduced the term “disciplinary *visualities*” (p. 214). The concept is reflective of the scopic regime, a set of

standard or normalised ways of looking at and producing visual artefacts. Here is an answer to the question of the beliefs behind image production and consumption. Ways of looking are not neutral, vision is discursive, and therefore productive—in Flusserian terms: programmatic.

The following section explores three scopic regimes identified by Jay (1988). Additionally, Friedberg's (2006) investigation of framing in connection to visual theory introduces another element for contemplation. Friedberg began her study with Alberti's window, an early optic instrument used to capture objective images (shown in Figure 7). Friedberg's analysis used the window as a metaphor to explore the use of single point perspective through the ages. The Cubist period is highlighted as a challenge to the traditional viewpoint onto the material world. Looking back to Flusser's (2011b) theory of abstraction, introduced in the previous chapter, adds another dimension as the discussion examines the image's relationship to material and immaterial aspects of representation and knowledge.

Crary (1990) traced visual practices and systems of thought in the latter half of the last millennium. The later part of this chapter examines Crary's work. Crary argued there was no direct conceptual lineage from the camera obscura to modern practices of photography and cinematography; rather a collection of changing ideas about vision and viewing. Drawing on Crary, the later sections discuss the scopic apparatus identified above: Alberti's window, the camera obscura, thaumatrope, and the stereoscope. This supports an analysis of historical practices and theoretical approaches of image making, and the influence of these on ways of looking and knowing.

Scopic Apparatus: Focusing and Re-Focusing Through Apparatus

Scopic regimes provide for a certain view, they form how we look and therefore see through the knowledge, values, and history informing them. Instrumental in this are apparatus used to extend, focus, or modify the vision of the human eye. There is a contingent element to looking through apparatus; the view is never set but is rather polymorphous. Discussed here are Alberti's window, camera obscura, the thaumatrope and

stereoscope. Each apparatus was used to view the world or explore vision in a different way. While the camera obscura is an ancient scopic device, the others are more recent inventions. Alberti's window became a common optic apparatus in the Renaissance period. The thaumatrope and stereoscope are more modern inventions stemming from the focus on optics in the mid-nineteenth century. The following analysis of these apparatus examines their relationships to historical practices and theoretical approaches of image making, and the influence of these on ways of looking and knowing.

Alberti's window.

Leon Battista Alberti (1404–1472) was an artist of the Renaissance period. He shared his theories of perspective through his metaphor of the window and practical devices such as the *velo* (Friedberg, 2006). Alberti's *De Pictura* (1435) described the artist's drawing field as a window. His treatise provided mathematical guidance on the division of space through geometric methods which created a centre point within the framed area (Friedberg, 2006). Using Alberti's metaphor of the window, Friedberg (2006) reviewed the practice of framing and abstracting the material world onto the surface. She described how Alberti's *velo*, with its single pointed perspective and division of the whole into blocks within a grid, became a ubiquitous apparatus to aid abstraction.

Friedberg (2006) narrated the metaphor of the window through the ages. Friedberg's focus on the frame, and the action of framing, offered a genealogy spanning from Alberti's window to the current "Windows" of the computer screen. Contained within her analysis is also consideration of the materiality of vision through the ever-refined use of glass. From simple pane, to ground lens, to computer screen, the materiality of glass has become increasingly complex and crucial in the mediated view of reality now experienced through viewing apparatus and the images created by them. As part of her genealogy, Friedberg commented on the development of camera obscura. However, rather than focusing on its use as a tool for philosophy, science, or art, Friedberg argued it was "fascination with *virtuality*—the approximation of the real—that drove these inventions" (p. 60). This took

Friedberg down a different path to Crary (1990), with his focus on its use as a model of vision and the subjective viewer.

Friedberg's (2006) discussion of the window-screen located the incorporation of multiple viewpoints with the Cubist movement in the first 2 decades of the 20th century. The Cubist period challenged the traditional viewpoint of the material world. Friedberg suggested Cubism "not only fractured the single viewpoint but also placed disparate objects on the same spatial plane, adjacent and simultaneous" (p. 192). The modification in the scopic regime made by the Cubists allowed for more than a single fixed frame of focus in art works. Cubist images were radically different in that they challenged the "historical dominance of the single-image, single-frame paradigm as an intransigent visual practice" (p.192). Not only did they challenge traditional perspective, they also played with the temporality of the image through representation of multiple views (Sturken & Cartwright, 2018). The Cubist period is important in terms of this thesis because it reveals the contingency of scopic regimes and ways of knowing and experiencing the world.

Friedberg (2006) contended Cubism went beyond the photographic camera and movie camera, which both maintain the single perspective, to change the way perception could be represented and experienced. While film and still photographic images are still "viewed in a single frame, seen on a single screen. Variations of scale, position, and camera angle from shot to shot may alter the positioned fixity of the camera's view, but these shifts in 'perspective' are *sequential*" (p. 192). Their sequential nature is governed by the surface qualities of the film containing the images. Film images are also "held within the fixed frame of a screen, a surface that holds it constancy regardless of the continuous or radically discontinuous spatial and temporal relation between shots" (p. 192). The Cubists may have momentarily disrupted the scopic regime they inherited, but the scopic apparatus of Alberti's window still plays out through the single point of view, single screen of the photograph.

Camera obscura.

Before the invention of the photographic camera, the camera obscura was commonly used as an optical device to view the world. It also served as a metaphor to support

philosophic inquiry into the seeing and knowing subject, and as a working model in the scientific study of optics (Crary, 1990). *Camera obscura*, meaning dark chamber, refers to a dark room with a small hole which lets in light. On the opposite wall to the small hole an inverted image forms of the outside scene. Figure 7 shows a mid-18th century image of a camera obscura in use.



Figure 7. An engraving showing an operational camera obscura. "Optics: The Principle of the Camera Obscura," 1752

(https://search.wellcomelibrary.org/iii/encore/record/C__Rb1465491?lang=eng) CC: Wellcome Library.

Knowledge of this phenomena dates from at least 2,000 years ago (Crary, 1990). The ancient Greek scholars Euclid and Aristotle, the Chinese Mohist philosopher Mozi and scientist Shen Kuo, and the Arabic scientist Alhazen (Hasan Ibn al-Haytham, 965–1040), all discussed the camera obscura in their works (Sturken & Cartwright, 2018). Over time, the camera obscura went from being valued simply for its ability to focus attention to being appreciated as an "unrivalled and privileged means of observation" (Crary, 1990, p. 38). Crary charted changing conceptions of subjectivity and perception as scientific and philosophic focus shifted from geometrical optics to the optics of physiology. He detailed these changes parallel to modernisation and underpinned his discussion with the work of

Michel Foucault.²² Using Crary's genealogy, this section discusses vision and its complicated role in perception.

The camera obscura provided philosophers of the 1500s–1700s with “structural and optical principles” which formed a “dominant paradigm” which in turn defined the “status and possibilities of an observer” (Crary, 1990, p. 27). Until the end of the 18th century, camera obscura provided the “most widely used model for explaining human vision, and for representing the relation of a perceiver and the position of a knowing subject to an external world” (p. 27). Interestingly, the initial primary purpose of the camera obscura was not the production of pictures (Crary, 1990). The camera obscura was used as a model for the human eye, providing the basis for the study of optics (Crary, 1990). These physiological studies of the human eye, its workings and composition, were reflected in philosophic questioning of the human subjects' activity and place within relationships external to self and theorised through the model of the camera obscura (Crary, 1990).

For Crary (1990), there is no undeviating line of technological development from camera obscura to photographic camera. What his study offers is a genealogy of the textures and progressions of historical thought on vision, viewing, and material visualisation practices towards the end of the last millennium. He posited the camera obscura was “not simply an inert and neutral piece of equipment . . . rather, it was embedded in a much larger and denser organisation of knowledge and of the observing subject” (p. 27). Crary suggested the commonly held belief that photographic cameras are the progeny of the camera obscura obscures several important shifts in thinking about the subject and vision. Crary refuted a straightforward linear progression of camera obscura, to perspectival techniques, to the development of the photographic camera, as this assumes that the “same essential presumptions about the observer's relation to the world are in place” (p. 26) across history. This theory is mirrored in Jay's (1988) comments on the polymorphous quality of scopic regimes: regimes change across time but there is not a lineal transition through time.

²² Amongst others; however, the use of Foucault's work has a resonance within this thesis.

While the camera obscura and perspectival drawing techniques can be used in creating drawn or painted images, Crary (1990) drew our attention to use of the camera obscura as a philosophical model for discussion of vision and perception. However, Crary did note a distinction between the camera obscura and perspectival drawing, warning against “conflating the meanings and effects” (p. 34) of the two. For Crary there is a clear difference between the two optical devices. The drawing technique of linear perspective results in a “two-dimensional representation,” whereas the camera obscura positions the viewer as “an interiorized observer to an exterior world” (p. 34). This capacity of the camera obscura led him to theorise its role as much more than a picture-creating device.

Unlike Flusser (2000), Crary (1990) positioned the apparatus as an external device, a tool used in extension of the human eye. Flusser (2000) contended there is no division between the photographer and the camera, rather an apparatus-operator complex exists (Ströhl, 2002). However, both Crary and Flusser emphasised the importance in *looking at what you are looking with*. The apparatus and the act of looking with it are *both* important sites for inquiry. So, the optical device, be that camera obscura, telescope, microscope, binoculars, movie camera, analogue camera, digital camera, and so on, must become a point of analysis also, rather than solely the image seen or created.

Perhaps the most important obstacle to an understanding of the camera obscura, or of any optical apparatus, is the idea that optical device and observer are two distinct entities, that the identity of observer exists independently from the optical device that is a physical piece of technical equipment. (Crary, 1990, p. 30)

While Crary (1990) argued it is important to recognise this distinction, Flusser focused on the intersubjective relationships between human and technology (Finger et al., 2011). From a Flusserian perspective, the human is thus positioned as an appendage of the scopic apparatus the camera (Finger et al., 2011). In Flusser’s thinking, the camera and its operator are bound together. What was important for Flusser was recognising the program operating the apparatus. In doing so, it becomes possible to realise the apparatus and its functionary action upon its user (Flusser, 2000).

For example, the possible view created through the optical device, be that the camera obscura, perspectival grid, or photographic camera, works to form what is seen by the viewer, as Barad's (2007) theory of the agential cut suggested. Crary's (1990) assertion that understanding of the camera obscura comes from cognisance of its separateness resonates with Flusser's (2000, 2011b) thinking about breaking free from the camera-apparatus. However, the theorists take different paths to their shared conclusion. Both theoretical views ultimately distinguish between the optical device and human observer, or, in Flusserian terms, the human subject as functionary or player.



Figure 8. An etching of a camera obscura in use as a drawing aid, n.d. From "A Seated Man Looking Through a Camera Obscura at Half a Skeleton Suspended Upside Down from a Tripod as Two Men Look on." n.d.

(<https://wellcomecollection.org/works/q7ieu79v?query=%22SUSPENDED%22>). CC: Wellcome Library.

Use of the camera obscura changed over time in relation to changing theories of reality, perception, and knowledge, as did the physicality of the apparatus itself (Crary, 1990). Its original use to provide viewers a perfectly replicated image of the world outside the camera obscura transformed significantly when the camera obscura was modified to support the production of images. In Figure 8, an artist is depicted sitting at a portable camera obscura. A representation of the hanging skeleton is drawn off the image projected onto the

drawing surface inside the box. Crary (1990) suggested it is important to recognise that by the 19th century, art and science

were both part of a single interlocking field of knowledge and practice. The same knowledge that allowed the increasing rationalization and control of the human subject in terms of institutional and economic requirements was also the condition for new experiments in visual representation. (p. 9)

Crary (1990) argued that, across the disciplines of art, literature, philosophy, science, and technology, discourse was influenced by visual concerns, such as subjective vision and the observer, and was largely informed by the model of the camera obscura. However, at the start of the 19th century, an abrupt philosophical shift saw the camera obscura become “no longer synonymous with the production of truth and with an observer positioned to see truthfully” (p. 32). This shift arises with the photographic camera, whereupon the “photographic camera becomes an essentially dissimilar object, lodged amidst a radically different network of statements and practices” (p. 32).²³

The camera obscura has been explored here as a scopic apparatus. Historically it positioned the subject within an illusionary immersion of the natural world. It was then developed as an apparatus to extend and focus the human eye. This later development supported recording information in images. Along with Alberti’s window, the camera obscura was a predominant scopic apparatus for many centuries. Two other, lesser known, scopic apparatus, the thaumatrope and the stereoscope, provide examples which play against the optic qualities of the human eye and the notion of a natural view.

The thaumatrope and stereoscope.

Crary’s (1990) review of scopic apparatus attended not only to the camera obscura and photographic camera but also to various other optical techniques, experiences, and devices of the 19th century. An underlying theme connecting these “was the notion that perception was not instantaneous, and the notion of a disjunction between eye and object” (p. 104). Two devices of interest are the thaumatrope and the stereoscope. The thaumatrope

²³ The camera is discussed in the following chapter.

was invented by Dr John Paris, of London, in 1825, and the stereoscope is attributed to Charles Wheatstone and Sir David Brewster (Crary, 1990).

The thaumatrope is an optical device which Crary (1990) described as a “philosophical toy” (p. 104). The simple device is created by a disc with an image on both sides and held either side by string. When twisted by the strings and then released, the disc spins, blurring the two images together. For example, if one side of the disc has a picture of a bird, and the other side has a picture of a cage, when the disc spins, the bird appears to be in the cage. The device works due to the afterimage effect created by the eye, whereby a lag occurs between the eye and the mind (Paris, 1827, quoted by Crary, 1990). Describing this phenomenon in connection to the thaumatrope, Paris (1827) explained:

An object was seen by the eye, in consequence of its image being delineated on the retina or optic nerve, which is situated on the back part of the eye; and that it has been ascertained, by experiment, that the impression which the mind thus receives, lasts for about the eighth part of a second after the image is removed . . . the Thaumatrope depends on the same principle. (pp. 13–15, quoted by Crary, 1990, pp. 105–106)

Crary (1990) suggested this simple optical device “made unequivocally clear both the fabricated and hallucinatory nature of its image and the rupture between perception and its object” (p. 106). While Descartes valued optical instruments for augmenting vision, here value is placed in such scopic instruments for a divergent reason. The thaumatrope provides a clear example of the productive power of apparatus on what viewers see. Descartes provided modern systems of thought with the notion that the “intellect *inspects* entities modelled on retinal images” (Rorty, 1979, p. 45, quoted in Jay, 1988, p. 5). However, when using the thaumatrope, the retina is tricked by the afterimage caused by two images moving in the same place at a high speed. The two after-images merge into one unreal image. This shows that what is seen with scopic apparatus is not always real, even if accepted as so.

A more elaborate device of the 19th century, one which Crary claimed was the “most significant form of visual imagery... with the exception of photographs” (p. 116), was the

stereoscope.²⁴ The stereoscope also operated within the rupture formed between the perceiving subject and the object perceived. The image seen through the stereoscope does not really exist, rather it is a “conjunction, an effect of the observer’s experience of the differential between two other images” (Brewster, 1856, cited in Crary, 1990, p. 122). The stereoscope played upon the ocular particularity of the human eye’s operation which scientific inquiry into optics had revealed. Figure 9 shows an early stereoscopic viewer; the later View-Master version of the stereoscope uses film negatives in disc format. By simultaneously showing both the eyes the same image, perception of the image is manipulated by the convergence of the individual axis of each eye’s line of sight (Wheatstone, 1838, cited by Crary, 1990), so, what is seen is an image with 3-D qualities.



Figure 9. An early stereoscopic viewer. By G. McMahan, 2004 (<https://pixabay.com/photos/viewer-stereo-3d-film-glasses-1069128/>). In the public domain.

This device was invented by Wheatstone to “simulate the actual presence of a physical object or scene” (Crary, 1990, p. 122). This would seem to corroborate the argument made by Friedberg (2006) that it was a “fascination with *virtuality*—the approximation of the real” (p. 60) which propelled the invention of optical devices. Crary

²⁴ Bearing in mind photographs maintained the “codes of monocular space and geometrical perspective” (Crary, 1990, p. 127).

(1990) declared the stereoscope as the primary optical device of the 19th century, which “conflated the real with the optical” (p. 124).

The question of binocular disparity is exemplified in the stereoscope. That the human subject has two eyes, which see different views, had simply been a curiosity until binocular disparity became a point of study. That research resulted in scientists of the 1830s defining the “seeing body as essentially binocular” (Crary, 1990, p. 119). Crary (1990) argued the stereoscope was responsible for the “radical repositioning of the observer’s relation to visual representation” (p. 128). The observer was decentred, and now looked upon an image which was “dispersed and multiplied” (p. 128). The significance of the stereoscope is that it deviated from the historical scopic regime of the perspectival “point of view” which had positioned the monocular viewer. This shows how scopic regimes are contingent and yet productive. Revealing them as such can destabilise taken-for-granted relationships between the subject, the visual, and the material.

Concluding Comments

This chapter has marked several shifts in scopic regimes governing representation, vision, and visibility over the last 5 centuries. Several optical devices were introduced that both contributed to, and have been informed by, changing visual theories, practices, and techniques. Vision and visibility are complex and multifarious. Extending on the argument put forward in the introduction of this chapter, the role apparatus play in the formation of knowledge and practices of vision and visibility has been explored. Examples of scopic regimes and apparatus have been used to throw into high relief the tension and contention between what we see and what we know, and how we see and are able to see (Foster, 1988).

Approaching scopic regimes and apparatus with curiosity allows for divergent understandings of how images are formed. These understandings subsequently lead to questioning of the materiality of images. Realising the image as a construct, an abstraction, reveals that images and reality exist in a contested space. The following chapter draws on the work of Vilém Flusser in a philosophic study of photography and the photograph. Flusser

(2011b) was interested in the human activity of making images. He proposed that the use of apparatus created technical images.

Scopic regimes and apparatus have been argued to have agentive roles in the production of what and how we see. This argument is revisited in Chapter 6 in connection to the archiving of information, and in Chapter 7 in combination with Flusser's theory of apparatus and Foucault's work on surveillance and disciplinary practices. Scopic regimes and scopic apparatus can be used in divergent fashions to show the conditional nature of looking in specific ways. Chapter 8 draws on the insights gained in this chapter to ask how the image is used and what the image does—keeping an open view, the image is seen to have multiple dissimilar uses and actions.

Chapter 5.

The camera-apparatus

The photograph is often used to create a visual record: of people, passing time, experiences, events, and ideas (Sontag, 1977). With industrialisation of the Western world, the photograph became a common method of collecting and constituting evidence (Henning, 2004; Sontag, 1977; Sturken & Cartwright, 2009). Photographs begun to be used by “important institutions of control . . . as symbolic objects and as pieces of information” (Sontag, 1977, p. 21). Photographs are used in ECEC to gather and provide information about children, learning, and teaching. The examination of photography undertaken in this chapter seeks to add to theoretical understandings of the practice of photography use in ECEC through discussion of: the early development of photography, Gómez Cruz and Meyer’s (2012) four moments of photography, and the theory of visual materiality (Rose & Tolia-Kelly, 2012).

Flusser (2012) argued knowledge of theories informing the camera assist critical understandings of photography and photographs to develop. With such historic knowledge, photographers can see the ideologies behind camera-apparatus and the photographs produced. Highlighting the history of photography is an important aspect of this doctoral research. This thesis argues use of photography in ECEC is missing important critical dimensions. The preceding chapter explored how scopic regimes focused particular ways of looking and knowing (Crary, 1990; Friedberg, 2006; Jay, 1988). That analysis is developed further here by considering the camera-apparatus as agential in material-discursive knowledge formation (Barad, 2007). Flusserian thinking considers the camera-apparatus as a “non-human agency” (Flusser, 2000, p. 83).

Core to Flusser’s (2000) philosophy of photography is that when an apparatus is used to create a visual image, for example a camera is used to take a photograph, the image created is formed within the programmatic allowances of the camera-apparatus. That program is informed by historic knowledge and discursive practices, which are also applied

in consumption of the photograph (Gómez Cruz & Meyer, 2012). In the case of the technical image, knowledge is derived from the disciplines of science and art.

The work of Vilém Flusser offers provocative arguments and unmet challenges when thinking about the upsurge of photographic images in the last part of the 20th century and the beginning of the 21st. Flusser (2000) argued that taking photographs has become a mania resulting in a “blinding” of humanity. He suggested the more frequent and automated taking photographs becomes, “the more difficult it becomes to decode photographs: Everyone thinks there is no need to decode photographs, since they know how photographs are made and what they mean” (p. 59). However, this is often not the case (Gómez Cruz & Meyer, 2012; Kember, 2008). As explored in Chapter 3, Flusser (2000) argued the normalised practice of taking photographs makes it difficult to critically engage with the act and its results, i.e., the programming nature of the camera-apparatus and the technical images produced. In conversation with Flusser (2000), this chapter follows Kember’s (2011) provocation to ask, “What is photography?” (p. 175).

Barad (2007) suggested because the “material and the discursive are intra-twined in apparatuses of bodily production, material and discursive constraints operate through one another” (p. 212), while Gómez Cruz and Meyer (2012) provided a useful discussion on the transition of photographic technologies and social practices. Similarly, they proposed photography as a networked social and technological assemblage. These ideas resonate with Flusser’s philosophy of photography and the photograph. This chapter examines how the intra-action of camera-apparatus, archive-apparatus, and photographer results in particular ways of seeing, and therefore knowing, before turning to question the photograph as a material object. The philosophic inquiry undertaken here is used in later chapters to critically examine the use of photography and the photograph in early childhood education. Before this, the work of Vilém Flusser is revisited.

Revisiting Flusser: A Summary of Key Ideas

Flusser (1986, 2000, 2011b) argued abstraction occurs when images are used to represent information through apparatus such as the photographic camera. Central themes

to Flusser's work previously identified as relevant to this thesis are: apparatus, information, the technical image, abstraction, program, and freedom. As discussed, Flusser (1986, 2000) contended that understanding the photograph requires an understanding of the camera. This chapter explores the developments to photography which led to the digital photograph. Having this historic knowledge assists in exposing the ideology of the technical image (Flusser, 2012). First, a summary of Flusser's thinking on the camera and photography is provided. This revisits the main points identified in Chapter 3. This serves two ends: reviewing those prior points and consequently re-focusing discussion through them. Flusser theorised the camera as an *apparatus*, explaining an apparatus as a:

plaything or game that stimulates thought [*trans.* An overarching term for a non-human agency, e.g., the camera, the computer and the "apparatus" of the State or of the market]; organization or system that enables something to function. (Flusser, 2000, p. 83)

Looking to the etymology of the word apparatus, Flusser (2000) returned to the Latin and the verb it is derived from, *apparare* (to prepare), resulting in a definition of the apparatus as a "thing that lies in wait or in readiness for something" (p. 21), with the camera-apparatus waiting to be used for photography. With the etymology of the word not enough to explain his use of the term apparatus, Flusser extended his definition through ontological contemplation. This resulted in an enclosure of the apparatus as it exists within the world, whereby Flusser (2000) suggested apparatus are cultural productions.

Therefore, the camera-apparatus is not only a cultural instrument, but the culture which produced it is identifiable within the camera. Barad (2007) suggested apparatus intra-twined the material and the discursive, meaning the material and discursive operated through each other. This conception aligns with Flusser's (2000) argument. Likewise, Gómez Cruz and Meyer's (2012) consideration of photography as a "socio-technical network" (p. 204) expressed the intra-action between discursive and material elements, i.e., the camera-apparatus and sociocultural circumstances.

Flusser (2000) considered the apparatus to be embedded in, and concurrently encompassing, the processes of production and consumption. Flusser proposed two types

of cultural objects: “ones that are good for consumption (consumer goods) and the ones that are good for producing consumer goods (tools)” (p. 22). Yet, Flusser only thought of the camera-apparatus as a tool tentatively. This hesitancy stemmed from the photograph’s capacity to hold information. Consequently, he argued for thinking in post-industrial ways about the camera-apparatus.

The Industrial Revolution acted to take and remake objects, to change them through use of tools and machines. However, camera-apparatus do not operate this way. Rather, their “intention is not to change the world but to change the meaning of the world. Their intention is symbolic” (Flusser, 2000, p. 25). Flusser proposed the photographer does not work with the camera in the traditional industrial understanding of the word, but “works” with the camera to “create, process and store symbols” (p. 25). Therefore, Flusser suggested, when analysing cultural issues, the “category of ‘work’ must be replaced with the category of ‘information’” (p. 25).

The photographer was positioned by Flusser (2000) as “inside their apparatus and bound up with it” (p. 27). The motivation of the photographer, according to him, is not driven by curiosity of the world, but rather a desire to explore, and test, the camera-apparatus and its potential to produce information. He perceived the camera not as a tool but as a toy, a plaything. But, the photographer does “not play with their plaything but against it” (p. 27). He argued it is only through playing “against” the camera that freedom can be found. For Flusser, that means seeking unpredictable outcomes in the camera program.

The following section outlines the development of the photographic camera. It is contended that knowledge of the camera program, its history and qualities, provides a way to play against the camera-apparatus, through knowledge of its concealed intentions and interests (Flusser, 2000) and the theory and technology behind its processes (Flusser, 2012). To understand the program, an understanding of the process of abstraction is also required.

A Short History of Photography: Science or Art?

Writing for *Leonardo*²⁵ in the late 1980s, Vilém Flusser emphasised how, with the emergence of the electromagnetic photograph, the division between the disciplines of art and science dissolved “because . . . [photographs] are the result of science and are at the service of the imagination” (Flusser, 1986, p. 331). While Kriebel (2007) suggested early theory of photography was the concern of the disciplines of “art, science, and commerce” (p. 7), Wilson (2007) described the photograph as the “bastard child of science and art” (p. 347) of the 19th century.

The previous chapter described developments in painting resulting from the “fusion of science and art” (Sturken & Cartwright, 2001, p. 115) during the Scientific Revolution. In more recent years, the photograph has been of interest to a wider range of academics, including those from the disciplines of “art history, cultural and media studies, and philosophy” (Green, 2007, p. 244). There has also been an increasing interest in photography in the discipline of early childhood education (for example, Cederman, 2008; Daniels, 2013; Einarsdóttir, 2005, 2007; Flannery Quinn & Manning, 2013; Kind, 2013; Lindgren, 2012; Moran & Tegano, 2005; O Magnusson, 2018; Sparrman & Lindgren, 2010; Tarr & Kind, 2016). However, interest in ECEC spaces of learning has traditionally been about using the photograph as a method of tracking, recording, and proving learning. This thesis calls for the ECEC community to re-examine photography, and photograph use as pedagogy, with a critical lens. This means going beyond the photographs themselves to question the apparatus, processes, and beliefs involved in their production and consumption.

Initially the photograph “offered a new technological opportunity”; however, it has increasingly become “an unexamined part of modern perception” (Berger, 1980, p. 53). This could be due to the misconception of the photograph as a “mechanical record” (Berger, 1972, p. 10). This lack of critical examination could have been perpetuated by the speed at which the photograph has become a “normal” part of modernity. Flusser (2000) claimed

²⁵ The journal *Leonardo* is published by MIT Press, and has a publication focus on the arts, sciences and technology. The mission statement of the journal suggests “critical challenges of the 21st century require mobilization and cross-fertilization among the domains of art, science and technology” (*Leonardo*, 2019, para. 1).

uncritical acceptance of the photograph is dangerous because the “objectivity’ of technical images is an illusion” (p. 15). Gómez Cruz and Meyer (2012) also argued belief in the photograph as a “technological means for recording the world as seen” (p. 204) is a popular argument made by people who think they “know what photography is.” In accord with Flusser (2000), and Gómez Cruz and Meyer (2012), Kember (2008) suggested that even after 150 years we do not know what photography is. Kember posited that we have not yet understood what photography is because, in part, we have been applying a “restricted range of disciplinary and conceptual frameworks” (p. 175) to it. To meet this challenge, a diverse range of disciplines, theories, and conceptual frameworks are drawn upon by this thesis, as detailed in Chapter 2.

Looking at early photographs, it is easier to see the photograph for what it is: a combination of scientific thinking and physical materials. Figure 10 is an image of one of the earliest remaining “photographs.” Created by Joseph Nicéphore Niépce in either 1826 or 1827, this is an important image in the history of photography for its success in maintaining a stable chemical reaction. The direct positive heliographic image was created with a camera obscura onto a plate of pewter coated with bitumen of Judea and washed with a solution of lavender oil and white petroleum (“View from the Window at Le Gras,” n.d.). The analogue photograph, as it is now known, is the result of much scientific experimentation finally resulting in the mastery of several substances’ chemical properties. The following Figure 11 shows an enhanced image of the initial photograph created by Joseph Nicéphore Niépce in Figure 10. In the image in Figure 11, created over 100 years later by Helmut Gersheim (c. 1952), the technical evolution of photography is evident.

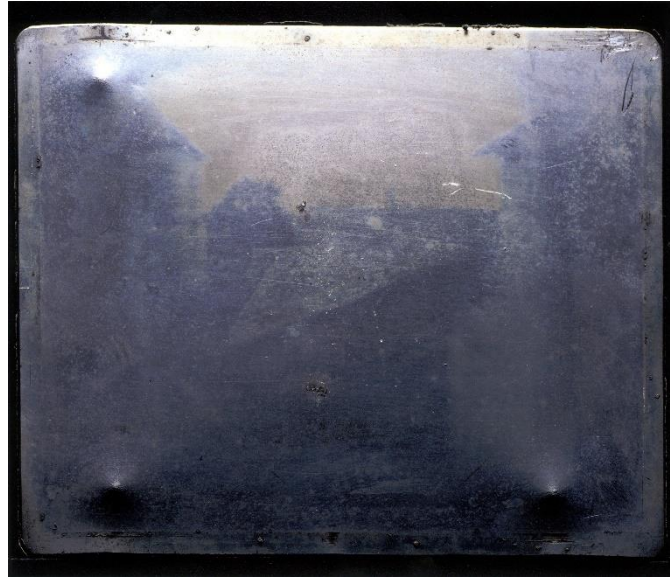


Figure 10. Digital photograph of the original heliograph plate (16.7 x 20.2 x 15 cm). It is credited with being the first permanent photograph. From “Point de Vue du Gras by Niépce, 1826,” by J. N. Niépce, 1826 (https://commons.wikimedia.org/wiki/File:Point_de_vue_du_Gras_by_Niépce,_1826.jpg). In the public domain.

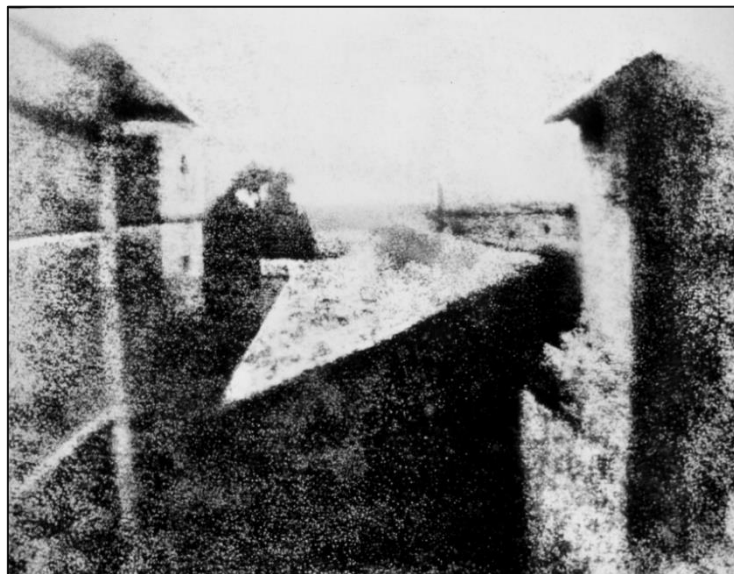


Figure 11. Enhanced image of “View from the Window at Le Gras.” The image was created by the Kodak Research Laboratory at the request of H. Gersheim in 1952 and later retouched and enhanced by H. Gersheim himself. From “View from the Window at Le Gras, 1826–27 (manually enhanced version)” by H. Gersheim, 1952 (https://commons.wikimedia.org/wiki/File:View_from_the_Window_at_Le_Gras,_Joseph_Nicéphore_Niépce.jpg). In the public domain.

Gómez Cruz and Meyer (2012) discussed the history of the photograph in relation to four “moments.” They theorised photography and the photograph as a “socio-technical

pendulum” (p. 208). This metaphor reflects the changeable nature of technology in relation to society. The first moment occurred around the time the photograph in Figure 10 was created, in the 19th century. At this point, photography was a science. Those early photographers required an expert skill base for

the preparation of the chemical emulsions that were often prepared in the field and applied to glass plates, tin plates, or paper, the use of complicated heavy and bulky equipment, and detail knowledge regarding times of exposure, light conditions, and so on. (Gómez Cruz & Meyer, 2012, p. 208)

The types of photographs produced were directly affected by the techniques and technologies existing in this moment. Photographers were “constrained [by] the photographic possibilities” of the available photography equipment, which in turn “constrained visual thinking and experimentation” (Gómez Cruz & Meyer, 2012, p. 208). Flusser (2012) discussed this in terms of the photographer moving within the categories and principles operating the camera. Lister (2007) also commented that past technologies determined the images photographers could make.

Following the first moment of photography, Gómez Cruz and Meyer (2012) proposed a second, in the first 3 decades of the 20th century, when small personal cameras became available such as those introduced by Kodak. These simple to use cameras, marketed with the catchphrase “you press the button, we do the rest” (Gómez Cruz & Meyer, 2012, p. 209), meant that now anyone with such a camera could take photographs.

