

Edited by Tully Barnett, Jason Bevan,  
Cameron Mackness and Zoë Wallin

ROUTLEDGE



# Beyond Virtual Production

Integrating Production  
Technologies



A Focal Press Book



# BEYOND VIRTUAL PRODUCTION

*Beyond Virtual Production* brings together a range of creative practice research projects that have been undertaken in The Void, an early-adopter university-based virtual production studio at Flinders University in South Australia.

From a cross-disciplinary short virtual production film, to a VR simulation of the last 100 seconds of life of earth, to the live performance of the virtual band Big Sands, to augmented and extended reality, to archaeological projects, this collection captures the potential applications of virtual production technology and provides a framework for cross-disciplinary work and industry collaborations both in a university context and beyond. It offers insight into the development of virtual production courses and encompasses research into theories of performance, liveness, methods for co-creation, gender in virtual production careers, and object digitization and its representation while highlighting significant pathways of industry partnerships alongside experimental art practices.

Creative technology and interdisciplinary practitioners, researchers, students, and teachers will find inspiration and practical guidance in these chapters.

**Tully Barnett** is Associate Professor of Creative Industries at Flinders University in South Australia, where she serves as Director of Assemblage Centre for Creative Arts. As an interdisciplinary scholar, her research considers digitisation and its impact on cultural experience and cultural work, as well as cultural policy and value.

**Jason Bevan** is a Senior Lecturer in Visual Effects and Entertainment Design at Flinders University, a Senior Fellow of the Higher Education Academy and practitioner in Visual Effects, Postproduction, Animation, Virtual Production and Film-related projects.

**Cameron Mackness** is a cinematographer/editor/director. In 2020 he co-founded The Void – Flinders' Motion Capture and Virtual Production Studio. Cameron is now the Digital Business Developer for the Void and an expert in all thing Motion Capture and Virtual Production.

**Zoë Wallin** is a research assistant at Flinders University. She has published research on the industrial operations of the film Hollywood industry and is the author of Classical Hollywood Film Cycles.

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**Routledge**  
Taylor & Francis Group  
LONDON AND NEW YORK

Designed cover image: Nat Rogers Photography

First published 2025

by Routledge

4 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge

605 Third Avenue, New York, NY 10158

*Routledge is an imprint of the Taylor & Francis Group, an informa business*

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*British Library Cataloguing-in-Publication Data*

A catalogue record for this book is available from the British Library

ISBN: 9781032582931 (hbk)

ISBN: 9781032582924 (pbk)

ISBN: 9781003449492 (ebk)

DOI: 10.4324/9781003449492

Typeset in Galliard

by Newgen Publishing UK

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# CONTRIBUTORS

**Tully Barnett** is Associate Professor of Creative Arts at Flinders University in South Australia, where she serves as Director of Assemblage Research Centre for Creative Arts. As an interdisciplinary scholar, her research considers digitisation and its impact on cultural work and experience as well as cultural policy and practice.

**Jason Bevan** is a Senior Lecturer in Visual Effects and Entertainment Design at Flinders University, a Senior Fellow of the Higher Education Academy and practitioner in Visual Effects, Postproduction, Animation, Virtual Production, and Film-related projects. Jason is a regular guest speaker at Visual Effects industry events internationally. Jason is an accomplished Film Editor with IMDB credits. Throughout his teaching, he has been involved in numerous collaborative projects such as *Combat Medics* for Sky and *The Machine* for Red & Black Films. Credits include, *Arth* on S4C/BBC and *The Gospel of Us*, starring Michael Sheen.

**Shane Bevin** is a lecturer in Digital Media at Flinders University where he combines many years of teaching and production experience to bring an industry focus to the delivery of curriculum. He was co-founder of Adelaide animation studio Monkeystack and spent over two decades working in all areas of digital media production. Shane is a flexible digital artist and producer with clients as varied as Nickelodeon, the ABC, Schneider Electric, and others. He is a multi-award-winning practitioner with recognition of his work as director, art director and technical director.

**Heather Burke** is an historical archaeologist with a wide range of research interests, including the construction of class and status through material

culture, the archaeology of cross-cultural engagement, and the links between cultural heritage, memory, and contemporary social identity. She graduated with a PhD from UNE (Armidale) in 1996, and has worked as a researcher and consultant on historical and Indigenous archaeological sites throughout New South Wales, South Australia, Tasmania, Queensland, and the Northern Territory. Her current research focusses on the ‘frontier’ and its social and material effects, particularly the archaeology of frontier conflict in Queensland.

**L. Nicol Cabe** is a new media theatre artist, specialising in digital dramaturgy. Her award-winning speculative fiction performances have won sold out show, critic’s choice, and producer’s choice awards at several festivals. Her Master’s thesis focused on the history of digital and online theatre (Master of Letters, University of Glasgow, 2021). She is currently undertaking a PhD at Flinders University considering the combination of technology and cultural changes leading to innovations in new media theatre and performance. Her article “Effing Robots Online: The Digital Dramaturgy of Translating In-Person Theatre to Online Streaming” published in the *Journal of American Drama and Theatre* won the Flinders University Vice Chancellor’s publication award in 2023

**Helen Carter** is a Lecturer in Screen at Flinders University and an award-winning cinematographer with 20 years’ experience in the film and television industry. She has been recognised by her peers, winning eight awards from the Australian Cinematographers Society as well as numerous awards from the AFTRS, Kodak, and the Sydney Film Critics Circle. Helen began her film career as a clapper loader on television series and went on to work on many documentaries, commercials, short dramas, and feature length films. She is a graduate from the AFTRS, receiving the highest achievement in her year. Helen is currently researching a PhD on cinematography in Australia.