However, photographic possibilities were still restricted. While photographers could select the frame, time, and their position when they photographed, they had to send film away to be processed, developed, and printed. This meant they did not have the same level of creative control over their photographs as photographers of the previous period. So, while photography had become more accessible due to cameras becoming simpler to use and more available, it simultaneously became more limiting, reductive, and constrictive. Yet, in this moment, Gómez Cruz and Meyer (2012) suggested, photography became “part of everyday life” (p. 210). That is, photography and the photograph became normalised.

In the third moment, between 1930 and the 1990s, Gómez Cruz and Meyer (2012) posited, the foundation to current societal understandings about photography and the photograph was formed. In this third moment, division between professional and amateur photography “increased and photography was institutionalized in different realms with fixed characteristics for each” (p. 211). This division was created by the different ways images were used and consumed. These “distribution circuits” (p. 211) helped to form a clear distinction between professional and amateur photographs.

For example, professional photographs were published publicly in magazines and newspapers and hung in galleries, whereas amateur photographs were shared amongst familial groups and collated into albums, or stored in shoe boxes, and hung on the walls of homes. Adding to the division were the types of technologies photographers could access. While professional cameras and photography equipment were more expensive, the skills and knowledge of professional photographers were also more expansive and refined than those of amateur photographers. The differences were socially created and, in a sense, returned photography to the first moment when photography was a decidedly skills- and knowledge-based activity.

According to Gómez Cruz and Meyer (2012), from the end of the 20th century to the current period we have been in the fourth moment of photography. However, they do propose we are potentially transitioning into a fifth moment in the socio-history of photography. Before discussing that possibility, towards the end of this chapter, the conditions of the near-past and potential now are first explored. The fourth moment is distinct from the previous three in that digital photography technologies emerged and become ubiquitous to photography. The pervasiveness of digital photography has been amplified by the internet and the connectivity it has supported via the virtual spaces of the cloud. Currently, digital cameras are the technology most commonly used to produce photographs. Smartphones provide a camera for everyday use at easy reach. Indeed, most smartphones provide dual cameras for users, for photographing the environment and photographing the self.

Van House (2011) reported that participants in a study into personal photography found “carrying a camera-phone, in particular, encouraged them to see the world as a field of potential images” (p. 131). As stated previously, Flusser (2000) argued humanity had in a sense become blind to copious photographs manically being produced. Flusser suggested the more everyday and automated taking photographs becomes, “the more difficult it becomes to decode photographs: Everyone thinks there is no need to decode photographs, since they know how photographs are made and what they mean” (p. 59).

The reason why it is so difficult to decode photographs is that they “obscure their relation to their meaning” (Flusser, 2012, p. 195), i.e., they appear to be symptoms of reality but are actually symbols. It is imperative, Flusser (2012) argued, that society understands how photography and photographs function. Gómez Cruz and Meyer (2012) identified three changes in the fourth moment to the knowledge required to produce images, and the photographic equipment. They contend due to these changes the “knowledge economy and power networks where photography used to operate were reconfigured” (p. 212). The three aspects Gómez Cruz and Meyer identified were: control, distribution, and knowledge.

The photographer’s ability to control the creative production of their photographs changed in the fourth moment. Gómez Cruz and Meyer (2012) described how in the second and third moments only those photographers with access to a working darkroom could control the whole process of photograph production. Otherwise film needed to be sent away to be developed and printed. With the introduction of digital cameras photographers are not dependant on photographic labs to process their film, they could now “process, and distribute images once they have the proper equipment” (p. 212). It is important to note that the ‘proper’ equipment, such as printers or computers, are now often already possessed by photographers. Gómez Cruz and Meyer pointed out that this moment is vastly different from previous ones for this reason. Digital photography is “part of new ICT-based networks that are different from the networks for film photography” (p. 213). Therefore, the networks of distribution are also different.

The key difference is that distributing digital photographs is an additive process rather than a subtractive one (Gómez Cruz & Meyer, 2012). As digital photographs have no

material basis they can be uploaded, shared, copied, printed and given away, but in a way which adds to their number rather than subtracts from it. Unlike an older analogue photograph, which, while it could be given away, remained bound to its material form and therefore sharing it required consideration. The point is that giving away an object is different from sharing data. Here, Gómez Cruz and Meyer (2012) differ slightly from Flusser (2000) who argued the analogue photograph also had abandoned its material basis and existed in the information contained upon its surface. Perhaps Gómez Cruz and Meyer (2012) made this distinction due to different understandings of the recent past and of the current digital era. However, both parties are in agreement that the ways information is distributed have changed with emergence of the digital photograph. More important, Gómez Cruz and Meyer proposed the new distribution networks were “rapidly becoming key actors in creating photographic meaning” (p. 214).

Gómez Cruz and Meyer (2012) suggested computer programs are an important player in the knowledge systems informing digital photography production and distribution. With the shift to digital photography, post-production processing has become the domain of the photographer, with the help of computer programs. The digital camera “inscribes, using algorithmic computer routines, complex photographic processes that are transformed into choices that appear simple to the photographer” (p. 214). This echoes Flusser’s (2000) concern that the program of the camera-apparatus is a complex abstraction which is accepted by photographers and viewers of photographs in a simple, i.e., uncritical, manner. While Gómez Cruz and Meyer (2012) pointed to the programmatic nature of photography within the fifth moment, they were also optimistic that photographers can play against the program through experimental photography and achieve a “playful relationship with the possibilities of the programs” (p. 216). Once again here is an echo of Flusser’s (2000, 2011b) thoughts on the future of the technical image. To be a malfunctioning functionary and creator of informative images requires understanding how camera-apparatus operates and the limitations and affordances of the program. This provides the possibility of freedom, through new and meaningful information.

The fifth moment of photography Gómez Cruz and Meyer (2012) proposed is discussed in the latter pages of this chapter in connection to Flusser's (2000) notion of playing against the camera-apparatus. The following section introduces a discussion of the archive in connection to the photograph and its distribution. The archive is a key point of analysis in this research. The following Chapter 6 looks more closely at the practice of archival photography, the archive, and the productive power at work upon information placed and held within archives.

Distribution networks: Archiving the photograph.

Photographs eventually need to be organised in some fashion. The practice of archiving is explored here as another way to think about how photographs are consumed. An archive is most simply defined as a collection of documents. An archive is also a place where documents are stored, physically or digitally. While archives can be diverse, they all share a commonality in that they require "some sort of a system for classifying the materials they hold" (Rose, 2000, p. 558). Taking photographs specifically for an archive, to produce a body of work related to a certain topic, necessitates cohesion between the photographs produced and the needs of the archive. For example, Arnold Gesell and colleagues at Yale between 1924 and 1948 took photographs of children to produce an atlas showing the "normal development" of the child (Curtis, 2011; Gesell, 1934; Halverson, 1928; Thelan & Adolph, 1992). The photographs needed to provide the viewer cohesion across time and subject, so all photographs were taken in a purpose-built observation dome and children were given the same objects at the same time throughout their early months and years.

The practice of archival photography provides another perspective with which to question the practice of photography and use of the photograph. Of particular interest to this thesis are the techniques "in which people are represented, arranged for the camera, made available to be gazed at, and placed in a system of signification which codes and classifies them" (Henning, 2004, p. 166). Henning's description of archival photography clearly shows power at play upon those photographed. The subject is presented to the camera in a way specific to the episteme the photographer is operating within. Photographs produced are

then coded and classified within the same organisation of knowledge which informs their creation.

Gómez Cruz and Meyer (2012) noted the digital transition of photography also changed the way archives of photographs are managed. With the shift to digital photography, computer programs are “required to access, store, manipulate, and share images” (p. 204). Consequently, companies providing archiving software and cloud-based platforms for photograph storage are active in the “reconfiguration of the definition of what photography means” (p. 204). How photographs are used is therefore directly influenced by the programmatic power of the archive. This is explored further in Chapter 6. Rose (2000) argued the archive can affect both the photograph and whomever accesses the photograph within its archive. She also argued that the archive “constitutes photographs in particular ways” (p. 558) through their ordering and systemic management, and that this “also produces the researcher in particular ways” (p. 561).

The space of the archive would seem to be as paradoxical as the photograph. Rose (2000) suggested the archive is complex, “fractured and contradictory . . . performed through practices that may not discipline successfully” (p. 567). Importantly, Rose suggested that there is also the possibility of resisting the archive, both by the photograph and by the researcher looking at the photograph. Here is Flusser’s (2000) notion of playing against the camera: resistance to the program creates a space for freedom.

The complexity of the archive is explored in depth in Chapter 6. This short introduction has developed ideas discussed in the previous section on distribution networks. The photograph’s power of truth is explored in relation to the archive in Chapter 6. While traditionally accepted as an accurate and unbiased way to present what is before the camera lens, the photograph is increasingly contested. Perhaps developments in digital photography show more clearly the power of the photograph to manipulate and mimic. The following section examines the materiality of photographs and provides some answers to the question of what the photograph is.

The Photograph: Visual Materiality

The photograph has become an important, even crucial component of communication in the modern world (Sturken & Cartwright, 2001). It is now difficult to imagine a world without the photograph and the digital camera (Sturken & Cartwright, 2018). Lister (2007) suggested “photographs of several important kinds—documentary, legal, medical, surveillance, personal—stand in for bodies, things, and events in their absence” (p. 265). Photographs are used in ECEC to document learning and teaching and therefore show educational outcomes have been met. However, the photograph’s perceived ability to preserve happenings, to act as a “stand in” for a person, object, or occurrence, can be problematic. Van House (2011) suggested the digital photograph has “slipped the bounds of materiality” (p. 128). This claim, also made by Flusser (1986, 2000, 2011b, 2015), points to the complexity of using photographs as evidence.

The photograph in Figure 12 plays with the understandings of the photograph as trace, proof, or evidence (Kind, 2013; Lister, 2007; Sontag, 1977). The photograph is of another photograph contained within a jar; entitled *Matryoshka (Beach in a Jar No.7)*, it plays with the idea of an object containing another similar object—in this case the photograph of another photograph held within a glass jar. The original photograph, an image of a rocky shore beneath a boat house and a clear blue sky, is distorted by the studio lights refracting through the glass of the jar. The photograph in the jar “stands in” for the beach; however, the secondary photograph of the beach photograph clearly shows it is not, nor never was, a beach. Flusser (2000) explained how technical images are accepted as “windows” (p. 15) on reality rather than as images—resulting in a lack of critical engagement with the image. He considered this uncritical acceptance dangerous as the objective reality accepted by viewers (of technical images) is one of illusion.



Figure 12. Matryoshka (Beach in a Jar No. 7). (Digital camera). Copyright 2017 by E. Diggins. Used with permission.

Flusser (2011b) argued the photograph has become an immaterial object. Lister (2007) suggested the same, and, like Flusser, identified the photograph's ability to "hold" abstract information as key to this transition. Drawing on ideas such as "information society" and "information economy," Lister cited Latour (2004) in describing this new type of information. It seems as if this new type information has been "released or loosened from the material substrates on which it was once inscribed (marked, etched, impressed, or registered in chemical or electro-magnetic changes on physical surfaces)" (p. 263). However, Lister differs from Flusser in his approach to this new manifestation of information.

Flusser (2011b) made a distinction between the concrete and the abstract, suggesting the information held within technical images, such as the photograph, "abandons its material basis" (Flusser, 1986, p. 331). Because the technical image is made from abstract codes, Flusser (2000) proposed the "material basis of information has completely disappeared" (p. 52). Lister (2007), on the other hand, suggested information is something "we have to think of as both abstract and concrete; as immaterial and material" (p. 263). Gómez Cruz and Meyer (2012) provided an interesting way to think about photography. They "understand photography not as representation, technology, or object, but as the agency that takes place when a set of technologies, meanings, uses, and practices align" (p.

201). This position resonates with Barad's (2007) concept of intra-activity. The agency of photography would, in Flusserian terms, also operate upon the functionary of the camera-apparatus.

Thinking about photography and the photograph as both an immaterial and material practice responds well to the complexity of the activity and the artefact. So, while it is possible to say the photograph is either material or immaterial, it is also possible to say it is both. The photograph is an object, it is a visual representation, and it is technology manifest. It is also the product of historic discursive understandings and practices. The photograph is both a physical object: printed paper, or imaged on a computer screen; and immaterial: abstract data, concepts, and information.

Rose and Tolia-Kelly (2012) suggested the visual and the material are most often considered in separation. They proposed *visuality/materiality* as an approach crossing disciplines with the purpose of "reconceptualisation of the visual (through theory, method, and practice), as an embodied, material, and often political-charged realm" (p. 3). This "co-constitution" (p. 2) of the visual and the material speaks to the theory of photography and the photograph as both immaterial and material.

A photograph then can be seen as a trace of an actual event, proof that something occurred, and image or reflection of how things were. It is evidence of a real tangible world: it visualizes, or makes visible something about the world as it is seen or experienced. (Kind, 2013, p. 428)

In the above quotation, Kind (2013) suggested the photograph can act in many ways to communicate to viewers what has happened in the material world. Kind discussed this in terms of the photograph providing a visual trace. Her comment clearly shows the relationship between the visual and the material. The photograph makes visible the material world. The word photograph comes from the Greek *phōto-* meaning "light" and *-graphos* meaning "written" and was first used in 1839 (Onions, 1966). So, to photograph is to write with light. Onions (1966) also noted most words using *-graph* are of technological use and commonly "denote a thing that records or expresses" (p. 410). The photograph was named at a time when the belief in its ability to faithfully record what was in front of the camera would have

been at its height. The photograph would have been considered to offer an accurate picture of the world.

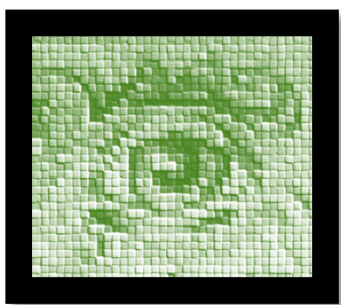
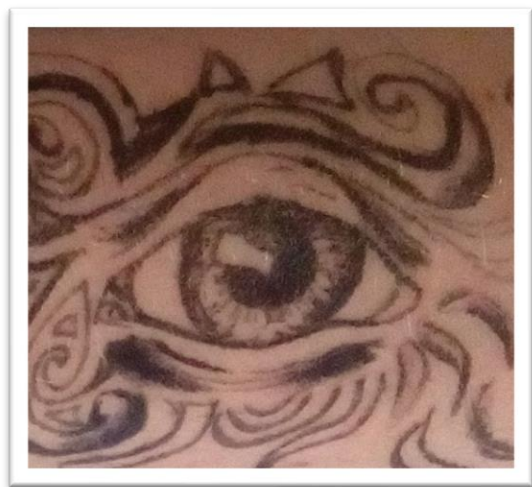


Figure 13. Filtering reality—playing with the program.

However, as Flusser (2000) argued, looking at photographs as “windows” (p. 15) onto reality, instead of as images, means a lack of critical engagement with the image as an object. This concerned Flusser, as the objective reality accepted by viewers as real was imagery. Rose and Tolia-Kelly (2012) pointed out research which works with both the visual and the material remembers “that the politics of *doing* the visual are as material as matter is visual and that both are engaged beyond the ocular” (p. 3). This points to the practices and apparatus behind images which permeate our understandings and habitual ways of thinking about vision, matter, and knowing.

Gómez Cruz and Meyer (2012) proposed we were entering a fifth moment of photography. In this fifth moment, it has become possible to play with the program. For example, the photographs in Figure 13 play with a photograph taken with a smartphone. The photograph has been altered with a computer program to create different images from the original photograph. This playful engagement with the camera-apparatus program makes it “possible that anything, anytime, could become subject of photography” (p. 216). They point to the mobile phone, specifically the iPhone, as a fulcrum of this change. With new technology, it has become possible to capture, process, and produce (in digital or paper-based form), all with the same device. More important, the original data can be processed to become something different. This means the images produced “can be randomly experimental rather than pre-planned” (p. 216). This is similar to Flusser’s (2000) notion of playing against the camera-apparatus. Likewise, there is resonance with Flusser’s (2011b) idea that freedom is found through creating new information

Concluding Comments

The photograph is complex. When asking what the photograph is, many possible answers can be given. The photograph is used to provide a visual trace of the physical world, it is used as evidence, and as proof (Kind, 2013; Lister, 2007; Sontag, 1977). However, the photograph is also a surface—holding abstract, immaterial information (Flusser, 1986, 2000, 2011b, 2015; Lister, 2007; Van House, 2011).

Flusser (2011b) argued language abstracts, and technical images such as photographs, are a coded abstraction of language. Furthermore, the ways we look are “not defined by sight but are complexes of actions and passions, actions and reactions, multisensorial complexes” (Deleuze, 2006, p. 50). Scopic regimes and scopic apparatus provide certain views. Looking at photographs as products of apparatus creates space to consider the complexities which lie behind the surface of the image. This allows for critical understandings of the histories, practices, and ethics of photography and the photograph to develop.

The ideas explored here are developed further in the following chapter through the archive-apparatus. Moving on from the question of what the photograph is, Chapters 6 through to 8 focus on how the photograph is used. This provides some answers to the question of what the photograph does. Like the camera-apparatus, the photograph acts to inform. However, according to Flusser (2011b), that information can be redundant, offering nothing original, or it can be informative and provide new unpredictable information. For photographs to be used to their potential, photographers must define the programs they operate within and find a divergent path. To do so requires working with, and against, the agency of apparatus.

Chapter 6.

Photographing for evidence: Archive-apparatus

When classifying and managing the human subject, it is important teacher-photographers are aware of the photograph's history. Having insight into the history of photography as a mechanism of social ordering offers teachers a critical viewpoint and therefore the potential to develop an ethical practice of photography. Since the invention of the camera, the human subject has been photographed often, for various reasons, and for various ends. From classification of "abnormality" (Sturken & Cartwright, 2009) to the cataloguing of "typical" (Sontag, 1977), photography has provided a remarkable tool to visually document the subject and society. Two methods of collating such photographs are explored here: the atlas and the archive. The Flusserian concept of apparatus is used here to explore these systems of organisation as archive-apparatus.

Chapter 1 highlighted growing concerns around the ethics of photography use in ECEC. Flannery Quinn and Manning (2013) urged all those involved in early childhood education, from student teachers, to practising teachers, to those involved in higher education contexts, to "explicitly consider the practice from an ethical standpoint" (p. 270). This chapter engages with that call and reconsiders the ethics of using photographs of young children in connection to the archive. The photograph is commonly used in early childhood education as a "pedagogical tool" (Flannery Quinn & Manning, 2013, p. 270). It is now normal for children to be repeatedly photographed in educational contexts, often on a daily basis (Sparrman & Lindgren, 2010). These photographs are then sorted, collated, and displayed in some manner by teachers, ideally collaboratively with children, and preferably made available for others to access and reflect on, verify, and classify.

This chapter examines the notion of archive-apparatus, introduced in Chapters 2 and 5, to argue that certain ways of looking and seeing are created by photographic evidence. The chapter consists of three sections. The first examines how looking through a camera is informed by historically discursive practices. In the second, an investigation of archiving

through systematic methods such as atlases shows the influence of the archive on knowledge production. Also, the archive is explored as an active force on what can be known. The third section reflects on how discursive practices built on historical understandings and methods of archiving govern current information production and consumption. This section addresses the post-industrial characteristics of digital visual data collection and analysis through Flusser's (2011b) concept of technical image.

A Historical View: Photographic Seeing, Looking, and Knowing

Historically, the photograph was thought of as a form of objective evidence “believed to offer the potential for revealing facts and truths” (Sturken & Cartwright, 2009, p. 356) while the camera was considered an “objective recording device” (Sturken & Cartwright, 2009, p. 357). By the late-19th century, filtered through an understanding of empirical observation as central to establishing knowledge, the photograph was believed to extend observation and analysis. Sturken and Cartwright (2009) suggested recent critique of empirical thinking has resulted in new understandings of the “limits of such claims about seeing and its relationship to facts and knowledge” (p. 363). While understandings may have shifted in some areas, it is important to note past ideology and discourse provide a historical a priori (Foucault, 1972). This means historic knowledge about photographs and photography will underpin current views. This historical a priori is traced below. The tracing is returned to in the final section of this chapter through a discussion of current digital photographic practices.

Use of the photograph as a form of evidence emerged from historic use as a scientific technique for “mechanically observing, measuring, and studying the real world in a manner that could check, balance, or correct the errors introduced by subjective human perception” (Sturken & Cartwright, 2009, p. 355). As such, Sturken and Cartwright (2009) argued the photograph carries a “legacy of positivism” (p. 355). The photograph's use as a mechanism of truth meant it was “not just a new way of seeing; it was a new way of believing” (Schwartz, 2006, p. 71). Galison (2002) expressed the long relationship of the sciences with the image as a “whirling embrace of iconoclasm and iconophilia” (p. 301).

Similarly, Daston and Galison (2007) tracked historic use of images in the sciences to show initial rejection shifting towards predilection.

Historically, the photograph has been used by the medical, biological, and social sciences to record and produce catalogues of human beings (Sturken & Cartwright, 2009) and the physical world at large (Blouin & Rosenberg, 2006; Daston & Galison, 2007; Schwartz, 2006). The use of photography during the 19th century in institutions which “documented and classified . . . stemmed in part from an emerging understanding . . . that classificatory systems could be used as a means of social organization and control” (Sturken & Cartwright, 2009, p. 357). The use of the photograph to observe, measure, and record the human form, and its physiological and psychological functioning, has resulted in a body of knowledge which, while questionable, informs current practices employed by police and security forces for the classification of people in relation to how they look (Gates, n.d., cited in Sturken & Cartwright, 2009).

The use of photography as an accurate method of producing objective evidence was taken up within asylums and prisons where “visual markers” (Sturken & Cartwright, 2009, p. 361) were determined for what normalcy (or abnormality) looked like. Both institutions used photographs to identify and classify the persons they managed, and individuate subjects (Sturken & Cartwright, 2009). Use of the photograph in the “visual categorization of people according to types, and according to specific identity-linked characteristics” (Sturken & Cartwright, 2009, p. 358) was regular practice by the turn of the 20th century and indeed remains routine procedure. Early photographic experiments overlaid several photographs to produce images of a typical “type,” for example of a criminal or “deviant” (Sekula, 1986). These photographs of types were then used to build a knowledge base of what people were like and how they would behave (Sekula, 1986).

Drawing on Foucault’s theory of biopower, Sturken and Cartwright (2001) discussed use of the photograph to classify and manage the human subject. They argued the photograph is extremely influential in producing docile bodies, suggesting the photograph provides subjects an ideal image, and ideological litmus, of what is normal—essentially of whom to become. Barthes’ (2000) comment that he transformed and constituted himself in

readiness to be photographed *as an image of himself* is illustrative of the productive power of being photographed. Presenting a certain self to the camera, be that a performance of “beautiful woman” (Sturken & Cartwright, 2001), or “learning child” (Buchanan, 2011), reveals the way bodies can be disciplined and normalised through being photographed.

Similarities can be drawn between the practices Sturken and Cartwright (2001, 2009) examined and the use of photography in early childhood to classify and manage the bodies and learning of children. Each child beginning early childhood education in Aotearoa New Zealand, after familial consent is gained, is routinely photographed. Photographs are used to identify children, be that on a visual roll or a centre website. Photographs are captured for learning stories or visual documentation such as story boards, displayed in photo frames within the classroom, and, generally, once a year the entire class is carefully presented in a group photograph. Specific cases such as medical dietary issues, or ongoing medical or behavioural concerns, commonly require children’s photographs accompanied by relevant information to be clearly displayed for all teachers to see. Also, typologies of children’s behaviours are visually represented in conjunction with the principles, strands, learning outcomes, and learning dispositions detailed in the early childhood curriculum.

The historic use of photographs to produce visual evidence have resulted in a particular way of looking and seeing becoming established. This way of looking and seeing creates specific ways of knowing the world and the peoples and objects within it. The task of this thesis is to consider ways in which photographs and photography contribute to the construction of knowledge about young children in ECEC. The historical perspectives discussed bring forth questions about the veracity of the image, performance, pedagogy, and ethics. Given the philosophical enquiry so far, I would argue that a teacher needs to be committed to ethics and understanding the history of photography to fully comprehend the power of camera-apparatus. Only by being aware of the legacy of photography can one contemplate potential consequences of this power for children, teachers, and education. The following section considers the power of the photograph in relation to the power of organisational apparatus: the atlas and the archive. It examines the influence these systems exert over knowledge production, and information production and consumption.

Systems of Documentation: Classifying and Cataloguing

The Flusserian notion of apparatus explored in Chapter 3 discussed how apparatus acts as an “organization or system that enables something to function” (Flusser, 2000, p. 83). The apparatus, for Flusser (2000), “stimulates thought” (p. 83). Therefore, the apparatus, be it a camera or an apparatus of information organisation (such as the atlas or archive), provides the structure within which thinking functions, and also operates upon thinking. Flusser proposed “there are intentions and interests concealed behind apparatuses” (p. 24), meaning that there are programs which inform and function through the apparatus, and consequently work upon the operator of the apparatus.

Theorising a shift in power from ownership of objects to the objects’ power to hold information, Flusser (2000) argued the symbols produced by apparatus “have in a certain way been prescribed” (p. 26). This is due to the nature of the camera-apparatus. This means photographers must operate within the possibilities allowed them. How we can look through the camera defines what can be seen upon the surface of the photograph (Flusser, 2000, 2012). Likewise, the productive power of the apparatus was described by Barad (2007) as enacting an agential cut. Importantly, the agential cut is dependent on the apparatus, or, rather, the apparatus used causes a specific cut to occur. Lenz-Taguchi (2010), following Barad, argued pedagogic documentation acts as a material-discursive apparatus and thus “an active agent in generating knowledge” (p. 54). Flusserian thinking understands apparatus as agential and yet simultaneously constraining through their programmatic allowances. While apparatus such as the archive act upon knowledge, the ways archive-apparatus act is by essence limiting. In the following sections apparatus that systemically organise photographs into visual databases—the atlas and the archive—are examined.

Artefacts of photography include the camera, the photograph, and photographic collections such as atlases and archives. It is argued these artefacts are produced through specific ways of looking and seeing, i.e., through historic values and understandings, and therefore result in knowledge which reflects this specificity (Daston & Galison, 2007; Foucault, 1972, 2000a). A certain type of photograph is pulled into focus here: the

photograph used as data for evidence. The apparatus of the camera is used in the action of photographing, or, as Flusser (2011a) termed it, the gesture of photographing. Flusser (2012) understood the photographic gesture as an “ideological gesture” (p. 198) in that it sought a certain viewpoint within specific framings of time and space which were a priori. The photographic gesture occurs within the possibilities offered to the photographer.

The view of the photographer is therefore influenced by “looking that reflects the structure of the apparatus, as well as the intention to create a photograph that is to be viewed by a recipient” (Flusser, 2012, p. 198). Ultimately, photographs produced from the gesture of photographing are collated and presented, for example as atlases, or archived into collections, which catalogue and classify truths and knowledge. The storage of the photograph in archives, and the production of photographs for atlases, are historic practices emanating from the invention of chemical techniques allowing the creation of stable paper-based images (Schwartz, 2006).

Producers of the atlas and archive, that is apparatus of photograph organisation, seek to present a body of knowledge to the viewer which is visually evidenced. The production of atlases is examined in the next section, and the archive is investigated in the following section. This thesis aims to develop a fuller understanding of how photographs have been used in the past. This is done through critical reflection on atlases and archives as systems of organisation involved in collating and consuming photographs. Gaining insight into past photograph use will enable current use to be better theorised. Questions are posed around how photographic seeing, looking, and knowing occur in relation to atlases and archives. Apparatus are explored as having concealed purposes and, as such, as acting as a kind of “performative agent” (Lenz-Taguchi, 2010, p. 62) in that they place preorganised structures upon photographs.

The atlas.

From the early-19th century until the early-20th century, extensive image-based atlases were published aiming to provide objective visual evidence of natural phenomena (Daston & Galison, 2007). Ranging from geological to microbiological, zoological to

astronomical, atlases systematically documented diverse subjects such as: soil types; human blood, organs, embryos, movements, development, and “human types”—resulting in the “science” of physiognomy; snowflakes; planets and stars; and biological specimens—both fauna and flora. Daston and Galison (2007) claimed that, at the height of the practice, between 1830 and 1930, approximately 2,000 atlases, not related to geographical studies, were published, plus several hundred similar collections of image-based publications.

The practice of archiving images into atlases also occurred before the invention of the photograph with images created by such methods as lithograph or woodcuts. However, with the invention of printable photographs the methodology and epistemological concerns of atlas makers changed (Daston & Galison, 2007). With the invention of a mechanical apparatus which could create images free from human subjectivities and interference,²⁶ Daston and Galison (2007) noted, there was a shift in thinking which “explicitly militated for a newly disciplined scientific self bound to a highly restrained way of seeing” (p. 122). Daston and Galison provided a chronicle of these changes to scientific use of visual images and introduced the notion of *mechanical objectivity*. They theorised mechanical objectivity as a “visually grounded” “ethical-epistemic project” (p. 121), defining it as:

the insistent drive to repress the wilful intervention of the artist-author, and to put in its stead a set of procedures that would, as it were, move nature to the page through strict protocol, if not automatically. This meant sometimes using an actual machine, sometimes a person’s mechanized action, such as tracing [O]bjects would be gathered into systematic visual compendiums that were supposed to preserve form from the world onto the page. (p. 121)

For instance, the research conducted by Arnold Gesell and colleagues at Yale used photographs of children to produce an atlas showing the “normal development” of the child (Curtis, 2011; Gesell, 1934; Halverson, 1928; Thelan & Adolph, 1992). Gesell’s (1934) *Atlas of Infant Behavior: A Systematic Delineation of the Forms and Early Growth of Human*

²⁶ While it was realised this was not possible it was an aim actively pursued and one which impacted practices and ways of looking—the camera and photograph provided mechanical techniques with which to seemingly achieve this goal of objectivity and curb human interference (Daston & Galison, 2009).

Behavior Patterns provides a notable example of an atlas specific to the development of the young child. To gather photographic data, the researchers constructed an elaborate observation dome within which children were observed, filmed, and photographed. Gesell made popular practices of child assessment based on norms of development (Thelen & Adolph, 1992). Gesell's research contributed to the shaping of how children are looked at, seen, and known.

Thelen and Adolph (1992) identified Gesell as a "giant in the field of developmental psychology" (p. 368). Curtis (2006) proposed Gesell's use of photography was influential in this. Thelen and Adolph (1992) suggested Gesell "pioneered the scientific observation of infants and children through innovative and technically sophisticated methods for collecting a vast archive of behavioural data" (p. 368). Gesell considered the use of photography, and the resulting photographic images, as core to his research (Curtis, 2006). Outlining Gesell's career, Thelen and Adolph (1992) detailed how his theories and publications provided a foundation for developmental psychology, education, policy, and the social sciences. Gesell published actively over a span of 4 decades, with his work being translated into over 20 different languages.

Halverson (1928), a member of Gesell's research team, described how the viewing dome afforded "standardization and experimental control to a considerable extent" (p. 127). Writing a year after the dome's construction Halverson described the consequent data production:

To date . . . many hundreds of still photographs and several thousand feet of motion film . . . Besides the relatively large number of children who we photograph for the purpose of securing norms of behavior, we make special intensive studies of a few Ss, each of which is examined at intervals of four weeks. A single examination yields from 30 to 60 still photographs and from 100 to 200 feet of motion film. (p. 128)

Curtis (2011) suggested a synergy between the use of film cameras and the legitimising of developmental psychology and child studies as fields of study. He posited use of the photograph as a source of data resulting from the disciplines' need for "more rigorous observational methods" (p. 418). Gesell's methods of collecting and analysing visual data

are identifiable within the concept of mechanical objectivity Daston and Galison (2009) outlined. In particular, these are the use of a mechanical apparatus designed with the aim of gathering “a truly representative record for further intensive study” (Halverson, 1928, p. 126), and the method of frame-by-frame analysis whereby single frames were traced onto paper by a specially designed projector for further study (Curtis, 2011).

Use of apparatus in gathering, collating, and analysis of data creates certain conditions of engagement, and so particular understandings and knowledge (Flusser, 2000). Gesell’s (1934) *An Atlas of Infant Behavior* provided those working with young children a visual record of standardised, ideal, scientifically correct developmental markers. The atlas provided an archive of photographs documenting “normal” child development. The use of photographs in *An Atlas of Infant Behavior* shows how controlled collation of photographic images produces specific ways of looking at the human subject through classification and cataloguing.

The archive.

The word *archive* comes from the Greek “*arkheî* magisterial residence, public office,” “*arkheîos* governmental,” and “*arkhé* government” (Onions, 1966, p. 48). The etymology of archive provided by Lane (2003) noted the Grecian *arkhelon*, meaning “a repository of official records” (p. 15), and also suggested its root *arkhé*, “meaning government, gives strength to the signification of *organization*” (p. 15). An archive can be a place or a collection of information. Derrida (1995) suggested we “not begin at the beginning, nor even at the archive. But rather at the word” (p. 9). In his etymology, he also included “*archons*, those who commanded” (p. 9), for which Onions (1966) provided “*árknōn* ruler,” and “*árkhein* rule” (p. 48). While Derrida (1995) suggested the root *arkhé* “names at once the *commencement* and the *commandment*” (p.9), Onions (1966) supplied “beginning, rule” (p. 47). So, *arkhé* means both origin and law. Derrida (1995) proposed *arkhé* “coordinates two principles in one” (p. 9):

the principle according to nature or history, *there* where things *commence*—physical, historical, or ontological principle—but also the principle according to the law, *there*

where men and gods *command*, there where authority, social order are exercised, in this place from which *order* is given—nomological principle. (p. 9)

Derrida (1995) discussed the combination of these two principles, commencement and command, through combining “place” and “law” in the notion of *topo-nomology*. This meant archived documents were “only kept and classified under the title of archive by virtue of a privileged *topology*” (p. 10). Meaning the place of the archive, the *arkheî*, holds an importance and status accorded to the documents contained. By right of political power to rule and govern, the archons also held the “right to make or to represent the law” (p. 10). Their power as ruler and law maker was extended to the archives they guarded. Therefore, they also held the “power to interpret the archives” (p. 10). Consequently, whomever governed the place of the archive also governed the information contained within it, i.e., access, interpretation, and application. The principle of command, nomology,²⁷ was awarded to the *archons* (the guardian of the archive).

So, as Featherstone (2006) commented, early archives contained secret and guarded official documents. The archive “was part of the apparatus of social rule and regulation, it facilitated the governance of the territory and population through accumulated information” (p. 591). Schwartz (2006) noted that recent critical engagement with the archive, which drew on the work of Derrida and Foucault, showed the archive as a “problematic site of contested power” (pp. 77–78).

Lane (2003) described the archive as a proactive structure, quoting Foucault’s (1972) theory that the archive acts as a “system of its functioning” (p. 129, quoted by Lane, 2003, p. 20). Through this theory, Foucault demonstrated the archive as a productive and discursive instrument. Foucault (1972) stated that discursive practices “establish statements as events (with their own conditions and domain of appearance) and things (with their own possibility and field of use)” (p. 128). These multiple and complex discursive forms come together as an archive. In Chapter 5 of *The Archaeology of Knowledge*, entitled “The Historical *a Priori* and the Archive,” Foucault (1972) defined the term *historical a priori* to mean “not a condition

²⁷ “Relating to or denoting principles that resemble laws, especially those laws of nature which are neither logically necessary nor theoretically explicable, but just are so” (Soanes & Stevenson, 2005, p. 1195)

of validity for judgements, but a condition of reality for statements” (p. 127). Therefore, finding *what came before* by analysing “the conditions of emergence of statements, the law of their coexistence with others, the specific form of their mode of being, the principles according to which they survive, become transformed, and disappear” (p. 127).

The previous section discussed how the rise of the photograph, as a crucial device in gaining objective visual data, changed the methodological and epistemological concerns of atlas makers (Daston & Galison, 2007). The principle of mechanical objectivity Daston and Galison (2007) identified effectively led to the disappearance of other types of images in atlases. The confidence the photograph inspired, in scientific research and publications, in turn gave validity to the research in the emerging disciplines of child studies and developmental psychology (Curtis, 2011). *An Atlas of Infant Behavior* (Gesell, 1934) provided photographic evidence of the normal development of the young child. As such the atlas was a productive and discursive instrument which acted as an influential source of knowledge about children and childhood.

Foucault (1972) highlighted the importance of noticing that while discourse has meaning and truths it also has a history, and that this history is “specific” (p. 127). This specific and particular history is “defined as the group of rules that characterize a discursive practice: but these rules are not imposed from the outside on the elements that they relate together; they are caught up in the very things that they connect” (p. 127). Flusser’s (2000) theory of programmatic apparatus, i.e., what can be seen, known, and produced by apparatus, is relatable to Foucault’s (1972) conception of the rules which constitute discursive practice. Flusser (2000) argued apparatus provide structure within which thinking functions, and which also work upon thinking. The archive has an internal structure which creates specific possibilities.

Flusser (2000) theorised the apparatus as stimulating thought, or as an organising or systemic non-human agency which facilitates functioning. This is relatable to Foucault’s proactive archive (Lane, 2003) which is a “system of discursivity” which provides its own “*system of enunciability*” (Foucault, 1972, p. 129). This is because the “archive is first the law of what can be said” (Foucault, 1972, p. 129). Returning to the etymology of the word

apparatus, Flusser (2000) noted the Latin verb it is derived from, *apparare* (to prepare), in forming his definition of the apparatus as a “thing that lies in wait or in readiness for something” (p. 21). This self-referential order-power is seen also in Derrida’s (1995) writing of the archive.

The archive is therefore a “set” of interconnected possibilities which operate in context of the program defining its parameters, resulting in a specific structure affording specific possibilities. The possibilities are agentive and operate through the archive and upon whomever interacts with the archive and the information it contains. The archive is formed from historic discourse. The archive also feeds into the formation of discourse. The archive is powerful. While containing possibilities, these options are limited to the program of the archive-apparatus and a therefore limiting and productive.

The photographic archive.

The credibility and authenticity photography lent to the photographic document resulted in the photograph becoming both a tool for memory and a regulatory apparatus (Osborne, 1999). The development of paper-based photographs “offered a means of observing, describing, studying, ordering, classifying, and thereby, knowing the world” (Schwartz, 2006, p. 75). This meant the photograph “promised possession of control of knowledge through possession and control of recorded information” (Schwartz, 2006, p. 76). This echoes Flusser’s (2000) argument that information contained on the photograph’s surface is of more value than the material object. Flusser argued the power of the photograph is its ability to hold information.

Foucault (1979) claimed that, by the turn of the 17th century, focus on confession and confessional practices shifted to another apparatus of power which permeated the lives of the human subject. In Flusserian terms, this apparatus could be named as an apparatus of information. Foucault (1979) suggested the change resulted in an apparatus that was an administrative and no longer a religious arrangement: a mechanism of registration and no longer a pardon . . . And everything thus said is registered in writing, accumulates and constitutes dossiers and archives. (p. 84)

The information which holds power over our lives is found, Osborne (1999) proposed, in the everyday, the mundane, and the ordinary. The ordinary and everyday relationships, happenings, and exchanges of life provide information which the mechanism of registration requires to maintain its operation.

Osborne (1999) suggested there is a reversible quality to the archive, whereby the testament of the archivist becomes “in a perverse way a kind of ironic compensation for being a victim of power” (p. 61, citing Foucault, 1979). The power of the archive was described by Osborne as a power generated by the “sovereign gaze of the historian, the reader of the archives” (p. 62). Here again is the power of the *archons* to produce the meaning of the archive, or, as Derrida wrote it, the “hermeneutic right” (p. 10). Blouin and Rosenberg (2006) suggested this right of productive power positions the archivist, and the archive, as an active mediator of “what is and can be known” (p. 88), expressing this also as “what is knowable and how it is known” (p. 86).

Foucault (1972) proposed the archive “defines a particular level” (p. 130). Referring to Foucault’s *The Birth of the Clinic* (1973), Osborne (1999) situated the singular within the complexity of the particular case or the individual event, citing Foucault’s notion of “paradigm-case” (p. 58). Osborne (1999) highlighted the importance detail has within the archive. The processes which draw out details, such as the providence of a case, result in the placement of the individual case within historical discursive knowledge. This is achieved through a “fine, discriminating gaze, that is able to isolate, on the basis of experience and example, items of significance out of a mass of detail” (p. 58). This prompts questions of whose, and what, criteria and values are used to select details of significance. What are the rules which govern privileging of certain information? (Foucault, 1972). Or, as Featherstone (2006) asks: “How are decisions on what to collect, what to store, what to throw away and what to catalogue to be made?” (p. 593).

Digital Archives and Technical Images

Featherstone (2000, 2006) proposed the digital (virtual) archives of current times are different from earlier physically bound archives. The archive has changed from its early

organisation, formulated during the Enlightenment period, with its penchant for “binary divisions and branching tree structures” (Featherstone, 2006, p. 593), to a more fluid and complex nexus of information. Featherstone (2006) asked if those traditional methods of classification are appropriate or meaningful in current times when different ways of seeing the world consider “flows, non-linearity and singularities with new meta-theories such as complexity theory and neo-vitalism etc.” (p. 593). He commented that knowledge created and circulated by new technologies and methods of information transference and storage is different from traditional archives comprised of physical data, and grounded, as Lane (2003) suggested, in a “metaphysics of presence” (p. 15).

Historically, the archive was a central loadstone of knowledge, into which information was placed, held, and shared according to the systems which governed and maintained the archive. “In its traditional manifestation, as a physical collection of data objects held within a ‘collection’ . . . the archive is underpinned by the metaphysics of presence” (Lane, 2003, p. 15). With the invention of paper-based photographs the photograph became data to be gathered into archives (Schwartz, 2006). The combination of photograph and archive, Schwartz (2006) suggested, combined ownership and control of knowledge with the ownership and control of information. Once again, Flusser’s (2000) contention that the information held upon the surface is of more value and importance than the material thing is underlined. Therefore, the discursive belief that the photograph presents evidence of reality—essentially privileging the “truth” contained upon the surface and denying whatever is absent—requires reconsideration.

Meaning ceases to be contained in a bounded physical form, the page or document, but is able to flow through network nodes . . . The archive ceases to be physical place . . . and informational control and formation ceases to be in the form of the panopticon with its bureaucratic forms of control and surveillance. Rather the decentralized digital archive takes the form of a database in which, depending on the access coding, knowledge becomes freer to flow through decentred networks. (Featherstone, 2006, p. 595)

The postmodern archive utilises digital devices to gather, store, access, and share information. “New information technologies expand our capacity to record everything: to be is to record and to record in volume means to classify, index and archive” (Featherstone, 2006, p. 595). This turn of words by Featherstone (2006) is suggestive of the Flusserian photographic universe. Flusser (2000) argued to “be in the photographic universe means to experience, to know and to evaluate the world as a function of photographs” (p. 70). Interestingly, Flusser (1988) proposed the technological revolution initiated by cameras and resulting in digital photographs is a drastically different revolution to the Industrial Revolution. This is because the current technological revolution does not stimulate the body as past revolutions have, but rather the nervous system. This, Flusser argued, makes it an immaterial revolution.

Flusser (2011b) suggested being in the photographic universe changes our “experiences, perceptions, values, and modes of behaviour” (p. 5). The photographic image works upon the nervous system of the human as our consciousness becomes enmeshed within a society of pure information (Flusser, 1988). Upon critical reflection, it becomes clear there is a need to understand theories behind the camera-apparatus in order to understand the photograph. Flusser (2012) argued this holds for all forms of apparatus, and this thesis suggests the atlas and archive are no exception. The archive-apparatus has a history of privileging particular knowledge. As shown earlier, the power of the archons as ruler and law maker extended to the archives they guarded. The archons also held the “power to interpret the archives” (Derrida, 1995, p. 10). Therefore, whoever controlled the archive also controlled the information contained within, including the access, interpretation, and application of information.

The questions posed throughout this discussion of the archive remain: What historical a priori informs the ground the archive is constructed upon? What processes operate within and upon the archive, and consequently what information is considered as valuable? and Who can access the information? For, as Featherstone (2006) noted, access to the digital archive is still regulated by the coding of its program. Featherstone’s suggestion that there is freedom of information and an end of a panoptic and bureaucratic apparatus of

control and surveillance is perhaps premature. What is true is that a large amount of visual and textual data not only exists, but it exists solely in the digital. Flusser (2011b) contended the technical images contained within the digital archive, a type of apparatus, come from a “peculiar hallucinatory power that has lost its faith in rules” (p. 10).

Flusser (2015) theorised we have entered a telematic society that challenges the second law of thermodynamics through the technology to store information forever. The “telematics society is ‘immaterial’ culture, that is, a culture that no longer stores elaborated information in objects” (p. 40). Featherstone (2006) also theorised the digital archive allows meaning to break free from the matter which binds it to become fluid connectivity. Flusser (2011b) argued that only because of the advent of “electromagnetic images, immaterial, pure information . . . can we fabricate memories over which nature has no power” (p. 108). This power of immortal memory within the digital archive comes with its own ethical tensions. Flusser (2015) suggested the net of telematic society blurs the division between the individual and society, thereby erasing the line holding public and private apart. Recently, there have been international movements advocating for the *right to be forgotten*. The digital archiving of photographs is a contentious issue. However, while important, further consideration is beyond the scope of this philosophy of photography.

The discursive legacy of photography positions the photographic image as a form of objective evidence “believed to offer the potential for revealing facts and truths” (Sturken & Cartwright, 2009, p. 356). A particular type of photograph has been drawn into focus in this chapter: the photograph used as evidence—a photograph which is used as a source of information (Flusser, 2000). If a photograph is held in the hand or viewed on a screen, its capacity to hold information does not change. Information can be represented in material or immaterial form, i.e., physical matter or abstracted concepts. The photograph can provide information regardless of whether it is stored on paper or in the cloud. Flusser (2000) theorised that for photographs to be informative they must contain new information. For information to be new, rather than redundant, the photographer must play against the program of the camera-apparatus to creative the unpredictable. So, are the photographs in

atlases and archives informative, or are they prescriptive and programmed and therefore providing redundant information?

This question can be explored by thinking through two theoretical points: mechanical objectivity (Daston & Galison, 2007) and *techno-imagination* (Flusser, 2012). Daston and Galison's (2007) notion of mechanical objectivity suggested that the methodological and epistemological concerns of atlas makers changed with the invention and incorporation of stable paper-based photographs into sciences' methods of knowledge validation. Faith in the photographic image led to systematic documentation of objects and subjects into "visual compendiums that were supposed to preserve form from the world onto the page" (p. 121). However, as noted, Flusser (2000, 2012) contended the photographer always works from within the program of the camera-apparatus. Flusser (2012) argued the photographer has a priori categories placed upon her by the camera. So, faith in the camera to produce photographs which preserved "the world onto the page" (Daston & Galison, 2009, p. 121) relied upon, and indeed valorised, the program and categories of the apparatus-camera to achieve mechanical objectivity.

Flusser (2000) theorised the photographer as a functionary to the apparatus of the camera. The photographer works within, or potentially plays against, the apparatus of the camera. The photographer also functions within the larger apparatus of state and business, within organisational systems and discourses, which perform in service of a program. Flusser described the act of photography as being trapped within a "programmed freedom" (p. 35). While moving within time and space, technical images are realised as the photographer selects options from the camera program. The agency of the photographer, for Flusser, is limited to what the apparatus allows. "Whereas the apparatus functions as a function of the photographer's intention, this intention itself functions as a function of the camera's program" (p. 35). Flusser delineated two possibilities for the photographer: redundant photographs, or informative photographs. Redundant photographs show already known states of things; informative photographs push and play the program to create new possibilities for images which show the unpredictable.

Flusser's (2012) techno-imagination "requires knowledge of the theories on which apparatus are based" (p. 198). Specifically, Flusser suggested scientific theories of optics, chemistry, and mechanics. Perhaps it would be timely to add coding and programming for digital imaging in the current post-industrial universe of the technical image. Having this historic knowledge is crucial for the photographer to see the ideology of the technical image. Flusser argued "the illusion that is inherent to photographs—can only be overcome through knowledge of those theories on which cameras are based. In general, the same applies to all ideologies of all apparatuses" (pp. 198–199). The illusion he referred to mistakenly identifies the technical image as a direct symptom of the lifeworld rather than a symbol of it.

In Flusser's (2012) thinking, this means photographs "obscure their relation to their meaning" (p. 195). Due to the causative nature of their creation—sunlight bouncing off material objects and onto the light sensors in a digital camera (or onto light sensitive film)—photographs are mistaken as "faithful reproductions" (p. 196). This results in photographs being considered as symptomatic of the scene they depict, so that viewers "forget their actual, but hidden symbolic character" (p. 196). Flusser proposed "if we could decipher them . . . then we could see through them" (p. 200). Flusser stated becoming aware of the theories behind the photograph provides the insight to see through the photograph to the apparatus and its program.

From a Flusserian perspective, awareness of ideologies and theories behind apparatus allows for critical engagement with apparatus. Examination of archive-apparatus has shown archives to be complex and ideological. This renders the questions posed throughout this discussion of the archive as useful tools for use in further analysis. Asking what historical a priori informs the ground the archive is constructed upon looks for the theoretical delineations of the archive; asking what processes operate within and upon the archive shows how the archive manifests as an object of knowledge, and consequently what information is considered as valuable; and asking who can access the information shows the power relations between the producers and consumers of the information held within the archive.

Considering the photographic archive through Flusser's (2000, 2011b, 2012) theories suggests another layer of programmatic limitation to the photograph. Flusser (2012) stated the "scenes that are signified by these images programme our daily life to a large extent" (p. 200). However, Flusser (2011b) also suggested there is potential for truly creative, dialogical, playful and free realisations of our human selves within the universe of the technical image—to realise this freedom, a literacy is required that enables us to comprehend the technological image in this post-historic time.

Concluding Comments

A certain type of photograph was pulled into focus in this chapter: the photograph used as evidence and collated within atlases and archives. The notion of archive-apparatus was used to further explore the argument that certain ways of looking and seeing are created through use of photographs as evidence. It was argued photographic atlases and archives are produced through specific ways of looking and seeing, i.e., through the application of apparatus, and therefore result in knowledge which reflects this specificity of view. Barad (2007) theorised this as an agential cut. She argued the apparatus used causes a specific cut, resulting in a specific view, to be created. Extending Flusser's (2000) theory of apparatus to the apparatus organising early childhood teacher-photographers at the governmental level, which provides the program for photographing children's learning bodies, leads to questioning the program and systems by which functionary-early childhood teacher-photographers are managed. The next chapter follows this line of inquiry.

Osborne (2006) and Kind (2013) both suggested the principle of reversibility as a method to change power dynamics: of being photographed (Kind, 2013), or over the information gathered in archives (Osborne, 2006). Adding information to the archive offers "compensation for being a victim of power" (Foucault, 1979, cited in Osborne, 2006, p. 61). Becoming the archivist allows the power of rule maker to be taken up. Kind (2013) proposed there is potential for reversing the gaze of the teacher-photographer upon the child subject. Giving children the camera, whereby the child becomes the archivist who informs the archive, allows the camera to become a "democratic, creative and empowering tool" (Loizou,

2011, cited in Kind, 2013, p. 428). Teaching literacy of the technical image is also necessary in an ethical photographic pedagogy. Seeing the ways knowledge is formed through how we look is a powerful strategy for gaining valuable insights into the power/knowledge nexus. Extending those understandings to the photograph used as evidence, the programmatic limitations of archive-apparatus are clearly seen.

Chapter 7.

Photographing the child subject

Drawing on ideas from the previous chapters, this chapter focusses on ECEC to question how children's experiences could be influenced through frequent use of cameras. Previous chapters argued that information (knowledge) generated through photographs can be productive and regulatory and that apparatus, such as archives, play a powerful role in this information (knowledge) creation. This chapter examines the productive force working through camera-apparatus. First, Foucault's (1977) theory of panopticism is introduced. Panopticism offers a way to theorise the surveillance of teachers and children in ECEC. This theory is used to explore the disciplinary gaze of new visual media. Next, an argument is made that taking photographs of children for documentation directs the teachers' gaze through the camera-apparatus, thus affecting both teachers and children. The act of photographing the child subject is theorised through the concepts of visibility, subjectification, individualisation, performance, and normalisation.

The young child is aware of cameras used to observe them (Forrester, 2011). Sparrman and Lindgren (2010) argued taking photographs for visual documentation of children's learning is based on the unfounded assumption that children "want to be watched" (p. 258). While the curriculum ethos is based on children's empowerment and meaningful participation (MoE, 2017b), the act of photographing the child subject is problematic due to the photograph's history (Kind, 2013). As shown in the previous chapter, the photograph has historically been used to classify and manage the human subject (Sturken & Cartwright, 2001). Furthermore, the practice of pedagogic photography can be problematised as undemocratic if it is something teachers do "to" children. The rhetoric of pedagogic photography can be seen in the Aotearoa New Zealand curriculum where teachers are required to make children's learning visible (MoE, 2017b).

The Panopticon: An Apparatus for Making Subjects Visible

In *Discipline and Punish: The Birth of the Prison* (1977) Foucault examined the architectural design of Jeremy Bentham's (1748–1832) panopticon to theorise the power at play when subjects are made visible. Bentham proposed the panopticon as a “new principle” to inform the construction of any building which served to hold and inspect people.²⁸ *The Panopticon; or The Inspection House: Containing the Idea of a New Principle of Construction* (Bentham, 1791a) provided a list of possible examples, schools being the last entry. The panopticon was designed as a circular building surrounding a guard house, so that each room and inmate were always visible to the watching guard. In Figure 14, a drawing of the original design is provided.

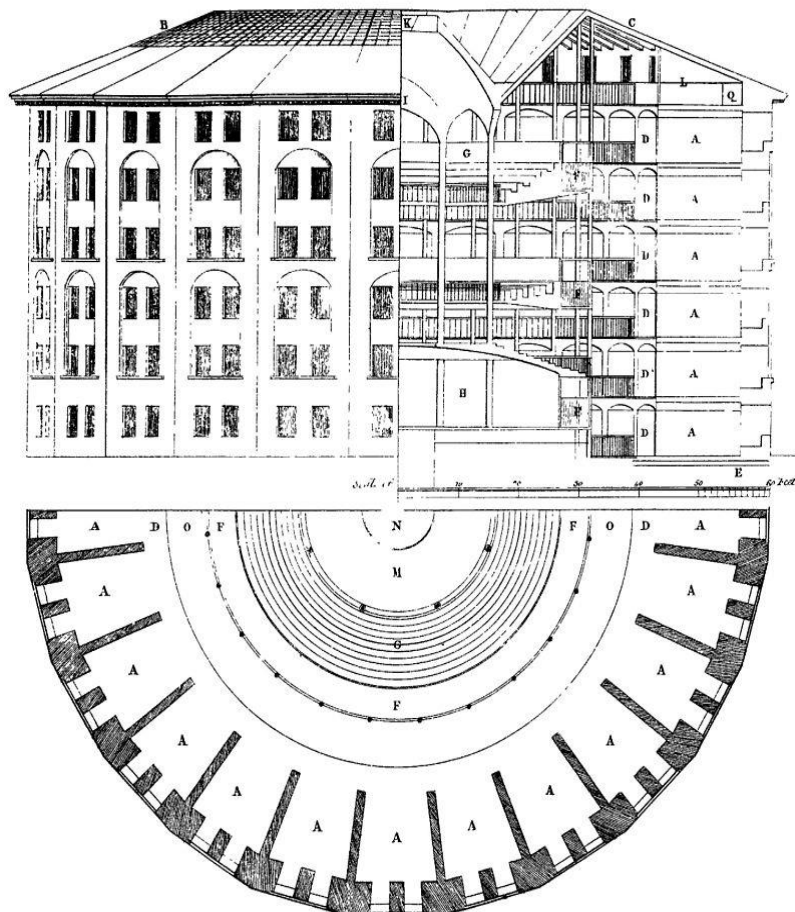


Figure 14. Depiction of a building designed through the panopticon principle. From “Plan of the Panopticon,” by J. Bentham, 1791b

(<https://commons.wikimedia.org/w/index.php?curid=3130497>). In the public domain.

²⁸ However, he does accredit his bother with sharing this idea gained from travels in Europe (Bentham, 1791a).

The effect on the observed of being seen by someone they could not see was essential to the operation of the panopticon (Bentham, 1791a). This design was to generate the feeling that they were always under inspection. Furthermore, Bentham (1791a) proposed the panopticon was the answer to the question *quis custodiet ipsos custodes?*²⁹ Bentham suggested that “subordinates of every kind, will be under the same irresistible controul [sic] with respect to the head keeper or inspector, as the prisoners or other persons to be governed are with respect to them” (p. 29). Foucault (1977) also identified the panopticon “may even provide an apparatus for supervising its own mechanisms” (p. 204). Therefore, the principle of panopticon is applied also to the workers within its walls; both observed and observer are caught up in the technology of disciplining the individual.

At the very end of *The Panopticon*, Bentham (1791a) discussed the panopticon principle in relation to the spaces of education in “Letter XXI, Schools.” Bentham did query “whether the result of this high-wrought contrivance might not be constructing a set of *machines* under the similitude of *men*?” (p. 127). However, overall, he discussed the great benefits of an education within a space governed by the panoptic principle, for example, the preservation of “young ladies”’ virginity—suggesting the transference of “damsels at as early an age as may be thought sufficient, into a strict inspection-school” (p. 129) so future husbands would be able to choose their young wives in confidence.³⁰ After failure to gain support in the realisation of his panopticon, Bentham purposed the idea again in his treatise on education *Chrestomathia* (Bentham, 1816). The school was to be designed on the principle of the panopticon, whereby “every human object in the whole building is kept throughout within the reach of the Head-Master’s eye” (Bentham, 1816, p. 11). Unfortunately for Bentham this aspiration was never realised either.

Foucault (1977) described the panopticon as “like so many cages, so many small theatres, in which each actor is alone, perfectly individualized and constantly visible” (p. 200). Following Bentham (1791a), Foucault (1977) suggested the individual cells may contain “a madman, a patient, a condemned man, a worker or a schoolboy” (p. 200). More

²⁹ This Latin phrase is often translated as “who will guard the guards themselves?”

³⁰ A clear example of the masculine gaze disciplining the female subject.

important, Foucault explicitly theorised the effect of the panopticon “to induce in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power” (p. 201). That is, being subjected to the *possibility* of surveillance, but never being sure if it is occurring, results in the individual’s constant self-awareness and self-management. Or, in his words, the inspecting gaze is internalised so that each person begins “exercising this surveillance over, and against himself” (p. 155). Therefore, the observing gaze was suggested by Foucault to not only make each individual visible, but to create an internalised self-surveillance where power came to play upon and change the subject (Caluya, 2010; Foucault, 1977, 1980; Schirato, Danaher, & Webb, 2012).

Foucault (1977) stated that, within the panopticon apparatus, “visibility is a trap” (p. 200). Foucault described how the “Panopticon is a machine for dissociating the see/being seen dyad: in the peripheric ring, one is totally seen, without ever seeing; in the central tower, one sees everything without ever being seen” (pp. 201–202). The building design, therefore, allowed for, seemingly, constant observation of the prisoners, or whomever was under observation. It was this apparently constant visibility which theoretically provided the means to discipline those under the gaze of the observing warden. So, in this sense, visibility becomes a trap in which the observed are caught—no escape from the gaze of those who watch, no certainty if in fact observation is occurring, only the view of the tower from which surveillance is directed.

Foucault’s writing of the practices of visibility provides a way to discuss surveillance as a method for subjectification, individualisation, and normalisation. Foucault (1977) described how the individual who is

subjected to a field of visibility, and who knows it, assumes responsibility for the constraints of power; he makes them play spontaneously upon himself; he inscribes in himself the power relation in which he simultaneously plays both roles; he becomes the principle of his own subjection. (pp. 202–203)

Caluya’s (2010) reading of Foucault’s *Discipline and Punish* also highlighted the importance that the observed “didn’t know when they were being watched” (p. 624). Schirato et al. (2012) suggested because surveillance practices such as regulation and retraining are “quiet

coercions written upon bodies and regularising habits” (p. 86) they have tended to be unexamined. Foucault’s (1977) interest in the way power worked exposed the microphysics of power at play. Through his theoretical examination of panopticism he drew attention to everyday practices of disciplining the individual through observation. Schirato et al. (2012) described how the sense of pervasive power becomes impossible for the subject to escape from; and how, subjected to this, the “sense of power insinuates itself as a disposition within the subject. In this way subjects would become ‘docile bodies’—not automatons as such, but subjects who were disposed to choose docility” (p. 87). Foucault (1977) described this disciplined body as a machine which turns “silently into the automatism of habit” (p. 135).

This section has introduced Bentham’s (1791a, 1816) panopticon principle and Foucault’s (1977) theory of panopticism. It is important to reiterate that the panopticon was never considered by Foucault (1977) as an actual building, it was rather a model of a “mechanism of power reduced to its ideal form” (p. 205). To discuss it as such allows for analysis of how power works upon subjects. Being visible was not the only disciplinary mechanism of the panopticon, but it was a powerful force with which to normalise and individual subjects. This research’s philosophic enquiry into photography use in ECEC considers being watched and photographed and being made visible in photographs as primary points of analysis. The following section examines how the visible subject could be disciplined through media technologies, with a focus on the camera.

Camera-apparatus and panopticism.

This section looks at panopticism as a way to think about media and the camera. Calls to rethink panopticism so as to bring the theory into the era of mass media, and visual technologies, have come from the field of surveillance studies. This section discusses Foucault’s (1977) panopticism in relation to the current media rich present and the focus of this thesis on photography use. It looks at how cameras may change the behaviours of those around them to conceptualise and question routine use of photography in ECEC. Sturken and Cartwright (2001) suggested the camera’s gaze holds a panoptic quality. They noted

that the camera does not need to be in operation to affect those before its gaze. This is an important connection to make between photography, ECEC, and the panopticon principle.

Poster (2011) proposed that, while Foucault used metaphors of media in his work, and his work had resonance with media studies, he, unlike Flusser,³¹ never engaged in theoretical work in the domain of media. Similarly, Mathiesen (1997) argued Foucault (1977) overlooked “an opposite process . . . which has occurred simultaneously and at an equally accelerated rate: the mass media” (p. 215). However, Caluya (2010) suggested this line of critique is unfounded, as Foucault’s *Discipline and Punish* was a “historically bounded, genealogical” (p. 626, citing Wood, 2007) project, not a future-looking prophesy of things to come. This may be true, yet the question of how to use Foucault’s work on panopticon in connection to media theory and visual studies remains.

The line of critique comes from within the field of surveillance studies and is most clearly seen in Lyon’s (2006) *Theorizing Surveillance: The Panopticon and Beyond* (Caluya, 2010). Scholars in that edition were seeking to move beyond the panopticon model, suggesting new technology and media had changed the texture of surveillance (see Haggerty, 2006; Hier, Walby, & Greenberg, 2006; Lyon, 2006). Those scholars asserted there was a need for a new theoretical model to work with the “post-panopticon society” (Caluya, 2010, p. 622). Drawing on other work on visual technologies this section weaves together Foucault’s thematic concerns with media theory and consideration of 21st-century technology. Thinking about visual technologies such as closed-circuit television (CCTV), or biometric technology, as technologies of surveillance offers a way to work with Foucault’s theory in relation to the current social matrix and the focus of this thesis on the use of photography in ECEC.

Mathiesen (1997) critiqued Foucault’s lack of engagement with media in a paper entitled “The Viewer Society: Michel Foucault’s ‘Panopticon’ Revisited.” Mathiesen argued that concurrent to the intensification of surveillance, another process was increasing. He termed this process the *synopticon* and described it as the process by which the many look

³¹ Unlike Flusser, who theorised the future of communication and humanity in a post-industrial, telematic society.

at the few, for example through television programmes. Of course, since 1997, rapid growth in internet-based visual platforms for display of photographs of the self and others has allowed for other modalities of this to develop, such as Facebook, Instagram, Snapchat, Twitter, Reddit, and YouTube, to name but a few.

While Mathiesen (1997) conceded we do live in a panoptic society where practices of “classificatory and diagnostic techniques” (p. 218) are used in sites such as schools, amongst others, he strongly argued the panoptic exists together with the synoptic. He conceptualised the synoptic to “represent the situation where a large number focuses on something in common which is condensed. In other words, it may stand for the *opposite* of the situation where the few see the many” (p. 219). The concept of synopticism was derived from the Greek *syn* (“together” or “at the same time,” p. 219), and *opticon* (the visual). Mathiesen saw the unfurling of the modern mass media, which was important to his theory, as a crucial factor at play upon modern society.

Mathiesen (1997) suggested the notion of synopticism worked in unison with panopticism, and the fusion of the two reconceptualised society as being a “viewer society” (p. 215). While he pointed to panopticism as amongst the most important theories Foucault (1977) introduced in *Discipline and Punish*, Mathiesen (1997) also argued it is a “concept which strongly needs to be supplemented” (p. 216).³² Supplementing panopticism with synopticism allows for theorising which accommodates both the notion of the few watching the many, surveillance, and the notion that the many are watching the few. The individual child in ECEC is watched by teachers. Teachers take photographs which are displayed for other children, teachers, parents, and governmental or community organisations to view in the setting. Photographs are also made available via online platforms where children’s immediate and possibly extended family and family friends will view the images.

Mathiesen (1997) wove Foucault’s theories into media studies through his insistence that both surveillance and media make the modern era what it is. Noting a similar timeline

³² Foucault’s theorising in *Discipline and Punish* was complex and the notion of panoptic surveillance foregrounded in this chapter was by no means the only concept Foucault explored. It is however of key importance to this thesis and the philosophic focus on looking through cameras at children.

between Foucault's notion of disciplined bodies and the mass media, Mathiesen argued for reconsideration of surveillance in combination with media. Mathiesen (1997) proposed "synopticism, through the modern mass media . . . first of all directs and controls or disciplines our *consciousness*" (p. 230).³³ This argument positioned the human in a web of productive power, much the same as Foucault, but in a web created, connected, and consumed through media. When Mathiesen (1997) wrote his paper, he identified media such as newspapers, film, radio, television, and new digital pathways of communication. As noted above, digital sites such as Facebook, Instagram, YouTube, personal blogs, and numerous other sites, are media where the masses can view the individual.

Thinking about visual digital technologies such as CCTV, or biometric technology, as technologies of surveillance offers a way to conceptualise Foucault's work in relation to the current social matrix and the focus of this thesis on use of photography. Like other theorists, Poster (2011) sought to work consideration of media into, or over, Foucault's panopticon, suggesting the notion of "superpanopticon." Poster argued that while media are different from prisons, schools, and other mechanisms of power, they are still "structuring systems . . . [which] construct subjects, define identities, position individuals, and configure cultural objects" (p. xxiv).

These effects of media are especially evident in the power of the photograph. Frosh (2001) defined the photograph as a "manifest performance of power" (p. 45) to be understood not only as a means of visually representing the world but, due to its productive power, as an active force. The photograph's power lies in its ability to make material things visible. Frosh presented a similar discussion as Sturken and Cartwright (2001, 2009, 2018) on the history of the photograph. Drawing on Sekula (1981, 1989), Frosh (2001) described the photographic practices, discussed previously in Chapter 6, used to classify and manage the human subject. Frosh pointed to the power imbalances between photographer and subject, underlining the visibility of the subject.

³³ Resonance is noted here with Flusser's (1988, 2011b, 2015) theory that human consciousness is changed due to interaction with the technical image.

Flusser (2011b) reminded us technology is not “politically neutral” (p. 63). The use of photography to gather biometric data is a good example of non-neutrality. While the recent surge of technologies using biometrics may be accepted as normal, and inevitable, they are by no means neutral (Braithwaite & Rodgers, 2018). Advancements in camera technology have led to increased use of surveillance cameras. We are now watched by, largely unnoticed, CCTV cameras in most public areas. Creating and consuming visual images of mundane events; or viewing the more “newsworthy” images of international (popular and subversive) events playing across our screens is normal practice. The use of surveillance cameras is almost ubiquitous, at some level, within our institutions and places of work; more than ever we are expected to be able to provide visual evidence to prove we are who we say we are and, indeed, visually verify others are who they claim to be.³⁴

The use of CCTV systems has infiltrated most areas of society. Rossiter (2017) suggested “knowledge has submitted to regimes of measure and calculability that are the techno-ontological core of the digital” (p. 89). Rossiter highlighted the power of the algorithm in current knowledge creation and transfer, suggesting issues of control and use of digital knowledge are political. The technology of biometrics is at the point of crossover of photography and computer programs. While an area of interest, and worthy of future investigation, it is beyond the scope of this thesis. Therefore, discussion stays with panopticism and focuses on the way CCTV and new media, such as the digital camera and photograph, work upon visible subjects.

Piro (2008) used Foucault’s “architecture of surveillance” to discuss intensification of video-camera use in American schools since the increase of fatal killings in the late 1990s, conceptualising it as a “high-tech version” (p. 42) of the panopticon. The constant surveillance is usually justified by the need to guarantee “the safety and security of generally hundreds, if not thousands of young people and adults” (p. 42). Piro quoted a principal whose school had installed CCTV. The principal thought the cameras had affected the students’ behaviour in a positive way, i.e., their behaviour had changed due to the fact they

³⁴ While outside the scope of this research, the recent move to ePassports is an example of the panoptic principle. The panopticon has manifested as biometric scanners guarding the digital borders of nations.

were being watched and recorded by CCTV. While the American high school context is greatly different to that of the early childhood experience of Aotearoa New Zealand, the idea of disciplining bodies with CCTV to act in a self-surveilling manner provides a way to conceptualise and question institutional use of photography in ECEC. The camera affects the behaviour of those it is pointed at, and those who aim it.

Walby (2007), writing within the field of surveillance studies, used Foucault's panopticon to analyse the power at play, not on the observed—but on those whom observe. In a study of a Canadian suburban mall, Walby turned the disciplinary gaze back upon those in the position of observer. The research was an institutional ethnography which studied CCTV surveillance practices of camera operators. Walby found that “through their embeddedness in a ruling discourse and set of organizational practices, it is the CCTV operators whose behaviours and activities are normalized along institutional lines” (Hier & Greenberg, 2007, p. 133).³⁵ That finding is interesting when applied to this research into the use of photography in ECEC. Theorising the observational practices of teachers, as they work to meet governmental expectation to “make learning visible” (MoE, 2004–2009, 2017b), prompts questions of how teachers' “behaviours and activities” within early childhood institutions can be understood within this paradigm of the panoptic gaze. Chapters 8, 9, and 10 discuss this in terms of the state-apparatus of curriculum and policy, and how they operate upon teachers.

The examples introduced above (Piro, 2008; Sturken & Cartwright, 2001; Walby, 2007) suggested people's behaviour changes when mediated by cameras. Foucault (1977) proposed the panopticon was an abstracted model of power in action. He underlined that it is a “political technology” (p. 205). This is an important point. As highlighted earlier, technology is not “politically neutral” (Flusser, 2011b, p. 63). So, intertwining the technologies of the panopticon with the technology of the camera must be done with an understanding of the

³⁵ Hier et al. (2006) discussed how the gaze of the observer often perpetuates stereotypical ideas of who should be under surveillance. Those persons most likely to be watched are “youth, homeless persons, street traders and black men” (p. 232, citing Norris & Armstrong, 1999).

power at play.³⁶ Furthermore, photographs themselves are never neutral (Fairclough, 1989; Gee, 2011; Rose, 2001; Schroeder, 2002). Being visible was one disciplinary mechanism of the panopticon. This thesis suggests being photographed is also a disciplinary mechanism working upon bodies.

Re-Focusing into Early Childhood

Current discourse informing teachers' practices within early education spaces requires teachers to make learning visible (MoE, 2004–2009, 2017b). The following Chapter 8 traces this term back to the pedagogical documentation practices coming out of Reggio Emilia in the 90s. After the early childhood curriculum *Te Whāriki* (1996) was first introduced, Carr (2001) raised questions about the role assessment played in the surveillance of children. Carr (1998a) clearly identified assessment had specific ethical issues. Carr (2001) suggested that changes to early childhood regulations through “reframing the rules and redefining curriculum and achievement may simply be exchanging one form of surveillance for another” (p. 20). Carr went on to state that “we have a responsibility to ensure that the new communities we are constructing for children, in childcare centres and kindergartens for instance, are ethical and safe environments” (p. 20). This thesis argues that a crucial aspect of this responsibility is critical engagement with the frequent photographing of children to document assessment, especially as the practice of taking photographs of children to make their learning visible has become normalised and expected in Aotearoa.

Education spaces are designed so teachers can observe children, and others can observe teachers. Glass plays an important role in classroom construction. Windows in doors, or glass strips down the side of doors, allow for visibility into classrooms, without the need to enter the space. The recent move to open-plan classrooms has supported intensified surveillance of not only students but also teachers (Page, 2017). Children and teachers are therefore increasingly spending their days in spaces designed on panoptic principles which allow for constant observation. Glass acts as a boundary within spaces, but

³⁶ Foucault and Flusser used the word *technology* in different ways. Foucault's use was an expression of the ways power worked, while Flusser used it in connection to technology.

it is still transparent and allows for gaze to penetrate its material form. Glass divides classrooms from corridors, bathrooms, and staffrooms. The glass in the camera lens mediates between teacher and children, and the environment. The glass lens of camera provides another eye for teachers to observe children with, as artistically expressed in Figure 15. But the camera works upon both the photographed and photographer (Sturken & Cartwright, 2001; Walby, 2007). It is important this becomes a point of conversation in ECEC spaces.



Figure 15. A digital photograph that has been manipulated so that the lens of the camera is a human eye. By GimpWorkshop, n.d. (<https://pixabay.com/photos/eye-camera-photo-lens-photographer-3713967/>). In the public domain.

Looking at the practice of photographing for assessment purposes in Aotearoa New Zealand, Cederman (2008) raised concerns with our current “preoccupation with images of the child, or with the child making images . . . [and asked] ‘What happens to the child when the camera . . . is always the focal point for the interaction?’” (p. 129). This is a pertinent question. Responding to it in conversation with the focus of this chapter on photographing the child subject, one answer may be that children are predominantly seen within the viewfinder of the camera and the image captured. The view teachers are looking for is one showing valued learning. Consequently, children are photographed in connection to the criteria which must be used to evidence the child’s learning.

Teachers therefore take photographs of children that show connections to the curriculum-apparatus. Teachers do this to provide evidence of learning and teaching, essentially a variation of “teaching to the test.” Furthermore, making children’s learning visible results in children becoming the “subject matter of such documentation” (Flannery Quinn & Manning, 2013, p. 270). This process can be limiting and potentially detrimental both to children and the teaching profession, as increased attention on learning outcomes may prevent authentic engagement in learning and teaching (Daniels, 2013).

The practice of taking photographs of children to document learning has resulted in routine photography in ECEC. Importantly, the practice has been normalised through policy and practice. However, this thesis questions if the current photography-centric practice of documentation and assessment is based on critical engagement with the medium. Representing and relating to children in photographs, and observing them through a camera, is different to being with children in the moment. The next section focuses on the concern children can be limited as performing subjects in visual documentation practices rather than as equal participants.

The visible child: Disrupting the rhetoric of making learning visible.

In an article entitled *Visual Documentation as a Normalizing Practice: A New Discourse of Visibility in Preschool*, Sparrman and Lindgren (2010) asked if visual documentation practices “used in everyday childhood institutions [could] be regarded as training children to uncritical acceptance of surveillance techniques that are used with increasing frequency in western society?” (p. 248). An analysis of Swedish policy for pedagogical documentation revealed that the governmental position “takes for granted that preschool children of all ages want to participate in visual documentation” (p. 249). This same assumption, that children want to be participants in learning story assessment, could be argued to underpin the documents KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 2017b). Sparrman and Lindgren (2010) argued it is “problematic if visual documentation counteracts vital aspects of basic democratic rights at the same time as it uses rhetoric casting the method as a means to develop children’s perspectives and rights” (p. 256).

Drawing on research by Sparrman (2002), into how young children aged between 6 and 8 years interpreted being routinely (daily) recorded by a video-camera over 6 months, Sparrman and Lindgren (2010) underlined the “fact that children do not always want to be watched” (p. 258). They used an example of children’s resistance towards the panoptic principles of the research site’s design³⁷ to demonstrate this. Children who did not want to be visible to those outside their room resisted that gaze by covering up the window on their door with a blanket (Sparrman, 2002, cited in Sparrman & Lindgren, 2010). The research by Sparrman and Lindgren (2010) used visual discourse analysis to analyse policy documents and television programmes. Their research revealed the role visual documentation can play in normalising and producing visible child subjects. They considered it important to call attention to the reality that, while the

aim of visual documentation is not to control children, there is no guarantee that the technologies used will not be perceived as controlling or as surveillance by the children. Regardless of the adults’ supposedly good motives—as researcher, teacher, or caregiver—children can interpret visual documentation as surveillance. (p. 258)

This powerful point is particularly pertinent in the call to increase visual documentation. With the revised curriculum (MoE, 2017b) come further expectations. Teachers are encouraged to increase documentation through media-supported observation of children. Teachers are now prompted to “take photographs, make audio or video recordings and collect examples of children’s work” (MoE, 2017b, p. 63). This collection is to “make valued learning visible” (MoE, 2017b, p. 63). (For further discussion, see Chapter 10.)

Buchanan (2011) explored assessment as a technology of government which normalised the child subject and early childhood teachers. Her master’s study *Assessment in New Zealand Early Childhood Education: A Foucauldian Analysis* used discourse analysis to examine KTP (2004–2009) and texts central to assessment practice in Aotearoa. Buchanan argued children performed as learners and that learning stories captured those

³⁷ The building was built on panoptic principles, whereby all rooms could be seen into from a central point through windows in entrance doors.

performances of “learning child.” Buchanan proposed children knew themselves as a learner within ECEC and were disciplined as such through the productive power of assessment. She critiqued the performative force children experienced when they are photographed for learning story assessments, arguing children were produced as subjects in the process.

Recently there has been a call for those involved in early childhood education and care to question the increased focus on young children as learners, and the increasingly standardised assessment of their learning (Moss et al., 2016; Moss & Urban, 2017). This neo-liberal movement towards life-long-learning and outcomes-driven teaching is also evident in early childhood education in Aotearoa New Zealand (Haggerty & Loveridge, 2019). Roberts-Holmes (2015) found with increased pressure on English early childhood teachers to meet testable-outcomes, assessment became central to their pedagogic work; even if teachers were resistant to the move away from a more holistic notion of children and learning. Roberts-Holmes argued the data gathered to assess young children’s learning not only produced a change to teacher engagement with learning, it also impacted children and the type of learner, and therefore the person, they were assessed to be.

Popkewitz and Brennan (1998) suggested the individual learner is “defined through abstracted sets of categories about cognition, affect, and motivation. These sets of categories and distinctions constitute and divide individuals” (pp. 12–13). As discussed in the previous chapter, photography was used in the past for similar ends, and used in ECEC to document typologies of children’s behaviours in conjunction with the principles, strands, learning outcomes, and learning dispositions detailed in the early childhood curriculum. Buchanan (2011) proposed it would be difficult for children “to know and conduct themselves as other than learning subjects” (p. 107). The learning subject is successful if they meet learning outcomes. However, focus on individual learning experiences can decontextualise children’s learning. Moreover, the categorisation can abstract the human experience into defining criteria. Adding photographs into the teaching-learning multiplex adds another layer of complexity.

In his master’s study of the use of photographs in the revised *Te Whāriki* (MoE, 2017b) Whitaker (2018) suggested a lack of critical engagement with “visual practices,

specifically those of pedagogical documentation” (p. 85). Teachers referring to the revised curriculum see photographs of children as learners and also photographs of children reading portfolios. These images are influential messages that powerfully reinforce the written text (Gee, 2011), suggesting teachers take photographs of children’s learning as a part of documented assessment. The use of cameras, photographs, and portfolios to archive photographs in ECEC influence what learning is made visible.

Making learning visible makes children visible also. As discussed in previous chapters, scopic regimes and apparatus make available a particular way of looking. These regimes and apparatus result in certain images of children being made visible. Add state-apparatus such as the curriculum to this and what is made visible becomes more specific to ECEC. For example, often children are seen as individual learners on individual learning journeys; this will define the way they are viewed, resulting in photographs of them on their own. Or, if a learning objective for a child has been set around social learning, relationships, and belonging (MoE, 2017b) then photographs of them in groups will be taken.

While it has become normal and expected that teachers take photographs of children to document and assess learning, this practice may not always be in the best interest of the child. Undertaking any practice in a routine and unexamined way means that practice becomes uncritical. Critical theory is indicated in the curriculum as a way for teachers to “challenge norms” (MoE, 2017b, p. 62). Critical theory is pointed out to resonate with the principles of the curriculum. Being critical of normalised photography reveals how the child becomes visible in the process and is positioned as a subject rather than a participant. Thinking critically about this leads to questioning the assumption that children always want to be involved in visual documentation for assessment, or, indeed, if visual documentation is in their best interests.³⁸ Critical engagement with photography and photograph use in ECEC can bring awareness to the ethics involved in taking and using photographs of children.

³⁸ This line of thinking is explored in Chapters 9 and 10.

Performing to the camera: When someone (or thing) is looking.

The following section examines how children's experiences could be influenced through frequent use of cameras in everyday settings. It discusses findings from Forrester's (2011) study of the reaction and interaction of a young child with a camera over a period of almost two years. Forrester videoed his daughter Ella from when she was 1 year to 3 years 5 months. Forrester's initial study researched language development. However, during analysis, moments when the video-camera was included in the research, as what he termed a "cultural object," were identified for future attention. Those moments are of interest as they explore how the observed child showed awareness of the camera, the interactions which occurred between the child and the camera, and the performances produced for the camera. Forrester's study is discussed first before connections to the practice of photographing the child subject in ECEC are made.

In his secondary analysis, Forrester (2011) sought to understand "something of how participants orient towards, accommodate or otherwise respond to the video-camera as a cultural object particularly when it is used regularly in everyday context" (p. 119). Forrester found Ella's reactions and engagement with the camera changed over the period of the study. The camera was treated variously as confidant, companion, and conscience. The relationship between child and camera was thus exposed as dynamic and complex. This shows the need for critical consideration of regular use of cameras in ECEC.

Forrester's (2011) study explored use of the video-camera in connection to the child participant's experience of, and with, it as an object. Drawing on Hall (2000), Forrester (2011) argued utilising video-cameras to collect data can:

- a) reorganise the tasks and experiences of research participants,
- b) serve different research interests by selectively attending to different aspects of human activity,
- c) reinforce or break open traditional boundaries between researchers and their study participants, and
- d) provide both limited and privileged access to aspects of human interaction. (p. 120)

These four points are very pertinent to use of the photograph in early childhood documentation and assessment practices in Aotearoa, as well as to this chapter's examination of photographing the child subject. While use of video-cameras produces a different type of visual data, similarities to capturing still photographs are high and many of the same theoretical and methodological concerns exist between the two media.³⁹ Forrester (2011) drew on these points throughout his analysis. The first point, identifying the potential for change in participants' actions or engagement in response to the camera, is of significance to this thesis and its critique of how children's experiences in early learning settings could be influenced by teachers' frequent use of cameras.

From the almost eleven hours of visual data recorded in Forester's (2011) initial research project,⁴⁰ there were 15 "relatively brief" moments of "explicit or implicit participant-oriented interest in the camera" (p. 122) coded for additional examination. Forrester suggested that infrequent interaction with the camera may mean the video-camera was not of significant "interest" (p. 122) to Ella. What, rather, if the use of cameras had become normalised? Therefore, an acceptance of the camera's presence may have resulted in limited explicit reference to it, and interaction with it, as it stood in the corner of the room on a tripod. Either way, the following examples demonstrate an awareness of the camera.

The first time Ella explicitly noticed the camera was at the age of 17 months, at the ninth data collection, whereupon she identified its presence to her mother who was unaware of it being on and recording (Forrester, 2011). This instance is interesting also for the reaction of the adult participants and their attempts to act "normally" under the gaze of the camera. Here is the self presented as an image, which Barthes (1980/2000) spoke of. Awareness of the camera contributes to how those photographed behave. Therefore, being in front of the gaze of the camera results in modified presentations of the self (Sturken & Cartwright, 2001).

The next instance was 15 months later when Ella was 32 months old at the 23rd data collection, whereupon she "looks toward, non-verbally addresses and performs 'for' the

³⁹ Such as questions of reality, truth value, power imbalances between subject/photographer, subjectivity, and so on.

⁴⁰ The study recorded family meal times over a period of 2.5 years. Recordings ranged from 10–45 minutes.

camera” (Forrester, 2011, p. 125). While the previous recorded interaction discussed the adult’s interaction with the camera, this interaction is solely between the child and the camera (neither parents being in the room, the child is alone with the camera). Forrester’s (2011) analysis of this moment identified it as one of significance when considering interactions between the child and the camera. Forrester described the few minutes Ella finds herself alone with the camera, during which she displays a “very specific and marked orientation” (p. 127) in the direction of the camera, in the excerpt below. Finding herself alone in the room, and with her father pausing in their conversation, Ella

raises her head, and after approximately 3 seconds, looks up and towards the camera . . . Following another slight pause (2 seconds) Ella then begins to “interact” with or perform for, the camera . . . She begins to sway, move and dance in her chair, adopting a pursed smile while continuously looking toward the camera. She does this . . . for the remaining 5 or 6 seconds until the father returns to the room. (p. 127)

Forrester’s (2011) discussion of this interaction focused on two points. The first point was that the child was aware of being watched by “something/someone” (p. 127). The second was the meaning of the child’s interaction with the camera in connection to his aim to explore recording “the ‘normal,’ the ‘natural’ or the spontaneously ‘real’ when studying human interaction” (p. 120). Directing analysis to the child’s performance of a smile, Forrester considered how the presence of the camera may have contributed to “re-organising the tasks or experiences of participants” (p. 127, citing Hall, 2000). Specifically, Forrester asked, “how are we to understand the nature of the child’s smile—who is it for and why is it expressed in the way it is?” (p. 127). In connection to Hall’s (2000) belief in the potential video-cameras hold for “privileged access to aspects of human interaction” (Forrester, 2011, p. 120), Forrester queried the ethics of recording the interaction the child had with the camera. In doing so he asked if the smile the child shared with the camera was possibly “private or confidential” (p. 127).

In the next example Forrester (2011) provided, Ella is 2 years and 11 months old and is alone with the camera once again. Ella was supposed to be eating her breakfast. However, she instead picked up her dummies from the table and after looking directly, and in

a sustained fashion, at the camera, proceeded to suck on one. This act, within her family context, was “inappropriate and prohibited” (p. 131), as she should be eating her food. Forrester suggested that this act showed Ella was aware of the camera not only as “something that watches’ or records . . . [and] as someone/an entity that can be communicated with and/or appealed to” but also as something to view with “suspicion and/or negatively” (p.129). He suggested the quality of the look Ella gave the camera, and its correlation with her action, supports the claim this was a demonstration of her understanding of the camera’s gaze potentially “holding her accountable in some way” (p. 131). Here is the inspecting gaze Foucault (1977) wrote of. More important, under the gaze of the camera, Ella became a self-disciplining subject.

The last example provided by Forrester (2011) showed Ella, now 3 years and 3 months, interacting and performing for the camera. The interaction showed the camera as “an object that elicits particular kinds of behaviours and responses” (p. 131) from the child, as well as the father/researcher Forrester. In the final example, Ella asked for the video-camera screen to be turned around so she could see her image. She then proceeded to engage in an intricate “set of responses or performed interactions in front of/with the camera/mirror” (p. 134). While advising it is challenging to know exactly what was occurring in this moment, Forrester (2011) suggested it is “likely to be an expression of the child’s own self-positioning, self-image recognition and the playing-around with image manipulation that children often engage in at around this age” (p. 134).

Cederman (2013) argued the high use of cameras defines children’s everyday experience of early childhood education in New Zealand. Insights into how children interact with cameras are important for considering the human-technological aspect of collection and analysis of photographs for assessment. The everyday practice of gathering photographic data for documenting assessment results in relationships mediated through the camera. This thesis asks, with Cederman, what it may mean for children “when the camera . . . is always the focal point for the interaction” (p. 129). The focus of this chapter is on how the camera may change the behaviour of those who are watched. The examples drawn from Forrester

(2011) show a young child aware of the camera's gaze. Ella also interacted with the camera and her own image.

While young children interacting with cameras are positioned, and position themselves, as performers (Buchanan, 2011), early childhood teachers can take a position of ownership and control of the visual data produced (Flannery Quinn & Parker, 2016). Does the focus on noticing children's learning, with the objective to photograph, which informs the practice of teachers in Aotearoa New Zealand (Cederman, 2008; MoE, 2004–2009, 2017b), mean opportunities are lost to the child for private interactions and experiences? This question challenges taken-for-granted ideas around photographing for assessment, and is taken up in Chapters 9 and 10. The practice of photographing children is further complicated when considered in combination with Buchanan's (2011) argument that early childhood assessment produces a child subject who performs in a certain way.

The last piece of footage showed Ella interacting with the camera to explore her experience of performing to it. This moment of interaction seems to show her not only performing to the camera but engaging in a performance using the camera. This suggests an awareness of herself as a performing subject and the camera as a means to view her performance. This awareness also suggests Ella changed her behaviour as a result of the camera watching her.

Student teachers in Flannery Quinn and Schwartz's (2011) study held concerns children's (and their own) behaviour could be "altered" (p. 53) due to use of video or still cameras to document learning. Buchanan's (2011) critique of use of photographs in learning story assessment argued for reconsideration of how the child performs themselves as a learner. Buchanan argued children perform as learners and that learning stories capture these performances. The photographs taken and displayed in individual learning portfolios are then viewed to inspire future performances, which are documented through photographs, and so on, in a cyclic fashion. From a Flusserian perspective, teacher-photographers watch children through camera lenses, taking photographs when children's activities align with curriculum outcomes informing the operation of early childhood education.

This section has explored how young children are aware of cameras observing them and can respond in varying ways to the presence of the camera. The following section returns to Flusser to consider the bi-lateral effects of photographing child subjects for assessment purposes. Taking photographs obviously affects the subject photographed. However, the photographer is also a subject. The teacher-photographer is subject to the apparatus-camera, and also subject to the state-apparatus of the governing bodies regulating teaching practice.

In function of the apparatus: Within the program.

Flusser (2000) theorised the photographer as a functionary to the apparatus of the camera. Flusser contended the photographer works within, but hopefully plays against,⁴¹ the apparatus of the camera. The teacher-photographer also functions as a functionary of the larger apparatus of state and business, and within their particular organisational systems and discourses. Flusser described the act of photography as being trapped within a “programmed freedom” (p. 35). Moving within time and space, technical images are realised as the photographer selects options from the camera program. However, the agency of the photographer is limited to what the apparatus allows: “Whereas the apparatus functions as a function of the photographer’s intention, this intention itself functions as a function of the camera’s program” (p. 35). For Flusser, two possibilities exist for the photographer: taking redundant photographs or taking informative photographs. Redundant photographs show already known states of things; informative photographs push and play against the program in a creative search for original images showing new information.

Extending Flusser’s (2000) understanding to the apparatus organising early childhood teacher-photographers from a macro level, i.e., the curriculum, leads to questioning the program and systems by which the functionary-early childhood teacher-photographer is managed. Within the philosophical space of this thesis *Te Whāriki* (MoE, 2017b) and KTP (MoE, 2004–2009) provide the program for photographing children’s learning bodies. Buchanan (2011) argued various assessment criteria and concepts, part of

⁴¹ In the quest and expression of freedom.

the system which governs and manages teachers, are “applied (inscribed) to the actions of children” (p. 99). To discover the markings of the power of photography upon the teacher and, in turn, the child, requires tracing historical ways of seeing, looking, and knowing. Chapter 4 traced the history of visual regimes and scopic apparatus. Chapter 5 explored the history of photography and the camera, while Chapter 6 built upon these chapters in an analysis of the archive-apparatus. This chapter has theorised how children are made visible through photographs, and how teachers are subject to practices of observation and photographing children, by drawing on Foucault’s (1977) seminal work on the disciplinary force of gaze.

Foucault (1977) has undoubtedly contributed to current understandings on the use of gaze and surveillance to govern and produce subjects. Many theorists have used his ideas to theorise early childhood care and education, both within Aotearoa New Zealand and internationally. Often the literature in education uses Foucault’s conceptualisation of the regulating gaze to examine the state gazing upon teachers (Fenech & Sumsion, 2007; Gibbons, 2007; Mac Naughton, 2005; Novinger & O’Brien, 2003; Osgood, 2006). Novinger and O’Brien (2003), writing from what they see as the increasingly narrowing and controlling context of early education in the United States, cited Foucault’s notion of the panopticon. They suggested the inspecting gaze of the state “does its best to regulate or govern the actions, maybe even the thoughts of teachers and teacher educators” (p. 10). Osgood (2006) also used Foucault’s panopticon to problematise how disciplinary technologies impacted British teachers, for whom practice is regulated through “objectifying practices of constant surveillance and the endeavour for normalised practice” (p. 7). Key to Foucault’s (1977) theory is that the disciplinary gaze is internalised, and the subject becomes self-surveilling. Add cameras to this act of self-surveillance and the self becomes a photo-opportunity—as an ever-performing self(ie). An example of this can be seen in a widely circulated image of a girl taking a selfie as she is stretchered away from a music festival.⁴²

⁴² Image available at https://www.nzherald.co.nz/lifestyle/news/article.cfm?c_id=6&objectid=12197353

Buchanan (2011) argued early childhood assessment produced “permanently performing child-subjects” (p. ii). Foucault’s (1977) internalised gaze was brought to bear upon the self, by the self. Caught in the trap of visibility, photographer and photographed perform as teacher and learner. Perhaps this is another answer to Cederman’s (2008) question “What happens to the child when the camera . . . is always the focal point for the interaction?” (p. 129). Flannery Quinn and Schwartz’s (2011) research into student teachers’ perspectives on documenting young children’s learning using technology, such as the camera, showed student teachers held concerns about children being photographed. As mentioned above, student teachers’ reflections on documentation identified their belief that teachers’ and children’s behaviours could be “altered” (p. 53) through the use of video or still cameras, resulting in concerns that use of cameras may “affect how children feel or behave” (p. 53). Walby (2007) found that those who observed were also affected through the act of looking.

As highlighted in the previous section, the camera is a cultural object which acts and interacts. Acting upon subjects, the camera influences behaviours, interacting with subjects it mediates relationships. This section has discussed how apparatus work upon the observed subject, their operator, and the information produced. Both Flusser and Foucault pointed out the productive power of apparatus. Flusser’s (2011b) theory of creativity offers ways to work against the program of apparatus. This is explored further in the next chapter.

Concluding Comments

While there are many tensions and concerns around photographing children for assessment, pedagogic photography also offers richness and rewards. Therefore, this thesis proposes, in agreeance with Kind (2013), that rather than moving away from the use of the photograph, teachers instead move nearer and “attend much more closely to the camera’s presence and its ability to act and produce particular effects and . . . search for innovative ways of entering into what is happening” (p. 439). This will require leaving behind ideas of what photographs “should” look like and being open to more active engagement with both the theory underpinning photography and the photographs themselves (Kind, 2013). It would

also require seeking ways for children themselves to participate through a practice of photography, thus disrupting and “defying” dominant discourse (Cannella, 1999) which positions children as subjects to be photographed. This possibility is explored further in the following chapter.

In conclusion to this analysis of photographing the child subject, four points are made. First, within the practice of taking photographs of children, space for critical discussion must be made. This is a necessity of being an ethical and critical early childhood teacher. Second, gazing upon the child through cameras and creating photographic images requires ethical awareness of the learning evidenced and presented. Chapter 6 addressed this in connection to the processes of archiving. Chapter 10 returns to this topic to discuss further the power of the photographer. Thirdly, there is always an option for the child to be photographer and not subject to the teacher-photographer’s gaze. The difference between being a photographer and being photographed is explored in Chapters 9 and 10. There, the tension between participation and performance is examined. Finally, photographic images, and the practice of photography, are complex, imbued with power, and traversed by power relations.

Chapter 8.

Theorising pedagogic photography

The photograph is used in early childhood education as a “pedagogical tool” (Flannery Quinn & Manning, 2013, p. 270). Photographs are used to document examples of learning, with the aim of making that learning visible (MoE, 2004–2009, 2017b). This use of the photograph is concerned with creating meaning through identification of what is photographed (Sturken & Cartwright, 2001, 2009; Thompson, 2003). This chapter takes a closer look at how image is used, and makes an argument for critical photographic image use in ECEC. Firstly, the provenance of photography and photograph use as a pedagogic tool is traced. This shows historical transference of ideas at an international level regarding use of photography in early education. Drawing these connections illuminates the workings of the discourse of pedagogic documentation. Secondly, image use is examined through visual studies, Flusserian theory, and the lens of visual materiality.

The inception of learning story assessment in Aotearoa New Zealand has international influences. A review of theory and research evident in KTP (MoE, 2004–2009), as well as the initial research which informed the teaching guide (Carr, 1998a, 1998b), found discourse and discursive practices common to Reggio Emilia in Italy. The origins of pedagogic photography were found to focus on capturing children’s voices and to meaningfully document learning. Contemporaneously, digital technologies were captivating the consumer market. While initially expensive, the development of cheaper digital cameras, smartphones, and tablets now allows early childhood centres ease of access to this technology.

The theoretical lens visual materiality was introduced in Chapter 2. It is applied here to discuss the ways the photographic image can be used in early childhood spaces. The chapter also draws on visual studies to explore the image variously as a mnemonic tool, example, and illustration. Extending the analysis to photographic image use in ECEC,

discussion focuses on two possible uses: evidence and inquiry. Adding to the discussion are Flusser's (2000; 2011b) philosophical thoughts outlined in Chapter 3.

Drawing a Line Backwards

The latter half of the 20th century experienced an intensification of interest in childhood. James and Prout (1997a) suggested the culmination of the "century of the child" saw childhood studies becoming a new field of social science study. Within this new field, children were reconsidered as social actors entwined in social and culturally constructed conceptions of childhood (James & Prout, 1997b), the Reggio Emilia approach (Edwards, Gandini, & Forman, 1998) concurrently stimulated a common style of pedagogic engagement in early education discourse internationally. The approach is typified by a focus on group learning, community involvement, and making learning and teaching visible through documentation. The practice of pedagogical documentation promulgated by those inspired by Reggio Emilia influenced many practitioners and researchers working with young children. This section traces a history of pedagogic documentation.

Listening to Young Children: The Mosaic Approach developed by Clark and Moss (2001) drew on Reggio Emilia for research in an English context, while the Project Approach used in American contexts also cites Reggio Emilia as an inspirational force (Helm & Katz, 2016; Katz, 1998). Looking to Reggio Emilia, the research group Project Zero, based at the Harvard Graduate School of Education, also sought to engage with the thinking and practices of pedagogic documentation common to Reggio Emilia through the *Making Learning Visible* project (Reggio Emilia/Project Zero, 2001, Project Zero, 2003). There is evidence of all three of these approaches in the teaching resource KTP (MoE, 2004–2009).

The shift towards child-centred pedagogy within ECEC was preceded by international acknowledgement, promotion, and protection of children's rights within the *Convention on the Rights of the Child* ([UNCRoC], UN, 1989). In the same year the UNCoRC came into force, James and Prout (1990) published the first edition of the seminal text *Constructing and Reconstructing Childhood*. Within the collection, a new paradigm for childhoods was proposed and applied in discussions of the child situated in places and within and across

time. The scholarship recognised childhood consists of multiple and various possibilities, and worked to destabilise the notion of the passive, universal, and natural child (Prout & James, 1997). With this recognition also came new ways of approaching research about childhood and children (Kellett, 2005). Importantly, “children began to be seen as ‘subjects’ or ‘participants’ rather than ‘objects’ and research ‘with’ children became common practice” (Kellett, 2005, p. 5).

However, Kellett (2005) noted this often remained tokenistic in nature. The bulk of the power continued to be held by the adult-researcher. While children’s rights have been absorbed into the discourse surrounding childhood, Boyden (1997) pointed out governmental ratification of UNCoRC offers “little assurance that children’s best interests will be served” (p. 219). Provocatively, Boyden suggested UNCoRC raised questions of whose interests are promoted and protected. Boyden’s comment, considered in connection to use of photography and the photograph in ECEC, promotes questioning of teachers’ perceived right to visually document children’s learning (Lindgren, 2012). This line of questioning is pursued in Chapter 10 in connection to Article 16 of UNCoRC, which protects the child’s right to privacy (UN, 1989, p. 5).

The Reggio Emilia approach is based on democratic, inclusive, and participatory relationships which seek to honour and empower children as agents in their own lives and learning (Malaguzzi, 1998). The approach is based on listening to the child; documentation is, in part, to make the child’s voice visible. This entails a “systemic focus on symbolic representations” (Edwards et al., 1998, p. 7). In 1987, the exhibition *The Hundred Languages of Children* toured through America. Edwards et al. (1998) suggested the exhibit was a working example of the essence of the Reggio Emilia approach. The exhibit was collaborative, multimodal, and cyclic, embodied the documentation process, and importantly, remained a work in progress.

The systematic documentation practised by Reggio Emilia provides “children with a concrete and visible ‘memory’ of what they said or did” (Edwards et al., 1998, p. 10). Often, the displays included the teachers’ reflections, and, next to the children’s work, photographs that told about the process. Also included were descriptions of the various steps and

evolution of the activity or project. The descriptions were meaningfully complemented with transcription of the children's own remarks and conversation (Gandini, 1998, p. 175). An important aspect of the Reggio Emilia approach is the use of multiple modes of communication (Edwards et al., 1998). This multimodal understanding is referred to as the child having a hundred languages (Malaguzzi, 1998, p. 3). The approach suggests educators encourage children to work across different modes to think in divergent ways and make new understandings (Edwards et al., 1998, p. 462). As argued in Chapters 3 and 5, the photograph has become one of the defining features of the post-industrial era. Furthermore, having critical visual literacy is a vital skill in the hyper-visual present.

Clark and Moss (2001), drawing on Reggio Emilia, developed the Mosaic approach for research in an English context. Clark and Moss also drew on *Te Whāriki* (MoE, 1996), noting the importance of the principle of empowerment and the curriculum's child-centred ethos. Clark and Moss (2001) also picked up the evaluation question, formulated in line with the Communication strand, "Do you hear me?" (Podmore, May, & Carr, 2001, p. 97). Clark and Moss (2001) adapted that question to "Do you listen to me?" (p. 12). The Mosaic approach is defined as a "way of listening which acknowledges children and adults as co-constructors of meaning. It is an integrated approach which combines the visual with the verbal" (p. 1). Focus of the framework was on children's lived experiences, rather than "knowledge gained or care received" (p. 4). In this way, the project sought to maintain a focus on the children's contributions to the research. While the project used single-use cameras,⁴³ Clark and Moss identified the "huge potential" (p. 23) for digital camera use.

Within the New Zealand context, the charitable trust Reggio Emilia Aotearoa New Zealand (REANZ) has provided "opportunities for teachers to critically engage with the pedagogy of Reggio Emilia within the cultural content of Aotearoa" (REANZ, n.d.) since 2009. The well-known New Zealand educational researcher Margaret Carr⁴⁴ (1998a, 1998b, 2001) has taken inspiration from Reggio Emilia to discuss curriculum and assessment. Carr and Lee (2001) acknowledged they are "indebted" (p. 120) to Reggio Emilia and Project

⁴³ Due to the expense of digital cameras at the time of the research.

⁴⁴ Carr was the lead researcher on several projects informing KTP (MoE, 2004–2009).

Zero for the wealth of information each have provided about documentation. Carr (2001) noted the use of visual images, such as photographs, by the children of Reggio Emilia. Carr went on to suggest that while children in Reggio Emilia used Polaroid cameras, children could also use digital cameras to produce images of their interests. These photographs would offer similarly immediate feedback for children. These photographs could then be curated by children based on meaningful learning, and “should be included in their Learning Stories” (p. 152).

Liunardi (2013) found, in her master’s study, differences in the way New Zealand early childhood teachers applied the Reggio Emilia approach to pedagogical documentation. If teachers considered Reggio Emilia as inspirational, they “tended to use it as an extension to *Te Whāriki* and therefore used pedagogical documentation in addition to Learning Stories” (p. ii) and not to document and reflect on documentation as a practice. Those teachers who applied the Reggio Emilia approach “adjusted it for the New Zealand context and tended to document and discuss their documentation more often” (p. ii). Teachers’ professional development was a noticeable factor in this difference.⁴⁵ One participant stated she believed *Te Whāriki* “has incorporated the best of Reggio principles and adapted it to our New Zealand context” (p. 43).

KTP (MoE, 2004–2009) has the brushstrokes of Reggio Emilia implicitly imprinted upon it. This is seen in the focus on recording and revisiting documentation, to make learning visible, promoted in both KTP (MoE, 2004–2009) and the early childhood curriculum (MoE, 2017b). More explicit reference is also made in the booklets, in particular: *The Strands of Te Whāriki: Communication* (MoE, 2007b), *An Introduction to Books 17–20: Symbol Systems and Technologies for Making Meaning* (MoE, 2009a), and *The Arts* (MoE, 2009d). This is not surprising considering the widespread influence of Reggio Emilia. Furthermore, Carr (1998a, 1998b) drew on Reggio Emilia when undertaking the research which developed into KTP. The Mosaic approach (Clark & Moss, 2001) is referenced in the booklet *Children Contributing to Their Own Assessment* (MoE, 2004d). While much

⁴⁵ Teachers’ access to professional development is discussed further in Chapter 10 as a key tension working upon pedagogic photography.

discussion of projects is made within the KTP exemplars, no formal reference was made to the Project Approach (Helm & Katz, 2016; Katz & Chard, 1989). However, in Carr's (1998a, 1998b) report on the *Project for Assessing Children's Experiences* a publication by Katz and Chard (1993) was referenced.

This section has shown the cross-pollination of ideas informing documentation of young children's views, thinking, and learning. The movement of those ideas occurred on an international level at the turn of the 20th century. The first 2 decades of the 21st century have seen the rapid increase of digital technologies across all aspects of society. Within the field of early childhood education in Aotearoa New Zealand, this was seen in the governmental focus on ICT (Bolstad, 2003; MoE, 2005⁴⁶) and the increased access early learning settings had to ICT tools (Mitchell, 2008a). While the governmental emphasis on ICT use in ECEC is beyond the scope of this research, it is important to note this increased technology focus and access.

An Argument for Critical Photographic Image Use in ECEC

The photographic image provides teachers a "mode of communicating and representing" (MoE, 2009b, p. 2). The photograph is described throughout KTP (MoE, 2004–2009) as a language for documenting assessment for learning. That images can be used to make meaning is an underlining theme in the resource. What meaning is communicated and represented by photographs included in learning story assessment—to children, their families, teachers, the education community, and governmental bodies involved in early education—is important. So too, is questioning the taken-for-granted practice of photographing young children.

Within the field of early education, theorists have pointed out that use of photographs as an assessment medium comes with ethical and moral responsibilities (White, 2009, 2011). They have questioned whether teachers have the right to photograph all events children experience in early learning spaces (Flannery Quinn & Parker, 2016); the power of truth the photograph holds and how that works upon formation of knowledge; and what

⁴⁶ The cover of which shows a digital camera with an image of two young children on the screen.

information becomes valued (Daniels, 2013; Flannery Quinn & Manning, 2013; Flannery Quinn & Parker, 2016; Kind, 2013; White, 2015). Koro-Ljungberg and Ulmer (2015) argued that researchers need to be critical of knowledge assumed through viewing images, critical of image use, and critical of the images used.

Whereas other disciplines have critically examined the visual image, the discipline of education “has avoided the examination of visual culture and it has not engaged in needed debates about the epistemological assumptions and values embedded in different uses of the image in research” (Fischman, 2001, cited in Koro-Ljungberg & Ulmer, 2015, p. 232). This thesis argues it is timely to examine normalised use of photography and the photograph in early childhood spaces and question the practice of photographing children to produce photographs for evidence of learning.

While Koro-Ljungberg and Ulmer (2015) wrote about the use of images in a more general sense, the questions posed also provide rich material for considering pedagogical photography in early childhood. The questions asked of image use, and of images themselves, take a critical perspective in line with this research. Investigating and problematising the image in connection to “epistemological assumptions” (p. 232) aligns with questions within this thesis of how the photographic image is used as a method of recording and evidencing children’s learning. Following Koro-Ljungberg and Ulmer, attention is turned here to the ways images can be used. The next sections describe how images can be used and how they can be used within ECEC spaces. Koro-Ljungberg and Ulmer suggested that “even many critical uses of images are not critical of the images themselves” (p. 215). This is a key point. The work of Flusser (2000, 2011b) is used to extend analysis of the photographic image.

The Image: Making Connections to Early Childhood

This section connects Elkins’ (2013) three possible ways to use the image with pedagogic use of the photograph in conversation with Flusser’s theory of the technical image. Elkins (2013) put forward three ways images are generally used within art history and visual studies: “as mnemonics, as examples, and as illustration” (p. 26). He argued using

images in these three ways is problematic within the field of visual studies and instead advocated for finding “ways to be guided by pictures, rather than ways of explaining pictures” (p. 29). This highlights the potential use of the photographic image as a means of provocation, rather than as a method of providing evidence in early childhood assessment. It positions the photograph as a question rather than as a known.



Figure 16. “Panoramic glitch” (Digital photograph). Copyright 2019 by E. Diggins. Reprinted with permission.

This resonates with Flusser’s theory of creativity and its emphasis on creating new ways of thinking through dialogically interactions with information (Finger et al., 2011). It also recalls the distinction Flusser (2011b) made between new information and redundant information. Redundant images fulfil the program of the apparatus rather than push against the program in the pursuit of new improbable information. Flusser (2000) argued that redundant photographs surround us. Flusser suggested “Change is informative, the familiar redundant” (p. 65). Seeking to change the ways photographs can be looked at, the photographic image is theorised here through Elkins (2013), the philosophy of Flusser, and the lens of visual materiality, thus examining the spaces, connections, and tensions within the conglomerate presence/absence, evidence/abstraction, temporality/memory.⁴⁷

Images used as mnemonic tools.

The first use of the image discussed by Elkins (2013) was as a mnemonic tool. For instance, art history and visual studies publications use images for “reminding readers of images they may not be able to recall with sufficient detail, or that they may have seen but

⁴⁷ Chapters 7, 9, and 10 explore the performance/participation aspect of the visual materiality lens.

forgotten” (p. 26). This mnemonic use is on the basis that the original has been viewed. Within ECEC, photographic images are also used to provide a mnemonic tool, for children and teachers to review past experiences and support meta-cognitive thinking (Forman & Fyfe, 1998; MoE, 2004–2009). Due to the photograph’s considered ability of “imprisoning reality . . . of making it stand still” (Sontag, 1977, p. 163), its use to facilitate memory is understandable.

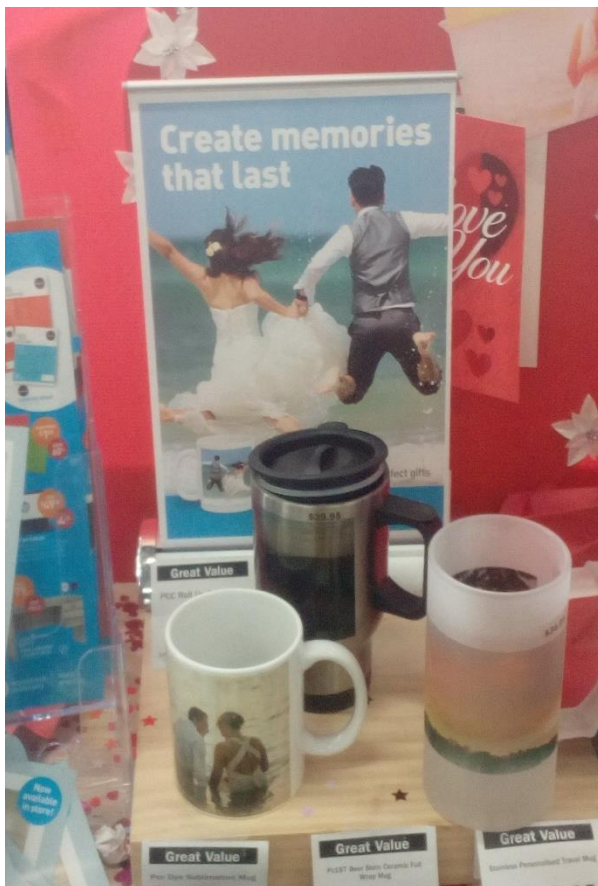


Figure 17. The fetish of memory. (Digital photograph, Smartphone)

Margaret Bourke-White, talking about her work as a photo-journalist with Erskine Caldwell, described the moment a photograph is taken as “the scene . . . imprisoned on a sheet of film” (n.d., quoted in Sontag, 1977, p. 193). Experiences are captured in photographs which become mementos, printed on coffee cups and other objects, such as cushions, or t-shirts. The notion that “photographs are experienced captured” (Sontag, 1977, p. 3) underpins pedagogic use of the photographic image to document learning for assessment. Use of the photograph as a mnemonic tool within early childhood assessment provides a way to look back at prior experiences. Children can read and revisit photographs

(MoE, 2004b). The photographic image is therefore valued within ECEC for providing feedback to children to further extend or to consolidate their learning. However, while photographs are used to hold information (Flusser, 2011b), as Berger (1980) pointed out, photographs “do not in themselves preserve meaning” (p. 55). Flusser (2012) argued belief in the photograph as a symptom of the physical world is based on illusion. This illusion hides the codified nature of the photograph. To dispel the illusion requires looking past the image to the ideologies behind the photographic image.

Used as a mnemotechnological tool, the photograph is thought to defy the temporality of human time and at times our cognitive retention. Yet, the plausibility of the photograph also has a troubling ability to create false memories (Hessen-Kayfitz et al., 2017; Strange et al., 2008). Typically, however, the photograph is thought to extend observers’ abilities to capture and record time, thus providing a repository for memory. Berger (1972) suggested although the camera takes the “burden” of remembering, it records only to forget. The photograph’s ability to “store” memory was argued by Flusser to be in defiance of the second law of thermodynamics. Flusser (2011b) argued that photographs: “are reservoirs of information that serve our immortality” (p. 18). However, experiences can only be experienced once. While the immortalisation of memory in photographs may outlast the photographer, photographs cannot replace embodied experience.

Smartphones have provided cameras to everyone with such a device. The use of photographic images as mnemotechnological tools has increased through this accessibility. The vast amounts of images stored on devices, external memory drives, or in the cloud, means we need to hold less information in our memories. Nevertheless, as identified above, the photograph can also support and create incorrect memories (Hessen-Kayfitz et al., 2017; Strange et al., 2008). The power of truth the photograph holds therefore makes it a dangerous tool for remembering.

Consider also the ability of the photographer to crop out information from images; either for aesthetic or ideological reasons. Figure 18 shows two versions of the image used in Chapter 5 (Figure 13) to explore the processes of photography production. On the left is the image used, on the right is the original image before it was cropped. Viewing the images

side by side, it is noticeable that the absence and presence of surrounding context creates a different perspective. Therefore, looking at a cropped photographic image as a true memory of a moment may result in lost information and incorrect understanding.

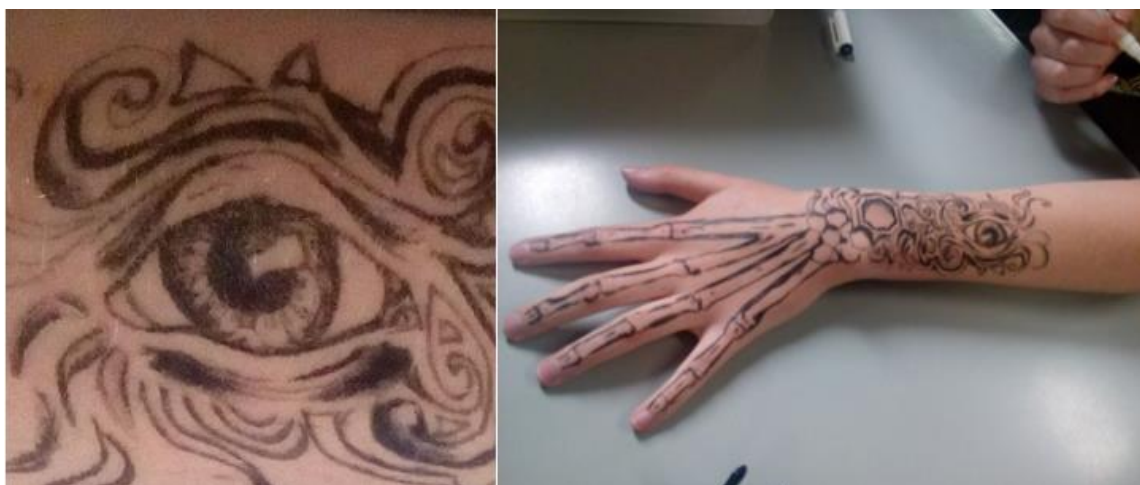


Figure 18. The bigger picture. (Digital photograph, Smartphone).

Images used as examples.

The use of the image as an example, as explained by Elkins (2013), provides the reader with an image to refer to and “provides evidence or veracity to an argument” (p. 27). In ECEC, photographic images are considered as “pedagogic documents” and the “camera as a method of observation, as a tool that helps teachers to develop a ‘pedagogy of sight’” (Flannery Quinn & Parker, 2016, p. 99). Photographs are used to document examples of learning, making that learning visible (MoE, 2004–2009, 2017b). This use of the photograph is concerned with creating meaning through identification of what is photographed (Sturken & Cartwright, 2001, 2009; Thompson, 2003).

Examples of learning are captured in photographs for learning stories and connected to the learning outcomes of the curriculum. KTP (2004–2009) provides many examples of photographs used as assessment documentation, while *Te Whāriki* (MoE, 2017b) includes photographic examples of children consuming photographs. Some of the images are used as examples within this thesis, such as the images of scopic apparatus in Chapter 3. The images show examples of the apparatus under discussion, thus giving the reader an example of something they may not have seen before, while other images are used

subversively to help show another perspective, such as those in Chapter 5. Regardless, both uses of images seek to provide proof of veracity to the argument.

Flusser (2000) argued the camera-apparatus and technical image changed the way humans understood and experienced the world. While the photographic image is normally used as evidence, be that in a criminal trial, scientific research, medical procedures, or as evidence of a young child's learning, the photograph is an abstract codification of reality. Flusser's (2011b) theory of abstraction suggested the mediation of the image through camera-apparatus reduces images to conceptual calculations. Technical images pose a risk to humanity if ideas become more valuable than experiences and interactions. Apparatus such as curriculum or ideologies also pose this danger. Looking through lenses of learning outcomes and ideal images of the child can result in losing sight of the actual child before us.

Images used as illustrations.

“When an image in an essay or a book is not required, either as an aid to the reader's memory or as a concrete instance of something argued in the text, then its purpose may be illustrative” (Elkins, 2013, p. 27). Elkins (2013) went on to describe this use of the image as “an addition, an ornament, a conventional accompaniment” (p. 27). Problematizing the use of photographs as illustrations within early childhood visual documentation provides a way to look critically at photographic evidencing of children and their learning. This allows questions to be formed and asked about how photographs are used. As Flusser (2011b) so succinctly put it: “Images don't show matter; they show what matters” (p. 11). The use of photographs to document learning in ECEC can show what matters to teachers, and when used with cognisance, what matters to children, their families, and whānau.

Berger (1980) wrote “normally photographs are used in a very unilinear way—they are used to illustrate an argument, or demonstrate a thought . . . used tautologically so that that the photograph merely repeats what is being said in words” (p. 60). If photographs are only used to illustrate the learning narrated in assessment documentation, then the images' potential to guide new thinking (Elkins, 2013) and question accepted views (Sontag, 1977) cannot be accessed. They remain redundant (Flusser, 2011b). Perhaps the images used in

this thesis are merely illustrative, acting as reiterations of the text. Perhaps not all the images are? It is hoped some images may be provocative and can guide and stimulate thinking rather than requiring explanation (Elkins, 2013).

Pedagogic Use of Photographs

This section extends the prior section through a consideration of how photography theory, visual studies, and early childhood education literature discuss photography and use of the photograph. In Table 1, two differing ways to use photographs are presented. These are common ways photographs are described, or suggested to be used, in the literature. The column on the left presents two objectives that emerged: firstly, for the photograph to produce evidence; and secondly, for the photograph to generate and/or support inquiry. To the righthand column has examples of how photographs are used to fulfil these aims. Both aims derive from an intention to be informative, although they originate from different motivations, and develop through different actions.

Table 1

Possible Ways to Use the Photograph: Evidence or Inquiry?

Aim	Action
Evidence	Inform
	Classify
	Provide proof
Inquiry	Stimulate
	Create conceptual space
	Provoke questions

Thompson (2003) suggested two types of photographs: photographs which photographers produce from a place of thinking, and photographs expressive of a more emotional view. Photographs created by “thinking photographers” (p. 51) are focused on the identification and meaning of the objects arranged and presented to the viewer, what is real

and known. Those photographs produced to be more emotionally evocative are “capable of affecting the viewer directly” (p. 51).

These two types of use are helpful in considering the aims of early childhood pedagogues. The use of photographs for evidence aligns well with Thompson’s (2003) notion of the “thinking photographer” (p. 51), in Flusserian terms, a redundant photograph. Those photographs produced for more creative and generative use resonate with the notion of photographs which directly affect their viewers, there is an openness and potentiality for new or divergent insights to be gained. The next section unpacks the aim of providing evidence through photography and the photograph in connection to literature exploring the photograph as a pedagogic tool, while the following section unpacks the aim of using the photograph as a tool in inquiry.

The photograph as evidence.

Looking at photographs as evidence “implies that we know about the world if we accept it as the camera records it. But this is the opposite of understanding, which starts from *not* accepting the world as it looks” (Sontag, 1977, p. 23). Using photographs for evidence is problematic; however, photographs are often used to present information, support classification, and provide proof in early childhood assessment.

Inform.

As noted previously, the photographic image was the most commonly cited source of data collected for early childhood assessment in Aotearoa New Zealand over a decade ago (Mitchell, 2008a).⁴⁸ The New Zealand Council for Educational Research national survey in 2007, showed 96% of teachers reported using photographs as a method to gather information about learning (Mitchell, 2008a). Increased access to digital cameras suggests this method will not have decreased. However, if, as Sontag (1977) suggested, use of the photograph as evidence can be limiting, divisionary, and reductionist, then its use in early childhood to evidence children’s learning must be careful, cautious, and critically considered.

⁴⁸ Mitchell (2008a, 2008b) reports on findings from research undertaken some 13 years ago, and as such cannot be considered to speak to the current situation. However, there has been no similar research that shows current use of photography and the photograph within ECEC spaces in Aotearoa New Zealand.

The truth power of the photograph is enmeshed in a web of understandings woven around notions of reality and assumptions the photograph can provide “objective data” (Sontag, 1977, p. 163). Photographs are often used in ECEC to provide evidence of learning, and to show what a child has been doing, to their family and other teachers. Sontag stated, “many important documents are not valid unless they have, affixed to them, a photograph-token of the citizen’s face” (p. 21). The photograph adds credibility to learning stories, by showing an activity, event, or moment has occurred. Photographs can also make the learning more accessible through providing visual evidence available to multiple audiences.

Flusser (2000) defined the photograph as a means to inform. And the photograph is described throughout KTP (MoE, 2004–2009) as a language for documenting learning. The photograph provides a medium to capture and record times past, thus providing a repository for memory (Berger, 1980; Flusser 2011b). Used as a mnemotechnological tool, the photograph archives information. The important question of what sort of information is provided is explored further in the following section on use of the photograph for inquiry.

Classify.

Photographs can only present a “slice” of a particular moment and are highly reflective of what the photographer chooses to photograph (Sontag, 1977). Flannery Quinn and Manning (2013) described the photographer of young children’s learning as the “author of the image” (p. 272). Moran and Tegano (2005) wrote about the potential for the photograph to be used as a tool for teacher inquiry. However, they also stated as teachers learn to use the photograph to document learning, they will “learn to observe carefully, screening out nonseminal information as they develop discernment, judgement, and decision-making” (para. 2). One challenge for teachers documenting learning is that there is so much to document (Buldu, 2010). This means there will always be choices to be made about what to select for documentation.

One way to respond to this is by classifying what learning is “valued” (MoE, 2004a, p. 3). Learning captured in photographs and presented back to the child as feedback shows what learning is valued in the context children are in. This will vary across types of ECEC

settings, communities, and teachers. The epistemological tension surrounding what learning is valued is explored by Flannery Quinn and Manning (2013) who asked, “do photographs represent reality or what the photographer decides is worth seeing?” (p. 272). Here is an echo of Flusser’s (2011b) suggestion that “images don’t show matter; they show what matters” (p. 11). Sturken and Cartwright (2009) argued that, historically, photography was used to classify people; therefore, photography can be used as a form of “social organization and control” (p. 351). The classification and organisation of children’s learning in early childhood settings occurs in relation to the state-apparatus of curriculum and policy documents.

Provide proof.

Looking at photographs as “evidence . . . incontrovertible proof that a given thing happened” (Sontag, 1977, p. 5) and a “dependence on the camera, as the device that makes real” (Sontag, 1977, p. 9) highlights concerns around how knowledge is produced about children and their learning in ECEC. More so when we consider that from certain ways of looking, certain realities are created about, and for, children, their families, and early childhood professionals. Flannery Quinn and Manning (2013) emphasised this concern, calling for discussion about the power involved in photographing young children’s learning. They questioned the power photographers have to document and value certain realities and also raised concerns about the unequal power relations which underpin the practice of photographing children.

As suggested in the above sections, photography and photographs can show what matters to teachers, and when used with perception and respect, what matters to children, their families, and whānau. However, there are epistemological and ontological tensions created when a camera is used to take photographs. Those tensions are further compounded when photographs are used without critical awareness of practices and technologies behind the image. This prompts questions not only about the photograph but also the institutional practices which inform its use, the photograph’s role in ordering the social world and understandings of subject, object, and knowledge (Crary, 1990). Using the photograph to inform, classify, and provide proof is a limited expression of the capabilities of

the photograph. This use of images produced by the camera-apparatus is redundant in that the practice does not seek to generate new information.

The use of the photograph for inquiry.

The ways to use the photograph that are discussed in this section offer a different way to think about photograph use. Accepting the photograph as an abstract, powerful, and programmatic force does not mean discarding it. It means moving past traditional ways of thinking about the photograph and opening to the possibilities of using the photograph in new and innovative ways. Flusser (2011b) suggested the photograph be used creatively in an expression of freedom. The photograph can change the way we think; this can come from changing the way we think about the photograph.

Use of the photograph as a tool for inquiry can be stimulating and offer multiple ways to see, as well as provide possibilities to see in new ways (Moran & Tegano, 2005). Two ways photographs can be used for inquiry are discussed below: as an object to support inquiry, and as an object for inquiry. While the visual information presented in photographic images can facilitate inquiry into the happenings in an early education context, the photographic image itself also provides an object of inquiry. Below, the photograph is discussed as an object with the potential to stimulate thought, create conceptual space for new ways of thinking, and provoke questions.

Stimulate.

Moran and Tegano (2005) used an example of a group of teachers talking about a photograph to show how photographs can stimulate new ways of thinking and understanding. In the example, multiple meanings were generated from a photograph shared between teachers. The multiple perspectives were challenging to the teachers who took the photograph originally. This occurred because the subjectivity of photographs results in different interpretations by those who have not taken the photograph. The resulting dissonance was eventually mediated through ongoing dialogue. However, the example shows how teachers can work with the multiple perspectives photographs generate, as well as use this tension to re-examine and extend their own thinking about what photographs show, and how they use photographs.

Berger (1980) suggested “the camera relieves us of the burden of memory. It surveys like God, and it surveys for us. Yet no other God has been so cynical, for the camera records in order to forget” (p. 59). The difficulty encountered by the teachers Moran and Tegano (2005) discussed is that “unlike memory, photographs do not in themselves preserve meaning” (Berger, 1980, p. 55). Swinnen (2007) wrote about this also, explaining how the same photograph in a different place may result in different interpretations. This is because the photograph can “only be made complete by the reader who interprets it, and who in this sense actively participates in a kind of rewriting, recreating” (p. 292). Engaging with photographs as abstract concepts and information rather than as static evidence creates possibilities to stimulate thinking rather than provide proof.

Create conceptual space.

In a paper drawing on new-materialist theories, Kind (2013) explored how photography in ECEC can open spaces for new ways of thinking and being. In the study, Kind paid less attention to the representational quality of the photographs and instead sought insight into “the visual worlds they created and what we might learn about the doings and enactments of photography” (p. 432). This resonates with Flusser’s (2000) notion of making the photograph “transparent” so that the practices and ideologies informing photographs can be seen. However, ever wary, Flusser warned that this “critical exercise does not necessarily lead to a disenchantment of the images” (p. 64). Using the photograph creatively means breaking through the enhancement of believing the photographic image to be true.

Using the photograph to create conceptual space, openness for new thinking to occur, requires “*not* accepting” (Sontag, 1977, p. 23) how photographs look at first glance. It also requires not accepting the program of the camera-apparatus but noticing its functions so as to “play” against them (Flusser, 2000). To do so, Flusser (2000) suggested we must “crawl into the camera in order to bring to light the tricks concealed within” (p. 27). Kind (2013) does this through approaching the camera from various theoretical perspectives, citing Bennett’s (2010) thing theory and Ingold’s (2011) theory of haptic engagement. Kind invited teachers “to recognize past practices and photography’s colonial histories, to play

with and against them, yet also to attend more closely to the doings, movements, and enactments of photography” (p. 439).

Provoke questions.

Use of the photograph to provoke questions does not accept the photograph as “incontrovertible proof” (Sontag, 1977, p. 5). Knowing photograph production operates within the program of the camera-apparatus means also knowing the technical images produced are limited to the output prescribed by the program (Flusser, 2000). This provokes questions about the knowledge formed by photographs, and the power of the photographer to produce certain “versions” of knowledge (Daniels, 2013; Flannery Quinn & Manning, 2013; Kind, 2013; Sturken & Cartwright, 2018; White, 2015). Questioning the epistemological power of the photograph in connection to its conception as a “language with structured forms and meanings” (Swinnen, 2007, p. 287) only highlights Flusser’s concerns.

Swinnen (2007) suggested photography and philosophy “seem closely related Both point out something and are therefore a knowing, but they also pose a question and are therefore a ‘nonknowing’” (p. 290). Sontag’s (1977) suggestion that understanding begins with non-acceptance of the images recorded in photographs allows photographs to be seen as questions rather than as evidence. This means photographs can be used to stimulate thinking, create conceptual space, and provoke questions rather than solely provide evidence for documentation in early childhood assessment.

Concluding Comments

The photograph has underutilised potential as a pedagogic tool. Used in a propagative rather than prescriptive way, the photograph can stimulate new ways of questioning, thinking, and knowing. Flannery Quinn and Parker (2016) underlined the importance of encouraging early childhood teachers to “talk about, express, and articulate their pedagogy, and the values which underpin their practices” (p. 97). Extending discussion and articulation of pedagogy to photograph use has shown the contradictory nature of the photograph. While photographic images can make learning visible, the editing, or absence of

other learning moments, reveals the power of the curriculum-apparatus and photographer-teacher to value certain moments of children's experiences over others.

Photographs are believed to provide a tangible artefact to revisit past moments. Documentation is thought to create "traces" (Rinaldi, 1998, p. 121) of learning moments. However, belief in the ability of the photograph to capture images of what has happened because "photographs are experience captured" (Sontag, 1977, p. 3), is false. From a Flusserian perspective, photographs are not experience captured, nor traces of experiences, rather they are the traces of apparatus and discursive knowledge. The important point to note is that apparatus are designed to operate automatically, that is without human interaction. Flusser (2000) argued that exposing the "rigid, unintentional, functional automaticity" (p. 74) is important. To do so provides space for human intention to flourish, for creativity.

A key point to consider is that if we can change the way we think about the photograph, we can change the way we think. Using photographs in summative ways, to show what children know, or what they have done, does not realise the potential of the photograph. Photographing children in line with learning outcomes or teaching plans does not realise the potential of the photograph either. When children are empowered to create their own photographs, when we work with them creatively, and with human intention, with heart, we move closer to the possibilities the photograph offers.

Chapter 9.

State-apparatus: A re-view of KTP and *Te Whāriki*

Kei Tua o te Pae Assessment for Learning: Early Childhood Exemplars (MoE, 2004–2009) was published to provide teachers a guide to implementing learning story assessment. Through the lens of historiography this chapter first examines the development of the learning story and KTP. Then changes to teachers' practice of assessment are examined with particular focus on the research and professional development around teacher practices prior to and post KTP providing insights into the use of photography and the photograph in ECEC. Following that, the chapter undertakes a reading of KTP and *Te Whāriki* (MoE, 1996, 2017b) through a Flusserian lens focused on multiliteracy (techno-imagination), photography, and the photograph. To conclude the chapter, the documents are theorised through the philosophical work of Flusser as the tension between apparatus and freedom is explored through questions of participation and privacy.

Foucault (2000b) theorised the power-knowledge nexus was formed through everyday practices and technologies. His panopticon project (Foucault, 1977) was interested in how practices of imprisonment came to be “accepted at a certain moment as a principal component” (Foucault, 2000b, p. 225). This is an important question to ask of the practice of pedagogic photography. Photograph use in learning story assessment has come to be accepted as a “principal component.” Learning stories are often written from photographs of children, at times, days after the photograph was taken, or even weeks. Sometimes the teacher authoring the story has not taken the photograph, nor even personally witnessed the child's activity. This thesis suggests the moment photography use became firmly embedded into ECEC assessment practice, as a principal component, was when the learning story became common practice.

Endorsement of the early childhood curriculum, *Te Whāriki* (MoE, 1996), in the mid-90s, resulted in research on assessment methods for early learning. KTP (MoE, 2004–2009) was developed from this enquiry. KTP presented examples of learning story assessment

that frequently used photographs as a tool for making learning visible. Taking a Flusserian (2000) perspective, curriculum and guidelines for teachers can be thought of as apparatus. They are theorised here through the constructs of curriculum-apparatus and state-apparatus. Two learning stories from KTP (MoE, 2009c, 2009e) are used to tease out the tension between apparatus and participation (MoE, 2009e) and privacy and freedom (MoE, 2009c). The stories are used to support philosophical engagement with the overarching tension between upholding children's best interests and the obligation to make learning visible.

Tracing the Development of *Kei Tua o te Pae*

The following section traces the development of KTP (MoE, 2004–2009) through the evolution of the learning story. The learning story approach to assessment developed out of the national curriculum document, *Te Whāriki* (MoE, 1996). Development of the curriculum involved years of professional development, changing pedagogies, and shifting theoretical ground (Carr et al., 2003). The learning story originated as a narrative-based assessment method. Designed to capture children's learning across time, the method provided a framework to assess children's learning dispositions⁴⁹ (Carr, 2001). It was informed by the research of early childhood academic Margaret Carr and her team into the practice of teachers involved in the Ministry-funded *Project of Assessing Children's Experiences* (Shaw, 2014); and the *Education Leadership Project* during the late 1990s (Carr et al., 2003; Shaw, 2014).

Learning stories emerged from an exploration of how assessment could be implemented in line with the sociocultural theories embedded within *Te Whāriki* (Carr, 1998, 2001, 2012; Carr et al., 2003; Cullen, 2003). The Ministry-funded *Project of Assessing Children's Experiences* was conducted from 1995 to 1997 and sought to answer two questions:

⁴⁹ Learning dispositions are ways children approach learning, for example by being curious, or engaging in sustained concentration even if a task is challenging. In the revised curriculum, working theories are positioned as interwoven with learning dispositions (MoE, 2017). Working theories are the ways children think about phenomena and experiences and help to generate new insights in an ongoing manner.

- What are the observable outcomes for children that professionals working with young children can link with early childhood curriculum guidelines?
- What assessment instruments can be applied in these sites across a range of settings and age groups? (Carr, 1998, p. i)

That research contributed to the development of a framework for writing stories about learning. The framework was developed to help support teachers in knowing what to assess, how to write about this assessment, and how to connect assessment to the early childhood curriculum (Carr, 1998). The framework was a forerunner to what is now commonly known as the learning story. The learning story is now practised as a combination of photographs and text related to curriculum learning outcomes or dispositions (Carr, 2001; Carr & Lee, 2012; MoE, 2004–2009).⁵⁰

Early in the project, teachers requested a way to include photographs in learning stories (Carr, 2001). To meet this request, a table was formatted to allow for the inclusion of photographs. Two templates able to include photographs were offered to teachers: “The Child’s Voice” and the “Parents’ Voice” (Carr, 2001, p. 152). Both templates were designed so photographs could be used to provoke a response to the moments captured in the learning story. These stories detailed connections to learning dispositions. Learning stories were usually archived into learning portfolios.⁵¹ The recent availability of digital platforms has resulted in growing use of ePortfolios to both manage and store documentation and assessment of learning.

In 2001, through the *Early Childhood Learning and Assessment (Exemplar) Project*, Carr and colleagues collected examples of assessment practices demonstrating the sociocultural principles of *Te Whāriki* (MoE, 1996). A selection of those examples was collated and published as *KTP* (Stuart, Aitken, Gould, & Meade, 2008). The teaching resource *KTP* (MoE, 2004–2009) is a series of 20 booklets created to “consider and inform assessment practice in early childhood education” (MoE, 2004a, p. 2). The series is also

⁵⁰ The learning outcomes for children in early learning are outlined in the early childhood curriculum in connection to the strands and principles of the document (MoE, 1996, 2017b).

⁵¹ Portfolios were usually collated in clear file folders. Art works, photographs, and learning stories were stored in the folders.

positioned as a resource “that will help teachers to understand and strengthen children’s learning” (MoE, n.d., para. 2).

Illustrated throughout with examples of narrative assessment and supported by connections to relevant theoretical works and *Te Whāriki* (MoE, 1996), the booklets were intended to provide early childhood practitioners with a professional development resource for supporting assessment in the early years (MoE, n.d.). The introductory statement to KTP (2004a) noted the booklets are a:

resource to enable learning communities to discuss assessment issues in general, both in terms of *Te Whāriki* and in terms of their specific settings. They introduce principles that will help learning communities develop their own assessments of children’s learning. (p. 2)

The revised *Te Whāriki* (MoE, 2017b) re-emphasised KTP as an assessment framework “consistent” (p. 64) with the curriculum. Using photographs to make children’s learning visible was also reiterated as a means to gather evidence for assessment.

Credit-based, formative assessment for learning, the learning story approach positioned the child as a participant and co-constructor in the assessment and documentation process (Carr, 2001; Carr & Lee, 2012; Lee, Carr, Soutar, & Mitchell, 2013; MoE, 2004–2009). This was a change from assessment practices focused on what children had learnt and could or couldn’t achieve. With the introduction of *Te Whāriki* (MoE, 1996), more formative methods of assessment that assisted and supported continuation of learning replaced summative approaches which looked foremost at what was known (Carr et al., 2003). Within KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 1996) the child was positioned as powerful, as capable, and as confident; in reciprocal relationships with people, places, and things; and existing holistically within corporal, mental, spiritual, emotional, social, and cultural dimensions. Furthermore, the child as learner was seen to be inhabiting an “ever-changing world,” in which they were required to be an ever-learning subject (MoE, 2004a).

In the wider context, children were coming to be understood as active participants in their own lived experience of life, and childhood as socially constructed (Prout & James, 1997). Sociocultural theory is one of the theories and approaches the curriculum draws on

(MoE, 2017b).⁵² The four curriculum principles, *empowerment/whakamana*, *holistic development/kotahitanga*, *family and community/whānau tangata*, and *relationships/ngā hononga*, are a “synthesis of traditional Māori thinking and sociocultural theorising” (MoE, 2017b, p. 60). These principles are woven through KTP (MoE, 2004–2009) also. The introductory booklet of KTP connects the four principles of *Te Whāriki* to four evaluative criteria for teachers to consider when assessing learning:

- Is the identity of the child as a competent and confident learner protected and enhanced by the assessments?
- Do the assessment practices take account of the whole child?
- Do the assessment practices invite the involvement of family and whānau?
- Are the assessments embedded in reciprocal and responsive relationships? (MoE, 2004a, p. 19)

Stuart et al. (2008) suggested sociocultural assessment practice requires teachers to, firstly, be working with the curriculum strands and connected learning dispositions; secondly, be credit based; and thirdly, include the child’s voice. Stuart et al. identified using photographs as one way teachers can include children’s voices in assessment. Stuart et al. provided the definition of the child’s voice as “the child being visible or active in documented assessment processes” (p. 19, citing Carr & Lee, 2002). Gaining multiple perspectives, such as of children, their families, or other teachers, allows learning story assessments to increase objectivity and therefore produce “more robust analysis” (p. 19, citing Hatherly & Sands, 2002). Using photographs is one way to gain multiple perspectives.

This section has traced the provenance of KTP (MoE, 2004–2009) through the development of the learning story method. The booklets are the result of research aligning assessment methods with the early childhood curriculum. The curriculum is imbued with the principles of empowerment, holistic development, family and community, and reciprocal relationships (MoE, 1996, 2017). Teachers’ practices of documenting assessment could therefore be expected to reflect these principles. Key to achieving this is a child subject who

⁵² The others being Bronfenbrenner’s bioecological model, Kaupapa Māori theory, Pasifika approaches, Critical theories, and Emerging research and theory.

is a willing participant in a process of documentation which is meaningful for them. To achieve this may require moving away from the normalised practice of photographing children for evidence. This possibility is explored further in the next chapter. For now, the following section reviews teachers' practice prior to and post KTP (MoE, 2004–2009) professional development.

Introducing *Kei Tua o te Pae* to the profession.

A short history of the implementation of KTP (MoE, 2004–2009) into practice is outlined here in reference to two reports on teachers' assessment practices:

Evaluation of the Implementation of Kei Tua o te Pae Assessment for Learning: Early Childhood Exemplars: Impact Evaluation of the Kei Tua o te Pae 2006 Professional Development (Stuart et al., 2008); and

Assessment Practices and Aspects of Curriculum in ECE: Results of the 2007 NZCER National Survey for ECE Services (Mitchell, 2008a).

These reports provide insights into teachers' practice around the time of KTP's release. This section focuses on the discussion of photography and photograph use in both reports, and early childhood teachers' assessment practices prior to and post release of KTP.

The report by Stuart et al. (2008) was commissioned by the MoE to determine the impact to teachers' assessment practices after KTP professional development.⁵³ Stuart et al. (2008) showed teachers used photographs in a variety of ways: as a means to include children's voices in assessment (p. 19), as well as to "allow educators and others to look closely at the child in action" (p. 58); to share learning with families, and make learning public in displays in slide shows or montages, i.e., to make learning visible (Stuart et al., 2008).

⁵³ Mitchell (2008a) stated "The most common delivery forms for teachers/educators' professional development were one-off seminars or conferences (66 percent) followed by service-wide professional development focused on teachers/educators' own service (53 percent). Thirty-four percent undertook their own personal study, 22 percent attended a conference of an educational organisation, and 14 percent reported undertaking action and inquiry-based learning. There were no substantial changes between 2003 and 2007, except for a drop in teachers/educators undertaking personal study (down from 44 percent). Kindergarten teachers were more likely than others to participate in service-wide professional development focused on their own kindergarten" (p. 24).

Stuart et al. (2008) reported teachers commented on the ways children were participants in assessment. Teachers pointed out children could “re-visit their learning through photos, displays and profile books” (p. 70). Teacher accounts also suggested children were claiming “ownership of assessment process by requesting stories and photos be developed and added to portfolios” (p. 71); or were “involved in producing learning stories (reflecting and commenting on photos)” (p. 71). Stuart et al. found overall use of photographs was “very common” (p. 105). The belief was that use of photographs enabled “the child in action to be presented through the narrative” (p. 105).

Mitchell’s (2008a) report compared teacher⁵⁴ assessment practices to a prior survey taken over the period from the end of 2003 to the beginning of 2004. In 2007, the most common method of data collection for assessment was identified by participants as photography, with 96% of teachers saying they used photography to gather information about children’s learning. Teachers’ responses showed the following shifts in methods of documentation and data gathering from 2003 to 2007: “a small positive shift in the use of photographs from an already very high level” (p. vii; 96% in 2007 compared to 90% in 2003), and “a large positive shift in the use of learning stories” (p. vii; 94% in 2007 compared to 78% in 2003). The most common use of data was to provide feedback to children’s families (91%). Providing feedback to children was situated in seventh place at 71% (compared to 62% in 2003). Mitchell noted the most noticeable shift from 2003 to 2007 was the increased use of ICT to document assessment and create portfolios.

Mitchell’s (2008a) survey showed a significant increase in access to digital cameras in early childhood settings, with 97% of teachers being able to access a digital camera in 2007 compared to 53% in 2003. Similarly, there was an increase in the number of children who were taking photographs (38% in 2007 compared to only 4% in 2003). There was also a reported 23% increase in the use of ICT to make children’s learning visible (up from 55% in 2003 to 78% in 2007). Mitchell suggested these shifts were in line with governmental

⁵⁴ Mitchell (2008a) used teacher/educator throughout the report to reflect the variations between settings and qualifications of adults in positions of responsibility. Here I use “teacher” for ease of reading.

direction of the time which focused on teachers' assessment practices and use of ICT in early learning settings.

In 2007, 72% of teachers reported making use of KTP (Mitchell, 2008a).⁵⁵ Sixty-eight percent of respondents thought the resource had supported their use of assessment for learning, while 12% believed the resource "had not made any difference to what they did before" (Mitchell, 2008a, p. viii). While KTP may not have changed some teachers' assessment practices, the increase of ICT and governmental encouragement to utilise such technologies most certainly has. Nevertheless, when commenting on their achievements over the past 3 years, 78% of teachers in 2007 identified an improvement in their assessment practices, compared to 68% in 2003.

Notably, survey results were different across the sector. For example, Mitchell (2008a) found Kindergarten teachers reported 23 hours per year of professional development compared to Playcentre teachers' 15 hours. This may be reflected in the teachers' opinions of their achievement of professional development in the different settings: 90% of Kindergarten teachers believed their assessment and evaluation practices had improved, compared to 58% of Playcentre respondents. However, overall, as Stuart et al. (2008) also found, Mitchell (2008a) reported that teachers believed KTP had a positive impact on their assessment practices.

This section outlined the development of KTP (MoE, 2004–2009), and highlighted variations to teachers' practice of assessment due to professional development in line with KTP. The studies highlighted changes in teachers' assessment practices: most notable were the increase in photography and ICT, which became increasingly common tools within early learning settings. A common phrase emerged for teachers, consistent with their increasing use of photographs: make learning visible. This was seen as a beneficial pedagogic strategy. While there was uneven provision of professional development and a lack of ongoing professional learning opportunities, for the most part teachers welcomed the learning story assessment method presented in KTP.

⁵⁵ Teachers' use of KTP in the 2007 survey was limited to the first eight books of the resource (Mitchell, 2008a).

Reading *Kei Tua o te Pae* and *Te Whāriki*

This section details a reading of KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 1996, 2017b). First, multiliteracy is explored as a crucial skill in the 21st century. Expanding the idea of being literate to include working with and “reading” visual and digital aspects of communication practices brings literacy into the 21st century. Flusser (2011b) argued it is imperative the relationship between photograph and camera-photographer is understood. Flusser (2012) theorised this ability as having a “techno-imagination” (p. 196). When using our techno-imagination it becomes “possible to lay technical images bare as symbols and to decipher them, bringing their hidden and masked ‘intentions’ to the recipient’s attention” (p. 196). There is resonance here with the notion of multiliteracy. To be multiliterate is to be able to understand and work with texts containing images and written language, as well as the digital technologies behind text production (New London Group, 1996).

The term *multiliteracies* was introduced in the mid-1990s by the New London Group (Gee, 2012). The term multiliteracies was coined to point to the significance of understanding literacy as consisting of multiple literacies. The New London Group argued literacy included “(a) multiple practices using print literacy; (b) practices around multimodal texts that incorporate both images and languages; and (c) practices around new digital media” (Gee, 2012, p. 371). Multiliteracy is considered to go beyond language-based literacy to a more expansive and responsive understanding of literacy related to a changing world, and the changing ways of living, learning, and working within it (New London Group, 1996).

Thinking about multiliteracy through Flusser’s (2000) analysis of the relationship between writing and image provides another perspective. Flusser suggested images mediate between us and the world, providing a bridge to aid comprehension. However, this mediation creates a division between the world and the human, meaning images come between us and our experience of the world.⁵⁶ While images were “supposed to be maps they turn into screens: Instead of representing the world, they obscure it until human beings’ lives finally become a function of the images they create” (p. 10). Writing was, according to

⁵⁶ As discussed in Chapter 3.

Flusser, originally intended to provide further explanation of images. However, with the invention of the technical image writing has been displaced. Nevertheless, technical images are often not recognised as images but rather as windows looking onto the world. He argued this means technical images are not engaged with as images, resulting in a lack of critical awareness about the processes of production behind images. For Flusser (2012), it was vital these processes are identified—this allows for analysis of the apparatus behind the production of technical images and supports the development of critical visual literacy.

The MoE (2009a) proposed “children of today are growing up in a world where the ability to read complex and diverse visual images for meaning will be just as important to literacy success as their ability to read the written word” (p. 2, citing Kress, 2003). The learning story is positioned as an access point for children to reflect on their learning through the photographs accompanying the written narrative (MoE, 2009a). Additionally, it is suggested photographs are more accessible for children than written text which they cannot yet read (Carr, 2001). Advocates for multiliteracy stress the importance of including multiple modes in an understanding of multiliteracy. Also significant is that meaning making is a *dynamic* process: modes are used differently and in combination (New London Group, 1996).

The learning story, and the MoE documents KTP (2004–2009) and *Te Whāriki* (2017b) are examples of multimodal texts. A multimodal text contains more than one type of mode of representation (Kress & van Leeuwen, 2001). KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 2017b) use images and the written mode, amongst others, to communicate and represent information to the reader through the same text. The term *multimodality* is descriptive of

approaches that understand communication and representation to be more than about language, and which attend to the full range of communicational forms people use—image, gesture, gaze, posture, and so on—and the relationships between them. (Jewitt, 2009, p. 14)

There are preferences for modes within societies and across history. While for “several centuries now, ‘western’ societies have preferred writing to image for most areas of public

communication” (Kress, 2009, p. 57), some theorists have suggested image has become the dominant mode of communication in postmodern times (Flusser, 2011b; Jay, 1988; Kress, 2003; Rose, 2001).

An awareness of children’s ability to engage with the visual image, i.e., be multiliterate, is important. KTP (MoE, 2009a, 2009b), much the same as the New London Group (1996), suggested that what it means to be literate is changing, as multimodality is increasing and visual modes are becoming more prominent. This new understanding of literacy moves away from a conception of the primacy of language to one of partiality (Kress, 2012; New London Group, 1996). A Flusserian reading of multiliteracy means also understanding that images are codified information, produced by apparatus. This research’s examination of how photography use in ECEC is positioned in ministerial documents aligns itself within this conception of multiliteracy.

Multiliteracy, photography, and the photograph in KTP and *Te Whāriki*.

KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 1996, 2017b) were read to identify explicit references to multiliteracy, photography, and the photograph. In-text photographs were also reviewed to establish how photographs were used within the documents. In an initial reading of KTP (MoE, 2004–2009), it was clear most exemplars used photographic images. Discussion about using photography and the photograph to document learning was also common. Also of note was the high use of words relating to visuality (such as: image, images, visible, aspects, illustrate, view, filters, perspectives, reflect). The high occurrence of words related to the visual implicitly introduced visuality into the conversation around assessment. To discover what explicit discussion of multiliteracy, photography, and photographs was evident within KTP and *Te Whāriki* (MoE, 1996, 2017b), a closer reading was undertaken. The following sections discuss multiliteracy and photography use as endorsed in early childhood education guidelines (MoE, 2004–2009) and curriculum policy (MoE, 1996, 2017b).

Kei Tua o te Pae.

In the introductory booklet to the last release of KTP (MoE, 2009a), *An Introduction to Books 17–20: Symbol Systems and Technologies for Meaning Making*, the work of Gunter Kress⁵⁷ (2003) is referenced in connection to the introduction of multiliteracies. Multiliteracies are defined in that booklet as “multimodal ways of communicating through linguistic, visual, auditory, gestural, and spatial forms” (Hill, 2007, p. 56, quoted in MoE, 2009a, p. 2). Hill (2007) suggested “being multiliterate is very relevant to the early childhood context” (p. 57). As pointed out previously, photographs are positioned as more accessible to young children than the written word (Carr, 2001). In Booklet 17 (MoE, 2009b), *Oral, Visual, and Written Literacy*, a view of literacy was presented which went beyond “skills and conventions to do with the mechanics of reading and writing” to a “wider view” of what “being literate is” (p. 2). In this definition the work of Kress (2003) was once more drawn upon, in a lengthy quotation in the end notes of the booklet.

It is no longer possible to think about literacy in isolation from a vast array of social, technological and economic factors. Two distinct yet related factors deserve to be particularly highlighted. These are, on the one hand, the broad move from the now centuries-long dominance of writing to the new *dominance of the image* [emphasis added] and, on the other hand, the move from the dominance of the medium of the book to the *dominance of the medium of the screen* [emphasis added]. These two together are producing a revolution in the uses and effects of literacy and of associated means for representing and communicating. (Kress, 2003, p. 1, quoted in MoE, 2009b, p. 27)

Thinking through a Flusserian (2011b) lens, the shift from written books to screen-based images can be thought of as the move from concrete to abstract. For Flusser, the immaterial technical image abstracts objects, subjects, and experiences into symbolic code. Being able to recognise the occurrence of this process, and the role apparatus play in ordering information, leads to understanding the photograph as an illusion of reality. While

⁵⁷ Gunter Kress is a well-known multimodality theorist.

Flusser cautioned against uncritical acceptance of the photograph, he also proposed the photograph can be used in dialogical and networked ways to create new information. Being multiliterate, that is, critically visually literate, makes this use of photographs possible. Using photographs dialogically is discussed in the following chapter where the pedagogic possibilities of photographs are detailed.

Booklet 6 *Assessment and Learning: Competence* (MoE, 2004f) discussed the notion of “culturally valued literacies” (p. 4). The Booklet also suggested children be provided opportunities to experience learning “within a range of literacies, including reading, writing, mathematics, information technology, and the arts” (p. 4). A more focused discussion of multimodality and multiliteracy, and the practice of photographic data collection, is evident in the last five booklets of KTP (MoE, 2009): specifically, Booklet 16, *An Introduction to Books 17–20: Symbol Systems and Technologies for Meaning Making* (MoE, 2009a), Booklet 17, *Oral, Visual, and Written Literacy* (MoE, 2009b), and Booklet 20, *Information and Communication Technology (ICT)* (MoE, 2009). While *An Introduction to Books 17–20: Symbol Systems and Technologies for Meaning Making* introduces the concept of multiliteracy (MoE, 2009a), Booklet 17 *Oral, Visual, and Written Literacy* (MoE, 2009b) discusses multiliteracy further, and the concept of mode is mentioned but not explored. The booklet entitled *Information and Communication Technology (ICT)* focuses on ICT and provides many exemplars showing use of the photograph in assessment (MoE, 2009e).

While there is substantial use of photographs in the exemplars, and the text is rich with visual language, there is limited explicit critical discussion about how to undertake pedagogic photography in KTP (MoE, 2004–2009). This lack was also identified by Perkins’ (2012) critical discourse analysis of KTP. Perkins’ master’s study revealed limited information on how to use photography and photographs for assessment in KTP. Perkins contended this was due to assumptions around teachers’ skills and knowledge in implementing assessment with photographs. Perkins went on to describe a “lack of discussion about data-gathering methods (other than undefined ‘informal observation’ and ‘photographs’)” (p. 101). It is important to note analysis undertaken by Perkins (2012) was limited to the introductory booklets within the resource (three in total out of 20).

The value of the photograph as a visual aid for learning is noted throughout KTP (MoE, 2004–2009). In the final booklet (MoE, 2009e), several exemplars of children taking photographs were included. The purposeful use of ICT by children in early learning contexts includes “taking photographs to construct a text that the photographer, who cannot read or write in the conventional sense, can read and revisit” (MoE, 2009e, p. 6). As Carr (2001) pointed out, children are one of the audiences assessment is produced for in early childhood education; however, “it is unlikely that written assessment will be accessible to them” (p. 138). In KTP, the capacity of photographs to be read by children is clearly identified⁵⁸ along with the potential that “children learn to ‘read’ photographs at a very young age” (MoE 2009a, p. 6). In the exemplar “Aminiasi Sets Himself a Goal,” the accompanying photographs are described as “tell[ing] a detailed story” (MoE, 2004b, p. 11). The teacher who documented the learning moment noted Aminiasi can “retell his own story to me from reading the pictures” (MoE, 2004b, p. 11).

The last booklet of the resource, *Information and Communication Technology (ICT)* (MoE, 2009e), discussed use of ICT within early childhood contexts, by both children and teachers. This booklet offers the richest information on use of photography and photographs in early education in Aotearoa New Zealand. The beginning paragraph directs readers to consider the assessment examples in this book “in conjunction with the discussion in Book 16” (MoE, 2009e, p. 2). As previously discussed, Booklet 16 introduced readers to the concept of multiliteracy. The opening pages of Booklet 20 defined ICT, made connections to the early childhood curriculum *Te Whāriki* (MoE, 1996), as well as MoE-commissioned research by Bolstad (2004) into the “role and potential of ICT in early childhood education” (MoE, 2009e, p. 2).

Drawing on an article by Lee et al. (2002), entitled *Using ICT to Document Children’s Learning*, it was suggested “ICT assists teachers with the documentation of children’s learning and facilitates the provision of more interesting, authentic, and immediate data for assessments” (MoE, 2009e, p. 3). That statement was supported by the following quotation:

⁵⁸ For example, MoE, bk. 1, 2004a, pp. 6 & 13; bk. 16, 2009a, pp. 2 & 6; bk. 17, 2009b, pp. 3 & 6

An area of great interest . . . to us has been how ICT is assisting teachers with documentation . . . Digital video and still cameras used in conjunction with computers have been pivotal in providing easier access to documentation and the curriculum, especially for children and their families. This applies particularly when a Learning Story contains a series of photos illustrating “work in progress” as opposed to one-off “tourist shot” of the finished product. (Lee et al., 2002, p. 10, quoted by MoE, 2009e, p. 3)

The role of the camera in documentation for assessment was positioned by Lee et al. (2002) as “pivotal” (p. 10). Lee et al. went on to describe the use of multiple photographs as a “photographic narrative” which, when combined with group learning stories, creates “‘living’ documentation” (p. 14). It is important to note this requires teachers to illustrate progress of children’s learning, therefore revisiting, documenting, and assessing in a way which creates continuity over time. The temporal fixity offered by the photograph makes it a valuable artefact for preserving children’s learning. However, as Lee et al. pointed out, this needs to go further than the “one-off ‘tourist shot’” (p. 10). Furthermore, while photographs may allow for ease of access to “documentation and curriculum,” access to archived photographs is also required.

The distinction between living documentation and tourist shot aligns with Flusser’s (2000) remarks on informative and redundant photographs. Flusser argued redundant photographs hold no new information. Redundant photographs, that is “snapshots,” are produced within the limitations of the apparatus program. When a photograph is used as a provocation and stimulus of “work in progress” it can act to generate new information. But, if the photograph is used as evidence of the finished project, i.e., a tourist shot, it is largely redundant. Redundant photographs operate in accordance with the program defining the apparatus. For Flusser, playing against these limitations creates new information. Photographers seeking to create living documentation would be motivated to find ways to document learning to support further learning rather than to prove learning had occurred (i.e., operating within the curriculum-apparatus).

Throughout the 20 booklets of KTP (MoE, 2004–2009), there are 177 learning stories. There are 898⁵⁹ photographs used to provide visual data documenting those learning experiences. The photographs act to capture and tell stories, ostensibly for children to revisit and read meaningful valued learning⁶⁰. An exemplar in Booklet 5 includes a group of teachers’ evaluations of their assessment practice. The teachers articulated their use of photographs in ECEC well, commenting that “documentation, with its strong visual content, is used in many ways—archival record, a medium for reflection and a way to show what happens here” (MoE, 2004e, p. 15).

Te Whāriki.

Te Whāriki (MoE, 1996, 2017b) is an important document for ECEC in Aotearoa New Zealand. As explored earlier, KTP evolved out of needing an assessment method that could work in synergy with the curriculum (Carr, 2001). *Te Whāriki* (1996, 2017b) was read to identify explicit reference to multiliteracy, photography, and the photograph. This was done to establish the professional knowledge provided to teachers on the topic of photography use as pedagogy. Also, in-text photographs in the revised curriculum (MoE, 2017b) were reviewed to establish how photographs were used within the document. The most relevant images to this research in *Te Whāriki* (MoE, 2017b) showed either adults or children reading portfolios. Those photographs contributed to the normalisation of photo-based assessment methods.

While the revised curriculum (MoE, 2017b) explicitly mentioned multiliteracy, it was in reference to children’s oral language literacy (p. 12), physical literacy (pp. 49, 50), and scientific literacy (p. 57). However, the reflective question “What types of literacy and numeracy opportunities are offered to children that will support *knowledge of symbols* [emphasis added] and learning of concepts about print and mathematics?” (p. 45) was

⁵⁹ It is difficult to determine if some images are photographs, particularly images of art works which mostly appear to be photographs of children’s artwork.

⁶⁰ It is important to note that children’s ability to independently access their learning stories is integral to successful implementation of socio-cultural assessment. The following chapter raises some issues around accessibility of archived learning stories.

posed. Not surprisingly, the Communication strand offered the most connections to multiliteracy.

The fourth learning goal in the Communication strand expects children will “experience the stories and symbols of their own and other cultures” (MoE, 2017b, p. 42)⁶¹ within the early learning setting. Evidence of this learning will be seen in children “understanding symbols can be ‘read’ by others and that thoughts, experiences and ideas can be represented as words, pictures, numbers, sound, shapes, models, and photographs in print and digital format” (p. 42). This is very similar to the first edition of the curriculum, other than the shift from being the learning outcome (MoE, 1996, p. 78) to becoming evidence of learning (MoE, 2017b, p. 42). There is a slight difference in the wording, with the revised curriculum understandably adding “in print and digital format” (MoE, 2017b, p. 42) in reference to photographs.

In *Te Whāriki* (MoE, 1996), there are two references to the photographic image. The first is seen in the second strand of the curriculum, Belonging, under the heading Adults’ Responsibilities in Management, Organisation, and Practice, where it is stated that children in the setting “should have some space for belongings and be able to identify with the environment and change things. Personal photographs, family names, artwork, celebrations, and so on are significant in establishing a sense of belonging” (p. 55). The second mention is found in the Communication strand in Goal 3, noted above, where it is suggested that “thoughts, experiences, and ideas can be represented through . . . photographs” (p. 78). These mentions of the photograph, in particular the second one, show a conception of the multiliterate child, a visually literate child who is able to read photographic images.

In the revised curriculum (MoE, 2017b), there are six mentions of photographs.⁶² The first is very similar to the first noted above, under the Belonging strand; however, the subheading has changed to Considerations for Leadership, Organisation and Practice. Additionally, the text has minor changes: “Children have some space for their belongings

⁶¹ This was Goal 3 in the earlier edition of *Te Whāriki* (MoE, 1996).

⁶² In the draft curriculum, released for public review, there were three mentions of the photograph. The first two similar to those in the 1996 document—in the Belonging and Communication strands—the third included in the Assessment, Planning and Evaluation section suggested teachers’ planned assessment would include taking photographs of children.

and are able to identify with the environment. Personal photographs, family names, artwork, celebrations and the like can be important for establishing a sense of belonging” (MoE, 2017b, p. 35). Of note is the omission of the words “and change things” (MoE, 1996, p. 55). This suggests a loss of children’s agency and ownership in relationship to the early childhood space. The second mention of photographs in the curriculum document is once again very similar to the initial document (MoE, 1996) and is found under the Communication strand, as quoted in the above identification of multiliteracies in the documents.

The four other references to photography and photograph use are new additions. The revisions in *Te Whāriki* (MoE, 2017b) changed how assessment was written about, through the presentation and ordering of written text. In the earlier document, assessment was included under the heading of Planning, Evaluation, and Assessment, which separated the discussion into two sections: one on planning, and the other on evaluation and assessment (MoE, 1996, pp. 28–29). The revised curriculum leads with assessment. The new heading reads Assessment, Planning and Evaluation (MoE, 2017b, p. 63) and the section now covers three rather than two pages. Three of the four mentions of the photograph are contained within this section. They relate to teachers taking photographs to record children’s learning for analysis, photographs included in children’s portfolios, and that “older children will often take their own photographs and dictate the story of their work” (MoE, 2017b, p. 63). The section ends by noting “assessment frameworks consistent with *Te Whāriki* include *Kei Tua o te Pae* (books 1–20) and *Te Whatu Pōkeka*” (MoE, 2017b, p. 64).⁶³

The sixth reference to photographs is found in the inside cover of the document which “gratefully acknowledges and thanks the children, their parents and whānau, and the kaiako, teachers and educators whose photos are used in this publication with permission” (MoE, 2017b, front matter).⁶⁴ The document’s use of photographs of children is markedly different to the original curriculum (MoE, 1996) which used no photographs. Additionally, no

⁶³ *Te Whatu Pōkeka* (MoE, 2009) is a resource providing early childhood teachers insight into the values, philosophies, and practices related to assessment based in kaupapa Māori.

⁶⁴ A similar acknowledgement is found in all booklets of KTP. This shows the complicated nature of photographic documentation.

mention of the ethical use of photography and the photograph is found in either document (MoE, 1996, 2017b). This lack of information for teachers means further support is needed for teachers' pedagogic use of photography and photographs within a critical and ethical framework. Those teachers registered or involved in work-based mentor programmes will be engaged in ongoing learning. However, it is possible the normality of taking photographs will overshadow deeper critical engagement with the ethics of photographing and using photographs of children.

Tensions in photographing children for assessment.

This section examines how children are positioned in KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 2017b) in relation to participation and privacy. For Flusser (2000, 2011b), the ability to play against the program of apparatus is an aspect of freedom. Through a Flusserian lens, actions of assessment undertaken when enacting the curriculum are considered as existing within the state-apparatus. Participation is theorised here in tension with state-apparatus and privacy is considered through the Flusserian conception of freedom. For Flusser (2011b), freedom is the right of refusal.

Lindgren (2012) found pedagogic documentation was an activity of early childhood teachers. Using examples from KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 2017b), this section queries how active children are in taking photographs. Are children participants in a manner which empowers them and validates their contribution? (MoE, 2017b), or, are children participants in the sense that they are subjects of photography? (Lindgren, 2012). An aspect of privacy is the ability to be agentive, to have autonomy in our relationships with others through defining the boundaries of our interactions (Dowty, 2008). For Flusser (2011b), a facet of freedom is having the “right to say no” (p. 122).

Theorising the use of photography and the photograph in connection to freedom and privacy means thinking about how information is collected and used as evidence. What aspects of children's experiences are made visible, and how? Are children awarded the right to say no to being photographed for assessment? Do children experience agency in the selection of learning photographed? Flusser (2011b) proposed evaluating information

through criteria is a result of using apparatus such as the camera to produce information. When an apparatus is used to capture information in photographs, the photographer focuses on deciding what images to select. Therefore, criteria are required to filter information. Flusser (2000, 2011b) theorised apparatus through a multifaceted model. Apparatus are non-human entities that manage, organise, and enable functionality (Flusser, 2000)—therefore the camera is an apparatus, as are the curriculum (MoE, 1996, 2017b) and guidelines on assessment practice (MoE, 2004–2009). Those documents provide insights into the state-apparatus of governance of early learning spaces in Aotearoa.

Participation.

Overall, the examples in KTP (MoE, 2004–2009) present photographs of children taken by teachers. There are a small number of exemplars documenting experiences selected by children as a moment their teachers should photograph. However, of the 177 exemplars, only four stories were identified by children as learning, to be documented. In “Write About My Moves” (MoE, 2004b, p. 14), Lachlan asked his teacher to write about his ability to do the hula hoop. The teacher also photographed the moment to include in the learning story. In the story “Brittany and Hayley Compare Records” (MoE, 2004b, pp. 12–13), Brittany asked her teacher to take a photograph of her so she could have it in her folder. In both “Harriet’s Mermaid” (MoE, 2007b, pp. 28–29) and “From Costume Designer to Movie Director” (MoE, 2009d, pp. 24–25),⁶⁵ the children are involved in making costumes; upon completion of their costumes, both children suggest that they could now make a movie.⁶⁶

There are six exemplars which contain photographs taken by children. Aside from one example in Booklet 14, where a child takes a photograph of a puzzle she had completed (MoE, 2007b), these exemplars are all found in the last booklet of the series, *Information and Communication Technology (ICT): Te Hangarau Pārongo me te Whakawhitiwhiti* (MoE, 2009e). In total, there are five exemplars in Booklet 20 which use photographs taken by

⁶⁵ While published 2 years apart, these two stories seem to have occurred at the same time in the same centre.

⁶⁶ Although not examples of still photography, they are included as both still and film photography use a camera.

children. Of these exemplars, three stories use photographs created through child-initiated photography, while the other two were teacher initiated.

“Exploring with iSight®” (MoE, 2009e, p. 7) documents a child asking if he can put the iSight camera into the mouse house. In the exemplar “Jason, the Boy with the Camera” (MoE, 2009e, pp. 10–11), the teacher gave the camera to Jason in response to his curiosity about the “process of taking photos” (MoE, 2009e, p. 10). “The Photographer at Work” (MoE, 2009e, pp. 18–19) shows Nissa documenting an activity at Kindergarten through taking photographs. The story is written about her independently taking on the role of photographer and uses photographs taken by her and photographs taken of her taking photographs. The teacher who authored the story “I Wonder What This Is?” (MoE, 2009e, pp. 20–21) suggested Leo took a photograph of the skeleton he had brought into the centre. So, Leo took a photo and it was included in this story about his learning. The story “Vinny Learns to Email” (MoE, 2009e, pp. 24–26) starts by describing how Vinny wanted to take a photograph. The exemplar includes several photos taken by Vinny as well as some taken of him. Also included is a photograph of Vinny’s friend Tilly to whom Vinny had sent an email with several of his photographs attached.

Overall, the exemplars are not of children telling their own stories. Most often the child is photographed, and a story is written about an experience or activity a teacher identified as valuable learning. The children, and their families, are then presented with these stories compiled within portfolios. Shaw (2014) found that while learning stories are used by teachers to communicate and share information with children, their main audience is parents, not children. This finding is supported by Mitchell’s (2008a) discovery that 91% of teachers identified that they provided feedback to parents in the form of assessment data, while only 71% used that data to provide feedback to children.

Booklet 14 of KTP (MoE, 2007b) explored assessment through the lens of the strand of Communication. It is stated there that “documentation avoids speaking for the child” (p. 2). The child’s voice is a core consideration in sociocultural assessment practices such as learning stories, which should “include the children’s viewpoint where possible” (MoE, 2004b, p. 2). When looking for assessment which embodies the principle of empowerment,

teachers should “look for . . . children being consulted about what will be recorded or collected” (MoE, 2004b, p. 6). The MoE (2017b) stated making learning visible should be through practices which allow children’s agency and mana to be expressed and enhanced. In *Te Whāriki*, the principle of empowerment/whakamana expresses how “curriculum and pedagogy [can] empower the child to learn and grow by giving them agency, enhancing their mana and supporting them to enhance the mana of others” (p. 60).

If children are photographers of their own stories, rather than the subject of photographs and stories given to them by others, they are more likely to be able to embody and enhance their agency and mana. Dahlberg et al. (2013) cautioned that pedagogic documentation is an ethical enterprise, and as such we must take responsibility for “every act of observing, and for our choices” (p. 165). Each choice made to document needs to be recognised as a productive force upon children. To be the documentary photographer is to take a position of power. The learning story “Exploring with iSight®” (MoE, 2009e, p. 7) documents a child asking if he can put the iSight camera into the mouse house. The narrative recording the learning moment is provided below.

Today Tuveina asked me if he could put the iSight® camera into the mouse house. I got it out of the bag and helped him plug it into the computer. Keanu was at the other computer with the other iSight® camera ready to see into the mouse house. Tuveina put the iSight® camera into the house to see what the mice were doing. He said, “Keanu, can you see what the mice are doing? They are sleeping.”

Keanu asked over the iSight® camera if Tuveina could wake the mouse up and see if it wanted to go on the wheel. Tuveina laid the iSight® camera down and gently picked up a mouse and put it onto the wheel. Keanu was laughing from the other computer watching via the iSight® cameras. The mouse was non-compliant and refused to do any exercise, but Tuveina persevered and kept putting it back on the wheel until it did run around. Tuveina quickly moved the iSight® camera in for a better shot, watching on his screen to see what it looked like. They talked about the sizes of the mice’s feet and how they run around the wheel so fast. (MoE, 2009e, p. 7)

Imagine for a moment the child photographer as the photographer-teacher and the mouse as the learning-child. The mouse's house becomes the early childhood learning environment and the exercise wheel represents the learning outcomes provided by the curriculum-apparatus. The teacher documenting the mouse-child is unhappy the child is asleep; the teacher would prefer the child to be a confident and competent learner. Waking the child up, the teacher gently encourages the child to begin running on the wheel, thus getting the required exercise and meeting learning outcomes. The mouse-child does not particularly wish to run on the wheel, but the teachers persist until the mouse-child runs on the wheel. They then use the camera-apparatus to show others how the mouse-child can run.

Thinking through this fanciful analogy expresses how the powerful photographer holds the power to create and select moments or actions to photograph. The photographer-teacher's right to photograph, to make learning visible, is in direct conflict with the mouse-child's right to privacy and refusal to participate in running on the wheel. Also, notice how the interaction is with the technical image on screen rather than with the mouse-child. Engagement with mediated experience, i.e., the image, moves us further into the universe of technical images and away from human relationships. It also points to the productive power of curriculum-apparatus in ECEC.

Lindgren (2012) called for attention to ethical engagement by teachers when practising visual documentation with young children. She analysed blogs of Swedish preschool teachers attending a university course on pedagogical documentation. The study chronicled the changing views of the teachers on the topic. Lindgren found teachers considered themselves as "active participants, but not necessarily the children" (p. 333). Significantly, Lindgren suggested that while it was likely teachers would increase their use of visual documentation, there was "little evidence that this meant that the children would participate in ways other than as subjects to be seen" (p. 333).

This is reflected in the type of stories selected as exemplars of learning stories in KTP (MoE, 2004–2009). While most exemplars show photographs of children as actively learning subjects, children remain the subject of photographs and the teacher's assessing

gaze. Shaw (2014) placed learning stories within the dichotomy of “accountability and meaningfulness” (p. 15, citing Cowie & Carr, 2009; Stephenson, 2009). The competing discourses inherent in visual documentation practices (Lindgren, 2012) mean children are not necessarily given a voice nor enabled in their participation (Elfström Pettersson, 2015).

Stephenson’s (2009) doctoral research studied the role of children in participation in, negotiation of, and resistance to, the curriculum of an early childhood setting in Aotearoa. Stephenson discovered teachers maintained a clear division between what were considered teacher’s resources and those seen as children’s resources. The camera, computer, and photocopier were all objects children were not allowed to access. Initially, children’s portfolios had been “stored out of reach . . . but they could ask to look at them” (p. 137)⁶⁷ before they were moved to within children’s reach (perhaps as a result of reflection generated by the research project—but this is not specified by Stephenson). Stephenson provided cameras as one way to generate data in the research. The cameras were given to children to take photographs of special places within the early childhood setting. Stephenson suggested this “breached the demarcation” (p. 138) between teacher/child objects.

Privacy.

This research has found limited discussion of children’s privacy in policies regulating early childhood spaces. The Office of the Privacy Commissioner published the resource *Privacy in Schools: A Guide to the Privacy Act for Principals, Teachers and Boards of Trustees* (Dalziel, 2009) for the school sector. The guide discussed management of the privacy of information and students’ bodies. The Education Act 1989 references the Privacy Act 1993, focusing again mainly on privacy of information and of students’ bodies.

There is no mention of children’s privacy in the Education (Early Childhood Services) Regulations 2008. The older document, Education (Early Childhood Centres) Regulations 1998, similarly makes no mention of providing spaces where young children can experience privacy. However, it did mandate the requirement for early childhood centres to have

⁶⁷ I have observed this also in the field. In my experience, portfolios were stored in the staff room, an area children were not allowed in. When queried, the practice was also reviewed and portfolios moved to an accessible area for children. This practice of “protecting” portfolios is indicative of the issues of access. This is explored further in the following chapter.

premises which provided “adequate space for different types of indoor and outdoor play, including . . . quiet space” (p. 13). In the revised Education (Early Childhood Services) Regulations 2008, only noise control is mentioned, rather than the provision of a space for quiet play by either individuals or groups. What little discussion there is of privacy in the licensing criteria for ECEC services focused on provision for toileting and washing facilities to protect the privacy of the child’s body.

The curriculum document *Te Whāriki* (MoE, 2017b), in the strand of Contribution and under the heading Considerations for Leadership, Organisation and Practice, suggested teachers provide settings within which “balance between communal, small-group and individual experiences allows opportunities for interaction, cooperation and privacy” (p. 40). This suggestion is reflective of the Education (Early Childhood Centres) Regulations 1998 requirement for the provision of space for children’s quiet play, either as individuals or in groups.

Ghafouri and Wien (2005) encouraged teachers to support children’s need for privacy by creating small intimate areas. Ghafouri and Wien’s research into children’s strategies for sustaining and containing their play within small social groupings of “we” showed that children valued close relationships. These relationships were often private in nature and drew on strategies of secrecy and deflection to keep others outside of the boundaries defined by participating children. In concluding their report, the researchers suggested “children require expansive time and space, emotionally safe and private space, and sensitive adult support” (p. 290). Similarly, Einarsdóttir’s (2005) study showed young children can greatly enjoy being in private spaces afforded to them within their early childhood space.

Looking to the exemplars presented in KTP (MoE, 2004–2009), only one story documenting a child’s exploration of privacy is found. The story is one of several stories from over the course of the year. The stories detail a child, Jack, exploring space (“Jack Explores Space,” 2009c, pp. 19–21) through the manipulation of objects and his body in the physical world. Several photographs are provided, two of which show Jack returning the gaze of the

camera-teacher. In the concluding comment, the teacher's voice noted Jack is observed each day spending time in a private space.

However, the official voice provided in the coloured bubble identified this exemplar as being about mathematics, making links to both the early childhood curriculum *Te Whāriki* (MoE, 1996) and *The New Zealand Curriculum* (MoE, 2007a). When analysing this statement, it is notable firstly that the child's exploration of privacy has been made public, and secondly that his right to experience privacy is neither recognised nor articulated by the official discourse governing early childhood spaces of learning and care. The focus is on the mathematical learning Jack was seen to have been undertaking.⁶⁸

The exemplar is used here to support discussion of the conflict between the responsibility of early childhood teachers to visually document children's learning, and children's right to privacy. Jack is exploring spaces which give him a sense of privacy; he is "hiding." Does calling attention to him and his expression of being private not violate his right to experience this without intrusion? The arbitrary nature of the power brought to bear upon him through documentation of his practice of finding a private space each day makes not only his learning visible but also himself. To show restraint in this moment, and not document his need for privacy, would have honoured his quest and realised his right to privacy without interference (UN, 1989). However, is this in Jack's best interest? If Jack's teachers and family are all made aware of his need to experience private moments, then they would be more able to facilitate this for him. This could also realise Jack's right to privacy through provision, in the future, of the freedom to take private time.

The ethics of children's privacy in semi-public spaces such as early childhood centres is of course multidirectional and complex. The second point made above, that Jack's right to experience privacy is not recognised or articulated by the official discourse, is more definite. Of the 177 exemplars presented in the KTP (MoE, 2004–2009) booklets, only two

⁶⁸ I am aware this discussion of Jack and his quest for privacy engages in another variation of making Jack and his experience public. As I do so, I question if there is congruence between my argument and my actions. Chapter 2 outlined several difficulties in selecting and working with data. I questioned how to enact an ethical study of photographs of children in the public domain. I decided not to include any photographs of children from the exemplars. I also determined to use children's names and write about them as people I could meet one day, rather than as pieces of interesting data for analysis. I hope I have achieved this.

mentioned privacy: the story discussed here about Jack's ritual of finding a private spot each day, and another exemplar which referred to a child's private language in the past⁶⁹ (MoE, 2004c). While some relevant and provocative questions were provided to support teachers, none of the booklets critically discussed or identified an ethics of taking or using photographs as evidence. What the booklets did do was recommend the use of photography and photographs and position them as valuable pedagogical tools.

Concluding Comments

Photography has come to be practised as a "principal component" (Foucault, 2000b, p. 225) of documenting assessment in Aotearoa New Zealand. This thesis argues the practice of pedagogic photography is normalised and undertheorised. To photograph is to make visible. There is a risk the child is made an object in this activity (Tarr & Kind, 2016). This chapter has theorised participation as being in tension with state-apparatus requirements of teachers to make learning visible, and considered privacy through the Flusserian conception of freedom. For Flusser (2011b), the right of refusal is an aspect of freedom. The next chapter extends the discussion of the tensions evident between teachers' professional obligation to document (MoE, 2017b), children's potentially unarticulated right to refuse, and being made visible, or remaining private.

⁶⁹ The term *private language* was used to refer to the child's prior vocalisations when learning to speak.

Chapter 10.

Ethical pedagogical documentation

In this chapter, teachers' visual documentation of children's learning is explored in terms of a conflict with children's rights to privacy. In Aotearoa, teachers photograph children for assessment purposes. The MoE (2017b) makes it teachers' professional responsibility to make learning "visible through assessment" (p. 59). Taking photographs is indicated as one method teachers can use to accomplish this. The MoE stated making learning visible should be through "practices that give children agency and enhance their mana" (p. 59). Yet, as shown in previous chapters, the power relations between photographer and photographed are often unequal and fraught with tensions. This chapter explores the ethical commitment to children's privacy and participation in connection to state-apparatus expectations of visibility and accountability.

The ongoing project of this research is to develop a critical philosophy of photography to develop and support ethical pedagogic photography. Drawing on previous chapters, the potential for a pedagogy of photography is examined as ethical and political. The chapter concludes by foregrounding several tensions in current practice: a lack of professional development, the power of the photographer, children's participation in assessment, the accessing of archived assessments, and the visibility of the young child.

Developing an Ethics of Photography

Guiding this chapter are two articles from UNCRoC (UN, 1989).⁷⁰ A fundamental principle of UNCRoC requires adults to consider what is best for the child. This is expressed in Article 3 which states that: "In all actions concerning children, whether undertaken by public private social welfare institutions, courts of law, administrative authorities or legislative bodies, the best interests of the child shall be a primary consideration" (UN, 1989, p. 2). Article 16, which protects the child's right to privacy, also guides the chapter's

⁷⁰ New Zealand ratified the Convention in 1993 (UN, n.d.).

problematization of routine photographing of children for the purpose of gathering evidence.

Article 16 states:

1. No child shall be subjected to arbitrary or unlawful interference with his or her privacy, family, home or correspondence, nor to unlawful attacks on his or her honour and reputation. 2. The child has the right to the protection of the law against such interference or attacks. (UN, 1989, p. 5)

In this chapter, I argue routine photographing of children can be an arbitrary application of administrative power upon the child subject. Regular photographing of the child to gather evidence of learning is not necessarily in children's best interests. Additionally, as discussed in Chapter 8, redundant photographs do not hold much pedagogical value. Juxtaposing visual documentation with the child's right to privacy generates questions about children's ability to be agentic in early childhood spaces. Dowty (2008) suggested privacy is "about our autonomy, the control we have over our own personal boundaries and the means by which we define who we are in relation to other people" (p. 397).

How can young children, in spaces designed to maintain their visibility at all times, who are also subjected to being routinely photographed, maintain a private self and enact their agency? How do they say no, do they have the right of refusal? (Flusser, 2011b). Or, as Tarr and Kind (2016) asked, have we explained to children they have the right to refuse? The above questions inform the following discussion about power, participation, and privacy in early childhood spaces. This line of theorising is concerned with how young children can be powerful and participate within early childhood spaces in ways which honour and realise their right to privacy.

Professional teachers acknowledge the nature of their position in the teacher–learner relationship means they inherently hold an unequal balance of power (Education Council, 2017). When the camera is included in the multiplex of power relationships between teacher and learner, many other sites of power are added (Flannery Quinn & Manning, 2013). Photographic images, and the practice of photography, are themselves complex, imbued with power, and traversed by power relations. When photographs are collated into archives,

further dimensions of power become manifest (Flusser, 2011b; Sekula, 2003; Tagg, 2009). What stories are told about children, what learning is made visible through photographic evidence, and how these are read, are also sites of power (Dahlberg et al., 2013; Daniels, 2013). Flusser (2015) suggested power has become enmeshed and entangled through apparatus and human connections *in* information.

Photography theory suggests the photographer holds more power than the subject photographed. Historically, the photograph was considered to hold a “power of truth” through its ability to provide substantiation of what was objectively real (Daston & Galison, 2007). While the photograph has been discredited as subjective, and also as potentially manipulative (Daston & Galison, 2007; Fairclough, 1989; Goldstein, 2007; Schwartz, 2006; Sturken & Cartwright, 2018), the truth power of the photograph is still at play when it is used as evidence. Nevertheless, evidence formed by apparatus, such as camera-apparatus or curriculum-apparatus, is often redundant. Apparatus produce information that lacks originality (Flusser, 2000). For Flusser, the camera-apparatus holds more power than the functionary photographer. It is only when the photographer pushes further than possibilities offered by the program of the camera-apparatus that she becomes agentive, and the photograph becomes informative.

Chapter 8 explored two discrete ways the photograph is commonly used: to provide evidence and to aid inquiry. While its use as evidence many provide redundant information (information that confirms what teachers know already), use of the photograph to aid inquiry makes it possible to create informative photographs. This thesis argues the photograph has the potential to stimulate thought, create conceptual space for new ways of thinking, and provoke questions. The photograph is used to create information when new, unpredicted, and nonprogrammatic possibilities are realised. This occurs when the program of the apparatus, be that camera-apparatus or state-apparatus, is transgressed. Magnusson (2018) found children created photographs holding information otherwise inaccessible to teachers. Photographs produced by one of the children “changed patterns” (p. 39) of the world as it was known by adults. The photographs thus created “new photographic trails to

follow” (p. 39). This shows the great potential for photographs in ECEC to be truly informative, creative, and ethical.

Flannery Quinn and Manning (2013) highlighted how photographs are made and consumed in line with the “systems of knowledge” (p. 273) governing early childhood spaces. In Aotearoa New Zealand, the systems of knowledge governing teachers’ photograph production and consumption are regulated by the early childhood curriculum *Te Whāriki* (MoE, 2017) and the teaching resource KTP (MoE, 2004–2009). ECEC providers in Aotearoa New Zealand are also regulated by the Education Act 1989, the Education (Early Childhood Services) Regulations 2008, and the licensing criteria for ECEC services (MoE, 2018). Taking a Flusserian (2000) perspective, these regulatory documents are non-human apparatus that function through teachers.

The Code of Professional Responsibility and Standards for the Teaching Profession (Education Council, 2017) and UNCoRC (UN, 1989) are systems of knowledge for early childhood education which make available ethical frameworks for thinking about children being “made visible.” From a Flusserian perspective, they are also examples of state-apparatus. As Boyden (1997) pointed out, UNCoRC is historically and culturally bound. Therefore, so is the notion of childhood promulgated by it. Both are involved in the regulation of childhood and adults’ interactions with children. It is important to strive to remain critical and curious when working with any framework or model (Flusser, 2000, 2015).

Article 3 of UNCoRC proposed “the best interests of the child shall be a primary consideration” (UN, 1989, p. 2) when taking all actions involving children into account, while Article 16 advised that “no child shall be subjected to arbitrary . . . interference with his or her privacy” (UN, 1989, p. 5). Early childhood spaces inherently have little privacy: they are designed to allow for constant surveillance of children by teachers. Children’s visibility is an accepted, and expected, element of ECEC. Policy requires child visibility for health and safety reasons (MoE, 2016) and to prove learning and teaching is occurring (MoE, 2017b), thus situating risk management and surveillance strategies as pedagogical outcomes. This can result in photography becoming a tool for surveillance and photographs being used to provide evidence for particular learning outcomes.

While Dahlberg et al. (2013) are proponents of pedagogic documentation they noted its processes “can never be neutral and innocent—they have always got social and political *implications and consequences*” (p. 164). Chapter 1 proposed the value of the photograph lies not in its ability to provide visual evidence of reality but, on the contrary, in its failure to do so. This allows for photographs to be critically examined as sites of historical knowledge and as productions of the programs governing the camera-apparatus and teacher-photographer. Consequentially, it is possible to see that arbitrary photographing of children may not be in their best interests. Ethical engagement with the power inherent in both the act of photographing and the use of photographs is called for. This critical act brings with it openings to reconsider photography and the photograph.

Pedagogic documentation is celebrated for the multiple perspectives it can provide, for its ability to give a voice to children, and as a reflective tool for children and teachers. Importantly, Dahlberg et al. (2013) suggested it is only when other perspectives are included that pedagogic documentation helps “to reveal the embodied character of knowledge construction, and as such functions as an emancipatory practice” (p. 164). In Aotearoa, it is common for teachers to write learning stories when on “non-contact time.” This practice sees teachers leave the shared learning space of the early childhood setting for the sanctum of the staff room. Here planning is undertaken, assessments made, and learning stories written about children. However, by leaving the shared learning space, opportunities to share the documentation and planning of learning are also left unrealised, as is the potential to develop or deepen ethical documentation through exposing the power of the photograph.

Of course, there are centres which do practise planning and assessment in a way which does seek the voices of children, parents, whānau, and other teachers. However, they are the minority (ERO, 2008). The rhetoric of making learning visible positions teachers as taking photographs of children. The use of photography and photographs in KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 2017b) presents photographs of children as the subject matter. Children are represented in photographs showing them engaged in activities, with people, places, and things. But, ultimately, overwhelmingly children are portrayed as photographed, not photographers.

A Politic of Photography: Production, Consumption, and Control

The examination of atlases and archives in Chapter 6 focused on the productive power of information organisation. Atlases were historically used to provide a visual reference of phenomena, while archives have been used as repositories of information and agents of control. Postmodern archives often exist in virtual spaces such as the cloud and “hold” abstract information. As was shown in Chapter 6, issues of power, authorship, and access are similar to both earlier physically bound archives and virtual-digital archives. An important aspect of both atlases and archives is the program which governs the information. Equally important is the historical heritage of photography, atlases, and archives. As pointed out, the photograph is not historically neutral (Kind, 2013; Sturken & Cartwright, 2018).

Flannery Quinn and Manning (2013) pinpointed the growing need for teachers to visually evidence children reaching learning objectives mandated in education policy. While New Zealand is not mentioned,⁷¹ similarities can be seen in the use of photography within our early learning settings. In Aotearoa New Zealand, photographs are used to provide visual evidence of learning in learning stories (MoE, 2017b). As discussed in Chapter 9, learning stories are linked to strands of the national curriculum document *Te Whāriki* (MoE, 1996, 2017b) via learning dispositions (MacArthur et al., 2003).

The stories and their accompanying photographs are collated into archives commonly called portfolios (MoE, 2017b), although recently there has been a move within the sector towards digital ePortfolios (Fraser & McLaughlin, 2016) such as Storypark⁷² and Educa.⁷³ In the second book of the KTP series (MoE, 2004b), exemplars demonstrated alignment to the four principles of *Te Whāriki*. For each principle of the curriculum, criteria of “what to look for” were outlined. The list is suggested to be “illustrative, but not comprehensive” (p. 6) and there is also the expectation each early childhood context will “develop its own criteria that reflects its unique context and community” (p. 6).

⁷¹ The article focuses on the United Kingdom and the United States of America.

⁷² See <https://www.storypark.com/nz/>

⁷³ See <https://www.geteduca.com/>

Looking at the practice of photographing for assessment purposes in Aotearoa New Zealand, Cederman (2008) raised concerns with the “preoccupation with images of the child, or with the child making images . . . [and asked] ‘What happens to the child when the camera . . . is always the focal point for the interaction?’” (p. 129). This is a pertinent question. Answering it in connection to this philosophical inquiry into use of the photographic image in ECEC, one answer may be that the child is seen most vividly within the viewfinder of the camera and the images captured to evidence the child’s learning. Making children’s learning visible requires the child to become the “subject matter of such documentation” (Flannery Quinn & Manning, 2013, p. 270). Yet, the seemingly vivid image of the child seen through the camera lens and in photographic images is only an image of the child, in Flusserian terms: *a codified abstraction*—this is a poor rendering of the human complexity of the embodied child.

Kind (2013) proposed that, given photography’s “history of voyeurism, othering, and violence,” taking photographs means we are “engaging with an already troubled material” (p. 427). Likewise, Sturken and Cartwright (2009) stated use of photography “in systems set up to classify people is an important aspect of the history of photography” (p. 357). As noted previously, historic use of photographs to provide scientific proof catalogued the human subject through a survey of human normalcy and deviation (Sturken & Cartwright, 2009). Concurrently, it is important to recognise that young children are habitually “constructed as those without rights to privacy” (Cannella, 1999, p. 42) from the educational gaze. This is alarming considering the current “preoccupation” (Cederman, 2008, p. 129) with photographing the young child, and the heightened but uncritical use of the photograph within current society (Flusser, 2011b; Sparrman & Lindgren, 2010).

As shown in Chapter 7, when you know you are being photographed, or even know there is that possibility, you change your behaviour (Sturken & Cartwright, 2009). You change the self you present for the camera (Barthes, 1980/2000; Rose, 2000; Sturken & Cartwright, 2009). Barthes (1980/2000) expressed this as: when photographed “I constitute myself in the process of ‘posing,’ I instantaneously make another body for myself, I transform myself in advance into an image” (p. 10). Sturken and Cartwright (2001) argued the camera

doesn't even need to be turned on, or visible, for the subject to modify their behaviour. In connection to Foucault's theory of the panopticon, they suggested the photographed subject only needs an awareness of the possibility of the surveillance camera to self-regulate—its gaze is felt regardless of the camera's visibility or operability.

Frosh (2001) defined the photograph as a “manifest performance of power” best “understood not merely as a technology of visual representation, but as a constitutive type of (visible) action within the social world” (p. 43). The power emanates from the photograph's ability to make visible. Frosh presented a similar discussion as Sturken and Cartwright (2009) on the historic use of the photograph. Frosh (2001) highlighted the comparability between different institutions' use of photography in that “certain people are made visible to others through the agency of a third party: photographers” (p. 46). When teachers take photographs of children's learning they also make the young child visible. This is positioned as a positive pedagogy; however, there are tensions entwined in this practice. Uncritical use of photography in ECEC may be detrimental as it can impede authentic engagement in learning and teaching (Daniels, 2013; Flannery Quinn & Manning, 2013). Furthermore, uncritical use of photographs to provide evidence of learning outcomes makes a certain type of learning child visible.

Use of the photograph to document children's learning is approached differently within the field. The examples shared here were selected to demonstrate two different perspectives on photograph use. Daniels (2013) cautioned against the “temptation” (p. 312) to use photographs to provide “evidence” (p. 312) for regulated learning criteria.⁷⁴ Daniels suggested gathering photographic evidence tied to learning criteria creates the risk teachers will “not be recognising the child's unique approach to learning and could possibly limit the observer's interpretations of the learning” (p. 312). Conversely, Good (2005/06) suggested using photographs to “document physical, social, and cognitive growth [and] . . . illustrate how children behave” (p. 81). These two examples, from quite dissimilar positions, indicate a range of ethical engagement with photography use in early childhood education.

⁷⁴ In Daniels' case, the British Foundation Stage Profile.

Flannery Quinn and Manning (2013) positioned photography “as a source of knowledge and power” (p. 271). One of the key issues they discussed in relation to the photograph’s inherent power, and its consequent role in knowledge generation, was the “message that ‘this is reality—this is true’” (p. 272). Their concerns resonate with those voiced by Daniels (2013) who identified the risk to the child through purposefully photographing to obtain evidence. White (2015) also pointed to the way photographers can form a photograph’s meaning from their own understandings. Looking from certain viewpoints affords a certain view. Furthermore, Flannery Quinn and Manning (2013) argued that if

certain “outcomes” be documented and serve as a basis for interpretation, then those outcomes also have more power than the teachers or the children, because the pursuit of these outcomes begin to take precedence in the educational endeavour.
(p. 273)

This is a crucial point to be recognised by the ECEC community. This concern was addressed within Chapter 6, which discussed the power of the archival apparatus. The power of the archive is productive. It is also normalising in that it creates the parameters of what can be known, and how it is known. The atlas operates in a similar way. *An Atlas of Infant Behavior* (Gesell, 1934) set the norms of child development. Greatly influential, the atlas depicted, in exacting images, the normal stages of infants’ and young children’s development. The outcomes for discrete stages of human development, consequently, had more power than the children whose bodies and minds were growing and changing.

Flannery Quinn and Manning (2013) proposed if mandated outcomes for learning became the source of interpretation for photographs of children’s learning then the learning outcomes would be more powerful than the children and teachers. The power of the archival apparatus is clear in this proposition. This is a key point to be not only recognised by the early education community but also critically reflected on and engaged with. Flannery Quinn and Manning were unequivocal about the inherent power the photograph holds in knowledge production, as was Daniels (2013), who cautioned teachers against purposefully photographing children to obtain evidence. Flannery Quinn and Manning (2013) underlined

how the photograph's power in knowledge generation is expressed in the belief that the photograph depicted reality and thus the truth. The power of the photograph and the photographer must be explicitly identified before ethical use of pedagogic photography can develop.

Flannery Quinn and Manning (2013) called on all parties involved in early childhood education to engage in more depth with the "ethical dilemmas and implications" (p. 270) of taking photographs of children for documentation and assessment purposes. This thesis argues to do so requires a fuller understanding of the history of photography, combined with critical reflection on the numerous systems of organisation involved in producing and consuming photographs. An ethics of photographing children for assessment must go beyond concerns of privacy, surveillance, and consent, to also consider the power of apparatus in creating and forming information (knowledge). Questions must be asked about the processes of creation, categorisation, collation, display, accessibility, and abstraction in connection to photograph use.

Ethical and Critical Tensions in Current Practice

The following sections identify five points of tension in photographing young children for assessment purposes and use of the photograph to visually document assessment. The first section outlines the tension created between teachers' need for professional development and a lack of provision at a ministerial level. Next a critical consideration of photography in early childhood education focuses on the power of the photographer. Thirdly, an outline of the tension between teachers' practices of assessment and the ideal of child participation in the process is provided. Following this, issues of accessibility of assessment for children are explored. Lastly, visibility of the child subject is problematised.

It is suggested that while "seeing comes before words . . . the relation between what we see and what we know is never settled" (Berger, 1972, p. 7). The relationship between looking, seeing, and knowing is therefore complex. Use of the photograph to document what is seen, so as to develop understanding and knowledge, or provide evidence, occurs within this complexity. It is true the photograph provides early childhood education with a useful

pedagogic tool (Carr & Lee, 2012; Dahlberg et al., 2013; Flannery Quinn & Manning, 2013; Flannery Quinn & Parker, 2016; Kind, 2013; MoE, 2004–2009; Moran & Tegano, 2005; Tarr & Kind, 2016) which can be used for teacher inquiry (Dahlberg et al., 2013; Flannery Quinn & Manning, 2013; Flannery Quinn & Parker, 2016), and sensitive documentation of children’s learning (Daniels, 2013). However, reflection on the use of this tool reveals not only ethical concerns about power relations (Dahlberg et al., 2013; Flannery Quinn & Manning, 2013), concerns for increased visibility of children, and the affects this may have for the child (Lindgren, 2012), but also exposes epistemological tensions (Flannery Quinn & Manning, 2013).

Shaw’s (2014) masters research studied the challenges experienced by six New Zealand early childhood teachers when writing learning stories. Shaw found participants experienced using photography (as digital images) in assessment practices in complex and at times challenging ways. These include: “when considering the significance of images versus narrative text” (p. 47); using photographs as evidence, and as a “visual stimulus” (p. 47); as an aid to reflection and memory; when reflecting on issues of subjectivity (p. 48); and knowing that using photographs and recording a child’s actions could “influence” (p. 48) and “impact” (p. 49) children. These narratives show use of the photograph to document and assess young children’s learning is a practice about which New Zealand teachers think, reflect, and grapple. It is this engagement with the complexity of using photographs in ECEC which provoked this doctoral research.

Lack of professional development.

The ERO (2008) report *The Quality of Assessment in Early Childhood Education* “highlighted the need for high-quality professional development in assessment and sufficient time to allow educators to fully understand the purpose of assessment processes and practices” (p. 1). While professional knowledge is seen as key in provision of quality⁷⁵ early learning, professional development is considered the foundation to high levels of professional knowledge and therefore to support best practice. The need for professional

⁷⁵ What qualifies quality is a contentious question in ECEC. Here, quality is understood as critical engagement in an ethical practice of photography.

development focused on assessment is also recognised within the sector (Cameron et al., 2016). In a survey of early childhood teachers' understandings, beliefs and practices when assessing 4-year-old's learning, Cameron et al. (2016) found repeated requests for "increased access to funded Professional Development (PD) specifically related to assessment" (p. 15).

This request from teachers was not unexpected (Cameron et al., 2016) considering the lack of Ministry-funded professional development for the sector since 2009 (Cameron et al., 2016, citing McLachlan, 2011; MoE, 2009). Cameron et al. commented that this lack in professional development offered by the Ministry, in "conjunction with the fact that there have been no MoE funded publications or resources relating to ECE assessment practices since *Kei Tua o te Pae*, has left teachers without access to support and new information" (p. 15). This is concerning, as a strong knowledge base for teachers' practice of assessment is positively related to high-quality practice of assessment (ERO, 2008, 2010; Stuart et al., 2008). ERO (2010) identified lack of professional development as a factor in poor-quality assessment practices in early childhood education. Therefore, it is probable if teachers do not have access to new resources furthering their knowledge and critical understanding of using photography to document assessment, this practice may be compromised.

It is important to underline that qualification levels of early childhood teachers in Aotearoa vary greatly across the sector. For example, in 2017 there were 3,705 Kindergarten staff holding qualifications compared to 357 unqualified, while in education and care services, 16,526 staff were qualified teachers and 9,229 staff were unqualified (Education Counts, 2018b). The changing political landscape of Aotearoa New Zealand has influenced the sector. Requirements for teachers' qualifications is one area impacted. Currently the minimum legal requirement for teacher-led services is that only 50% of teachers need to be qualified (MoE, 2019).⁷⁶

⁷⁶ The current government recently released a draft of their ten-year strategic plan for early learning. *He Taonga te Tamaiti Every Child a Taonga Strategic Plan for Early Learning 2019–29* (New Zealand Government, 2018) was open for consultation until March 2019. The plan would see the move towards 100% qualified early childhood teachers recommenced.

So, while initial professional development may have developed teachers' skill base from which to implement assessment mirroring the ethos of *Te Whāriki* (MoE, 1996; Stuart et al., 2008), lack of continuation of this for teachers coming into the field, combined with a uneven distribution of qualified teachers in the workforce, has led to concerns about proficiency of the current workforce in sociocultural assessment and critical use of photography. This is compounded by the limited resources offered by KTP (MoE, 2004—2009) to critically engage teachers in ethical pedagogic photography and the lack of them in *Te Whāriki* (MoE, 1996, 2017b). Carr (1998a) highlighted two very pertinent implications from the *Assessing Children's Experiences in Early Childhood* project.

The Learning story framework is a useful one; however professional development on assessment will be necessary to help practitioners use this framework, especially the focused and participatory observations that it demands...[also] professional development on assessment in early childhood should include supporting practitioners over extended periods of time to foster reflection and action research, and practitioners should be encouraged to adapt models of innovative practice to suit their programmes. (Carr, 1998a, p. viii)

It is clear Carr (1998a) identified the need for ongoing professional development and support for teachers to use learning stories as a method of assessment. The learning story is based on research method; therefore, teachers are engaged in ethical and political interactions with children. Yet, the methodological thinking required to enact ethically informed research and engage in critical thinking about power may be glossed over, watered down, or missing entirely. The MoE has simply not provided ongoing professional development as Carr (1998a) suggested was necessary. As Arndt and Tesar (2016) pointed out, the potential for learning story assessment has not yet been fully realised.

Power of the photographer.

Echoing KTP (2009), Fraser and McLaughlin (2016) suggested the booklets provide early childhood teachers a “key resource on enhancing learner identity through the use of photographs in ECE” (p. 10). Fraser and McLaughlin, citing Flannery Quinn and Manning

(2013), also cautioned that the teacher-photographer's "decision-making about what to include and what to omit helps normalise certain centre practices" (p. 10). Normalisation of particular practices through use of photography was problematised by Flannery Quinn and Manning (2013) who argued educationalists must recognise use of photography in early childhood documentation greatly empowers those who take the photographs—as the teacher-photographer produces images of the child as *they see them*.

The way assessment is undertaken can support or impede children's development of agency (Carr & Lee, 2012). The MoE (2004b) stated sociocultural assessments such as the learning story model "take account of the powerful influence of assessments on children's sense of themselves as learners" (p. 2). This necessitates awareness on teachers' behalf of what learner identities are promoted through assessment (Buchanan, 2011). As Fraser and McLaughlin (2016) noted, "because educators typically take photographs and interpret their meaning on their own, their views may be privileged over those of young children and their families/whānau" (p. 10, citing White, 2015). This suggests early childhood teachers reflect on what learning is valued, privileged, and made visible in photographs—and therefore question whose view is represented. As White (2015) pointed out, it is important early childhood teachers also realise

photography does not provide instant access to a child's perspective, nor does it provide certainty regarding children's priorities outside of the context in which they are placed. Photographs are seldom, if ever, static images devoid of interpretation or aesthetic meaning. (p. 186).

In a study aimed at designing a tool to make dispositional learning explicit to children and others, Daniels (2013) developed an instrument for photographic documentation. The tool was constructed as a "photographic learning story" with explicit reference to visual modes in its creation and application. The photographs were taken first, and the story written in response of them. Daniels placed importance on her own awareness when photographing children and their learning. She deliberately cultivated cognisance of the learning that would be communicated, and, importantly, awareness of the particular messages that would be communicated to children about themselves, and to families about the child. This critical use

of pedagogic photography was enacted ethically. Highlighting this possibility is important because, as Fraser and McLaughlin (2016) pointed out, teachers usually take photographs and then infer their own meaning from the photographs. This can result in learning being valued for reasons other than being meaningful for children.

Becoming aware of her role as storyteller, Daniels (2013) also became aware of the power of the photographer in documentation. Daniels' research is particularly interesting as it provides an example of visual documentation practice which is aware of the productive power of the photographer, as well as modes of image, gesture, and gaze, and how these can be used with reflexivity when visually evidencing learning.⁷⁷ The power of the photographer is one of authorship. Writing stories and taking photographs is a subjective act. As White (2015) suggested, "photographs are seldom, if ever, static images devoid of interpretation or aesthetic meaning" (p. 186). With teachers taking on the role of both photographer and author, there is a risk learning story assessment becomes something done to children rather than with them.

Children's participation in assessment.

Fraser and McLaughlin (2016) pointed out that "children should be more involved in taking their own photographs and interpreting their meaning alongside teachers to mediate the power differential between teachers and children" (p. 10, citing MoE, 2004). However, the review of assessment implementation post-KTP professional development, by Stuart et al. (2008), found that, while there had been a positive impact on teachers' practice of assessment and teachers talked about talking to children and including child voice in assessment, "documentation rarely recorded this child engagement and its outcomes" (p. 9). Several ERO (2008, 2010, 2013a) reports show practice of assessment across early childhood settings and services continues to vary regarding quality. An indicator of high-quality assessment is the "active and meaningful" (ERO, 2010, p. 9) participation of children in assessment. However, ERO (2013b) found the empowerment strand of the curriculum is more often absent in planning and implementation of the curriculum than other strands.

⁷⁷ Thus providing an example of a critical multiliterate application of ethical pedagogic photography.

Stuart et al. (2008) found teachers had developing understandings of the importance of involving children in the assessment process. After taking part in professional development on implementing the KTP (MoE, 2004) approach to assessment into practice, 32% of teachers interviewed saw this as “crucial” (Stuart et al., 2008, p. 72). As noted earlier, assessment is commonly undertaken by teachers in their non-contact time. Non-contact time, as the term suggests, is taken away from the teaching setting and therefore away from children. Provision of non-contact time for teachers to assess, plan, and evaluate varies greatly across the sector, with teachers being given from two afternoons a week to no time at all (ERO, 2008). Teachers not given any time within their working hours, but required to produce assessments, inevitably need to undertake this aspect of their teaching at home. Early childhood teachers are required to be “attentive to learning and able to make this visible through assessment practices” (MoE, 2017b, p. 59). There is a tension between the practice of teachers undertaking assessment during non-contact time and the practice of a participatory, collaborative, multi-perspectival assessment partnership between teachers and children.

Child participation and contribution are woven into *Te Whāriki*, with contribution/mana tangata forming one of the five strands (MoE, 2017b, p. 36). Lee et al. (2013) suggested it is the “notion of learning as participation . . . that connects the goals and outcomes” (p. 107) of *Te Whāriki*. This means that the goals of teaching are connected to the outcomes of learning through the relationships children experience with the people and things within the learning environment. Lee et al. proposed including photographs in learning stories to make “visible the link between documentation and practice” (p. 115). This places the photograph as a bridge between learning that is valued and practices which foster valued learning. Returning to the four guiding evaluative criteria in KTP (MoE, 2004a), articulated through the four principles of *Te Whāriki* (1996), shows how teachers are guided to think about assessment:

- Is the identity of the child as a competent and confident learner protected and enhanced by the assessments?
- Do the assessment practices take account of the whole child?

- Do the assessment practices invite the involvement of family and whānau?
- Are the assessments embedded in reciprocal and responsive relationships? (MoE, 2004a, p. 19)

Thinking about photography and use of the photograph, the questions can be re-posed as: Does photograph use empower, protect, and enhance the child's identity? Are photographs used to capture a holistic, informative, picture of the child, and not just a "tourist shot" (Lee et al., 2002, p. 10)? How are family involved, and what is the nature of the relationship between cameras, teachers, families, whānau, and children? Ultimately, the question becomes: are children participants or subjects of pedagogic photography?

The creation of learning stories often holds a dual purpose; one use is to provide assessment for children's ongoing learning. Another use of learning stories is to show how teachers are meeting mandated learning outcomes, and often to provide evidence of their own teaching practice. Booklet 5 of KTP (MoE, 2004e) asks teachers to reflect on: "Who are we documenting for? Who should we be documenting for?" (p. 20). The answer to these questions is not a simple one. The learning stories within the teaching resource KTP, and the photographs they contain, remain the copyrighted material of the "corresponding children, parents, and ECE services" (MoE, 2004–2009, front matter). This shows the shared interest and blurred lines of ownership of learning story assessments.

Accessing archived learning stories.

Carr et al. (2003) realised the potential for learning stories to "flourish" with the "introduction of computer technology and digital cameras" (pp. 206–207). Innovation over the last decade in technology development has resulted in changes that have also transformed the way photographs are produced and consumed in ECEC spaces. The increase in digital images and webspaces able to contain digital photographs has been dramatic. Carr and Lee (2012) suggested the digital revolution changed not only the way learning stories are written (with increased use of digital images), but also "the ways in which we communicate and 'do literacy'" (p. 127). All the teachers in the study by Shaw (2014) used digital cameras and computers to produce learning stories. Furthermore, digital documentation in ePortfolios, i.e.,

digital portfolios stored in cloud-based archives, are becoming increasingly common in Aotearoa (Hooker, 2016a, 2016b; Kelly & Clarkin-Phillips, 2016).

Proponents of documenting assessment with ICT suggest technology makes learning more visible and accessible, because the use of digital cameras and computers together has “been pivotal in providing easier access to documentation” (Lee et al., 2002, p. 10). Digital cameras (and/or other handheld devices capable of image creation) have arguably increased the use of the photographic image in early childhood assessment practices. However, with the move to cloud-based storage systems, access may not be “easier” for all parties. Although many early childhood teachers now use web-based ePortfolios to archive learning stories, access to these requires an internet connection, data, and a device. While many families have these resources,⁷⁸ young children cannot independently access their learning records in the same way they could access their paper-based portfolios.

Kelly and Clarkin-Phillips (2016) considered the shift to digital platforms and consequent loss of the portfolio, as a material artefact children can access independently, as “disturbing” (p. 4). Stuart et al. (2008) reported teachers showed understanding that “physical access [to portfolios] was vitally important to children’s contribution to their assessment” (p. 72) after KTP professional development. However, if systemic changes within early childhood spaces prevent the creation of physical portfolios, children’s ability to access, revisit, and contribute to the assessment process may be compromised. This would be a great loss. This thesis argues physical engagement with documented learning collated in portfolios is integral to children’s ability to engage in a sustained and authentic manner with the learning stories contained within (as do Hooker, 2016a, 2016b; Kelly & Clarkin-Phillips, 2016). The current shift to uploading this type of assessment to a virtual archive brings with it the need to consider what this means for children and their families, teachers, and educationalists.

Kelly and Clarkin-Phillips (2016) highlighted several concerns about the move to digital portfolios, three of which are particularly relevant here: “equity of access” (p. 4),

⁷⁸ Additionally, of course, some do not; economic resources and digital literacy are factors which can impede access.

ethical concerns pertaining to ownership of information, and the ability of digital platforms to “influence the ways in which assessment is documented” (p. 5). Access is an issue at two levels: the child’s ability to access their portfolio within the learning setting, and the ability of their family to access digital spaces (Kelly & Clarkin-Phillips, 2016). Another concern is children’s ability to contribute to ePortfolios in a meaningful and empowering way (Hooker, 2016a). The ethics of information ownership was discussed above in the sections on the power of the photographer and children’s participation in assessment.

Digital platforms such as ePortfolios act as repositories for information. As users will know, these platforms are highly structured and programmatic in the sense that they provide the “shape” of the assessment uploaded. This is a concerning impact of using programs to write learning stories. Flusser (2000) identified the limiting nature of apparatus programs. A master’s study into teachers’ use of ICT in ECEC, by Pohio (2009), revealed this was an issue of concern early on. Pohio’s study looked at a group of early childhood teachers’ use of ICT. One participant commented on how computer programs, such as Word, were taking creative agency from teachers. The teacher “questioned whether a personalised style was being lost through the more generic appearance created by using word [*sic*] documents” (p. 91). The generic learning stories produced through ePortfolio software can be said to further erode the potential for learning stories to be personal and creative. The power of the apparatus-archive identified in Chapter 6 is evident in this example.

Kelly and Clarkin-Phillips (2016) pointed to how using ePortfolios can influence documentation of assessment. Therefore, the power of the photographer to produce certain views of the child subject will itself be modified in line with the programmatic structure of the apparatus (Flusser, 2000, 2011b) of the ePortfolio. Hooker (2015, 2016a, 2016b) provided a considered review of the positive and negative consequences of using ePortfolios. Her doctoral study identified 10 questions which must be given due consideration before ePortfolios are implemented (see Hooker, 2016a, 2016b). While important work, this is a subject beyond the scope of this research.

What is relevant is the way photographs are used in a digital form. Archiving digital photographs in ePortfolios, which influences photograph use, is of great interest. Hooker

(2016b) advocated for a combination of both material and digital portfolios, suggesting each offers different benefits for documenting assessment. She cautioned care is needed when applying ePortfolio templates in assessment. Kelly and Clarkin-Phillips (2016) suggested we are in jeopardy of losing authentic meaningful assessment practices to the “risk of ‘standardised’ assessment using online platforms where the analysis of learning comes from a drop-down menu rather than deep engagement with the learner” (p. 5). Once again, the power of apparatus-archive is clear. The programmatic power of ePortfolios in combination with evidence-driven photography takes ECEC down a dangerous path.

Contribution to documentation for assessment, through photographs taken by children, is a way to address power imbalances and to recognise the child as competent and confident (MoE, 2017b). However, this approach is based on the assumption that children want to be part of photographing for assessment or consuming photographs of learning (Sparrman & Lindgren, 2010). It also assumes that photographs are meaningful to children, and that they add something to the process of making learning visible. This assumes that visually documenting children’s time in early childhood spaces is in their best interests.

Visibility of the young child.

A theme running through both *Te Whāriki* (MoE, 2017b) and KTP (MoE, 2004–2009) is the notion of making children’s learning visible. This thesis argues it is possible the idea of making learning visible, through documentation of learning, and assessment and evaluation of that learning and teaching, has been conflated with taking photographs to provide a visual artefact. Stuart et al. (2008) found that “although services had strong practices to make assessment documentation visible, the assessment items did not always make learning visible” (p. 107). Lindgren (2012) reported on a study of reflective blogs by Swedish early childhood student-teachers learning about pedagogic documentation practices. Their use of photographs and narrative is similar to the use of learning stories in Aotearoa New Zealand. The study showed teachers’ initial “fascination” with pedagogical documentation, their realisation of, and “frustration” with, the ethics of documenting, and the “use and overuse of visual technology” (Lindgren, 2012, p. 332).

Sparrman and Lindgren (2010) provocatively asked if visual documentation practices in early learning settings could be “training children to uncritical acceptance of surveillance techniques that are used with increasing frequency in western society” (p. 248). This speaks to the subtle cohesions, discussed in the Chapter 7, working to discipline subjects. Sparrman and Lindgren posited use of photographs to document learning may impede “vital aspects of basic democratic rights at the same time as it uses rhetoric casting the method as a means to develop children’s perspectives and rights” (p. 256). They also provided an example of children resisting the panoptic principles of their early learning space. Children resisted that gaze⁷⁹ by covering up the window on their door with a blanket (Sparrman, 2002, cited in Sparrman & Lindgren, 2010). Tesar’s (2017) recent study in a New Zealand setting also discovered children resisting the gaze of teachers.

Tesar (2017) theorised children’s resistance as a “childhood underground.” Children in the ethnographic study included the researcher in their resistance against the gaze of the teacher, revealing hidden objects and private games. The children moved within the early childhood space in a manner which potentiated corners and spaces under and behind objects to gain privacy. Similar to Sparrman (2002), the children in Tesar’s (2017) study enacted their agency to achieve their need and right for privacy. Tesar suggested this behaviour showed children’s agency within the systems governing the early childhood space.

Sparrman and Lindgren (2010) pointed out that “children do not always want to be watched” (258). Their study revealed an assumption at governmental level which positions visual documentation as a positive strategy for early childhood teachers. Their research also showed visual documentation can play a role in normalising and producing visible child subjects. Sparrman and Lindgren considered it important to call attention to the fact that, while the motivation of teachers may be good, the enactment of visual documentation may be seen as “controlling or as surveillance by the children” (p. 258)

⁷⁹ The building was built on panoptic principles, whereby all rooms could be seen into from a central point through windows in entrance doors.

This is a provocative idea, and one warranting further consideration, especially so with the newly revised curriculum's expectations of higher levels of documentation and media-intensive observation of children in early childhood settings (MoE, 2017b). Early childhood teachers in Aotearoa New Zealand are now prompted to "take photographs, make audio or video recordings" (MoE, 2017b, p. 63). The MoE (2017b) proports this data collection is to "make valued learning visible" (p. 63). However, there are tensions around what learning is valued, as explored in the previous section on the power of the photographer. Furthermore, children have little standing within the official discourse of making learning visible. Once again, children are largely positioned as subjects to photograph, rather than active participants and photographers. The MoE (2017b) stated that "older children will often take their own photographs" (p. 63), but this delineation by age does little to empower the younger members of ECEC communities, nor does it uphold the aspiration for all young children to be empowered as valued contributors.

In Tesar's (2017) study, children were given cameras to use. What the children did with the cameras is explored here as a counter-practice of visual documentation. The children produced photographs which were meaningful to them, sometimes of objects teachers were not aware of (such objects had transgressed the borders of the early childhood setting). Some children used visual images to invite the researcher into their private world, a world which resisted the watchful gaze of the teacher; some did not. An example of children's subversive actions as photographers was seen in children's practice of deleting images. Children took photographs for their own purposes and, defying the mandate to make learning visible (MoE, 2017b; MoE, 2004–2009), instead made it invisible through their erasure of the photographic evidence. Children who used this counter-practice of visual documentation decided to not share their photographs, their stories, but rather to keep them private. Returning to Lindgren's (2012) study provides a teacher's voice which resonates clearly here. The teacher suggested that teachers:

in every moment need to ask ourselves whose needs we meet when we observe children. Is it the children's need for privacy or adults' need to "know everything" that is met? Does preschool as an institution take away children's freedom to act without

being watched, looked upon and documented whenever we grownups want to? (p. 334)

While the teacher's comment expressed both critical and ethical insight it is important to note, as Lindgren (2012) did, that the teacher creates an "us and them" division between teachers and children through the demarcation of a teacher "we." The practice of photographing children can perpetuate the binary relationship between adult and child. Taking photographs is an othering activity (Dahlberg et al., 2013; Kind, 2013). Lindgren (2012) considered the act of visual documentation to be a site of unequal power relations. Another participant voice in the study questioned if teachers "dared" to let children share in the documentation process. This question provoked another "about whether the adults had the courage to let the children be active participants in the documentation process" (p. 334). It is a good question. If we, that is all of us: researchers, ITE providers, teachers, children, and families, are to realise the potential of pedagogic photography in early learning then courage will be required. Sharing power when you are in a position of power is a powerful thing to do; however, it requires stepping into the unknown.

Concluding Comments

This chapter has explored the tension between teachers' use of photography to visually document children's learning and children's rights to privacy, and the principle of participation. This thesis argues children's rights to privacy and meaningful participation in ECEC are compromised when the best interests of the child are overshadowed by normalised practices of making learning visible. The governing power of policy upon children within early childhood spaces can be arbitrary. Routine photographing of children for assessment purposes can also be an arbitrary application of administrative power upon the child subject. Moments of valued learning are more often selected and visually documented by teachers than by children. Importantly, teachers are themselves accountable for their performance of making learning visible. This may place them at odds with the best interests of children.

There are still possibilities for children's expression of autonomy, agency, and the ability to maintain a private self in early childhood spaces. This will require the sharing of power and resources. Cameras cannot remain objects of adult control. Giving children cameras is a practice which can "give children agency and enhance their mana" (MoE, 2017b, p. 59). This is always an option, if we dare. However, Perkins (2017) found that just over 50% of centres, as reported by teachers participating in a small-scale online survey, provided no access to cameras for children. While Lindgren (2012) suggested it is "when documentation is used for reflection that it becomes pedagogical" (p. 330), Lee et al. (2013) stated use of photographs "makes visible the link between documentation and practice" (p. 115). Including children in these processes can afford some insight into the way knowledge is constructed (Dahlberg et al., 2013). However, this needs to be on equal terms. Furthermore, children must retain their right to say no. They need to understand that they can refuse to be photographed and do not have to be automatically available to be made visible.

Reflecting on the practice of taking photographs of children, the outlines of productive power can be traced. Dahlberg et al. (2013) suggested visual documentation is a risky business. They pointed out teachers need to continually question "what right we have to interpret and document children's doings and what is ethically legitimate" (p. 164). Visual documentation through photographs exercises productive power and control over what is shown, and therefore can be known. However, the potential to use photography and photographs differently is always available. As Flusser (2000) said, the camera patiently waits.

A hope for the learning story method was that such assessment could be used to provide more formative information (Carr et al., 2003). Previous chapters made the connection between summative and formative assessment and Flusser's (2000, 2011b) notion of redundant and informative information. Thinking of pedagogic photographs as either redundant/summative or informative/formative allows photography to be rethought. As argued earlier, changing how the photography is thought about can change ways to think.

Using photographs to open up space for thinking and engaging in creative dialogical relationships can result in more ethical use of photography in ECEC.

Chapter 11.

In Conclusion

Photographs are used pedagogically in ECEC to gather and provide information about children, learning, and teaching. This use of photographs is not neutral. The observation and documentation of children's learning is never a neutral act (Dahlberg et al., 2013). The overarching suggestion for use of photography and the photograph in ECEC is to make learning visible (MoE, 2004–2009, 2017b). This research found making learning visible through photographs of children was positioned in both KTP (MoE, 2004–2009) and *Te Whāriki* (MoE, 2017b) as a social good (Gee, 2011). The photograph was suggested to provide visual evidence so that: teachers could record learning; children could revisit this learning; families and whānau could share in the process; evidence of learning and teaching could be generated for other parties; photographs could provide a record of children's development over time, act as an aid to memory, and support further planning.

However, the MoE (1996, 2004–2009, 2017b) does not provide teachers explicitly focused resources to support critical, pedagogical use of photography. While the curriculum (MoE, 2017b) and KTP (2004–2009) positioned the photograph as a useful tool, discussion of more critical and ethical aspects of using photography and photographs with young children were limited. Photography and consumption of photographs of young children were normalised and considered to be good practice. The rhetoric of making learning visible was used to endorse the practice of photographing children and using photographs. However, this thesis argues this encourages a pedagogy of photography which is neither critically nor ethically engaged. It is possible the ideology of making learning visible has become conflated with taking photographs to provide evidence of learning.

When thinking about photography and the photograph, significant tensions between truth, power, abstraction, and the productivity of apparatus become apparent. Apparatus such as camera, archive, policy, and pedagogic practices all influence the photographer and therefore children's experiences of being photographed and the consumption of photographs

in ECEC. Furthermore, children's privacy can be eroded by normalised photographing for assessment, and authentic relationships interrupted by the urge to capture learning. This thesis contends an ethics of pedagogic photography would go beyond concerns of privacy, surveillance, and consent, to also consider questions pertaining to the power of apparatus behind information (knowledge) creation, categorisation, collation, display, accessibility, and abstraction.

The photograph is complex. Possible responses to the question of what the photograph is, how it is used, and what it does, are multiple. Flusser (2000) defined the photograph as a means to inform, and the photograph was described throughout KTP (MoE, 2004–2009) as a language for documenting learning. First and foremost, this thesis found the photograph is a way to hold and share information. However, what sort of information is contained in photographs was revealed to be of great importance. The intention for learning stories was that they would foster learning through assessment. As such they were positioned as a formative assessment method. Flusser (2000, 2011b) argued photographs were redundant unless they pushed past the programmatic limitations of the camera-apparatus. This thesis argues photograph use in ECEC can fall into the trap of presenting redundant information unless teachers and children work together in the creation of photographs that support new ways of thinking and knowing.

Therefore, this thesis argues that critically engaging with the ethics of photographing for evidence of learning means questioning the productive force of not only the teacher, but also the camera, curriculum, archives, and practices used to collate and contain information. For Flusser (2000), the apparatus of camera, archive, and state are governed by programs which in turn govern information production. Pedagogic photography has been shown to be a site of potentially unequal power relations. Epistemically and methodologically, use of the photograph is fraught with tensions. Whose stories are told and how? How is information collected, stored, and shared? These questions form the first level of tension surrounding use of the photograph to provide evidence of learning in ECEC. Wrapped around these questions are larger questions pertaining to truth, power, and materiality. The photograph is a contested object, the information contained upon its surface an abstraction. Knowing,

understanding, and accepting this allows for a deeper engagement with the photograph and with its inherent tensions.

An important use of the photograph lies not in its ability to provide visual evidence of reality but, on the contrary, in its failure to do so. This divergent use offers the possibility of engaging with the photograph in a completely different way. Rejecting the infallibility of the visual record reveals the common mistake of trying to hold too tightly to the photograph. Flusser (2011b) suggested the photograph shows what matters, it doesn't show matter. It has materiality, yes, but it is only a model of materiality constructed from abstract principles applied to a surface (be that paper or screen). What matters for this thesis is that relationships are what define children's experiences of ECEC, not images. What matters is that the photograph is used to open situations and provoke possibilities, not to frame, define, and capture experience.

Flusser believed a "society of individuals responsible for one another is fashioned out of a net dialogue" (Ströhl, 2002, p. xviii). Dialogue was a central part of Flusser's (2011b) philosophy, as was his theory of networks. To be creative involves sharing and synthesis of known information into new information. Networking is a connective and multidirectional process. Photographs can be used to create new knowledge in early education spaces if photography is a dialogical endeavour rather than a discursive practice. Sharing the role of photographer with children helps in breaking down more "normative ways of looking" (Lindgren, 2012, cited by Magnusson, 2018, p. 40). An ethics of photography for early childhood education is relational, dialogical, complex, plural, creative, and open. The human capacity for creativity provides an antidote to becoming automated by apparatus. How to access and activate this creativity is an ongoing project. Intentional, attentive choices, reflection, and an increase in dialogue around the ethics of photographing young children are aspects of this engagement.

This thesis concludes with a model of inquiry which sets out some common assumptions about using photography in ECEC. The questions are tentative provocations designed for teachers to use to disrupt and critically examine their own practice. They provide a way to open up thinking and possibilities, specifically around photography and

photograph use in ECEC. As the questions are provocations, responses to them will hopefully create new critical thinking and deepen ethical conversations about the normalised production and consumption of photographs in ECEC.

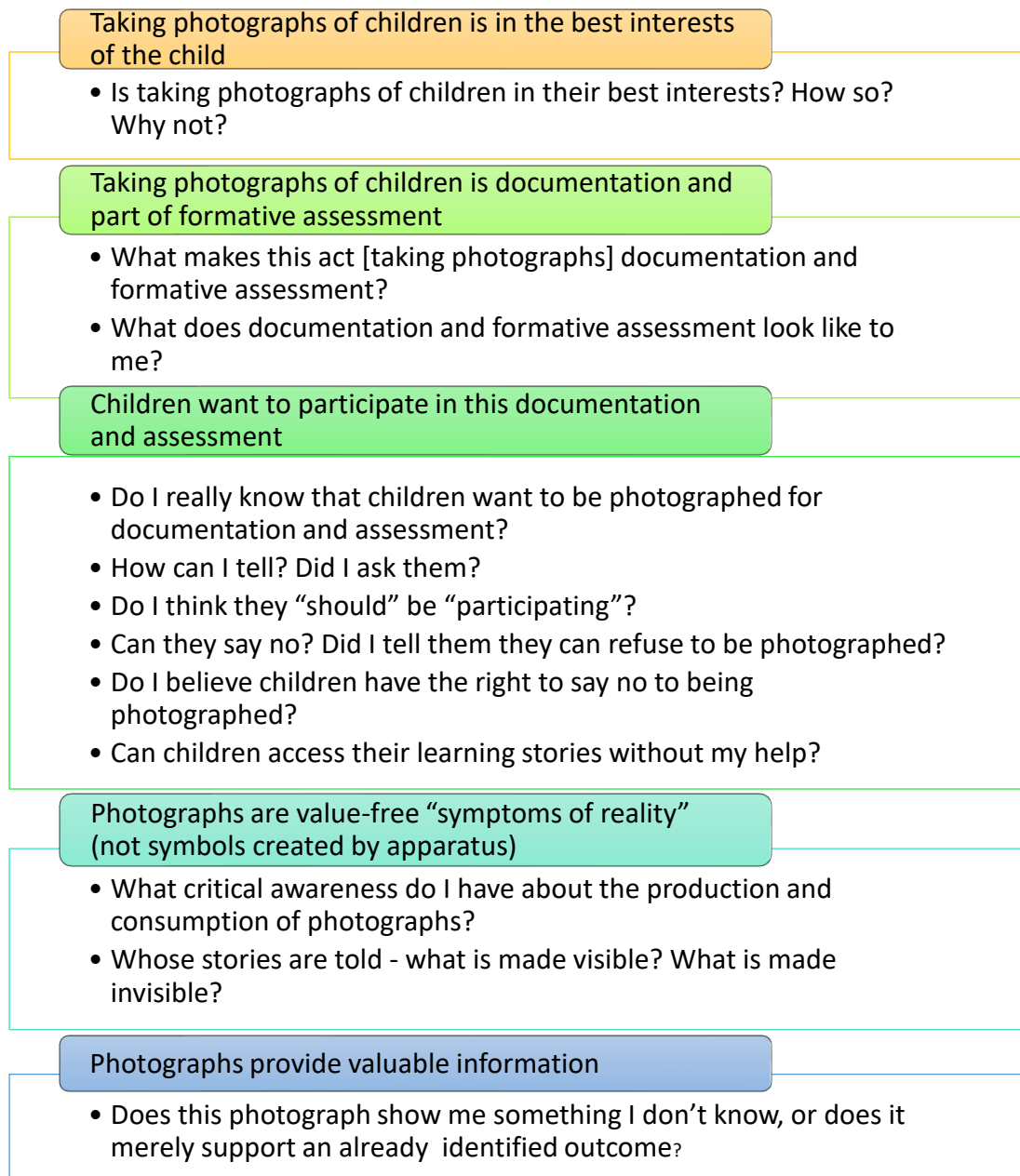


Figure 19. A model of inquiry: critical questions about photography and the photograph.

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