**Katie Cavanagh** is a Lecturer in Visual Effects and Entertainment Design at Flinders University. She majored and completed Honours in English and also was a Sculpture Major for three years at North Adelaide School of Art. After graduating she worked as a Graphic Designer, Web Monkey, and Project Manager for TechWorks and TMP Worldwide. She currently lectures in ‘hands-on’ digital media topics where she happily frolics and explores the convergence and combination of text, design, image, and meaning.

**Kristen Coleman** is a PhD candidate and casual academic in Screen and Media at Flinders University. Kristen also practises as a video installation artist and has exhibited nationally, including Perth Institute of Contemporary Art (PICA), SEVENTH Gallery Melbourne, Centre for Contemporary Photography, Melbourne, SAWTOOTH ARI Launceston, the Sydney Underground Film Festival, Adelaide Festival Centre Moving Image Screen Program, and FELTspace Adelaide.

**Sally Coleman** is a musician, creative technologist, writer, performer and former host of triple j Breakfast. Her new music project, Big Sand, is an animated sci-fi virtual band, created using Unreal Engine and brought to life using motion capture technology. The project has seen Sally named an inaugural recipient of the Creative Australia x APRA AMCOS 'Digital Futures Initiative', and begin a practice-based PhD with UTS Creativity & Cognition Studios in the use of game engines and motion capture for live music performance.

**Kath Dooley** is a filmmaker and Associate Professor at the University of South Australia. Her work as writer/director has screened around the world at events such as the Edinburgh International Film Festival and FIVARS, Toronto. She is currently a member of the Australian Screen Production, Education and Research Association (ASPERA) Executive. Kath is author of *Cinematic Virtual Reality: A Critical Study of 21st Century Approaches and Practices* (Palgrave Macmillan, 2021) and co-editor of *The Palgrave Handbook of Screen Production* (2019). Her research interests include screen production methodology for traditional and immersive media, screenwriting, women's screen practice, and diversity in the screen industries.

**Penelope Edmonds** is Matthew Flinders Professor in History at Flinders University. A former Australian Research Council Future Fellow, Penny's research is distinguished by over two decades of creative and interdisciplinary work in the areas of Australian history and nineteenth-century British empire and settler colonialism in the Australian and Pacific region. She seeks to bring a critical theory perspective to questions of colonialism, race, gender, reconciliation and redress, humanitarianism, slavery, and unfreedom in the Australian and Western Pacific region.

**Julia Erhart** is an Associate Professor at Flinders University and an internationally recognised feminist film scholar and expert in the fields of feminist, LGBTQ, and documentary media. She is author of three books, *Gendering History on Screen: Women Filmmakers and Historical Films* (I. B. Tauris/Bloomsbury, 2018), *Gillian Armstrong: Popular, Sensual & Ethical Cinema* (Edinburgh UP, 2020), and *The Children's Hour* (McGill-Queens UP, 2024).

**Nicholas Godfrey** is a Senior Lecturer in Screen at Flinders University in Adelaide, South Australia, and the author of *The Limits of Auteurism: Case Studies in the Critically Constructed New Hollywood*.

**Sasha Grbich** is a mid-career artist, writer and lecturer who works responsively with places and communities. An avid collector of things, found footage, sounds and stories; she is fascinated by the way art takes part in the politics of

everyday life. Sasha approaches artworks as ecologies: unfinished events that perform with audience and in local environments. She lectures at the Adelaide Central School of Art in Video and Performance, Installation, and coordinates the Bachelor of Visual Art and Honours degrees. She is undertaking a PhD at Flinders University

**Tiffany Lyndall Knight** is an award-winning actor, director and lecturer in Drama at Flinders University. She has taught acting throughout her career, including Adelaide University's Elder Conservatory Musical Theatre program, Flinders University Drama Centre, Adelaide College of the Arts and the University of British Columbia. She co-authored *The Creative PhD: Challenges, Opportunities, Reflections* with Professor Tara Brabazon and Natalie Hills (Emerald Press).

**Anna M Kotarba-Morley** is a Lecturer in Museum and Curatorial Studies at the University of Adelaide. She is an Archaeologist and Cultural Heritage professional whose current research interests focus on protection, management, and documentation (by means of 'community archaeology') of cultural heritage vulnerable to damage and destruction due to climate change and extreme weather events. She is an Expert Member of ICOMOS Australia (International Committee for Monuments and Sites) and its Scientific Committee for Risk Preparedness (ANZCORP).

**Jarrad Kowlessar** is a researcher and teacher at Flinders University working in the fields of Archaeology, Geospatial Science and Machine Learning. He holds a PhD in Archaeology as well as a Masters in Maritime Archaeology and an Honors Degree in Applied Geographic Information Systems (GIS). His publications are in the areas of Archaeology, GIS, Remote Sensing, Geophysics and Machine learning.

**Cameron Mackness** is a cinematographer/editor/director. In 2020 he created The Void – Flinders Motion Capture and Virtual Production Studio. Cameron is now the Digital Business Developer for the Void and an expert in all thing motion capture and virtual production.

**Amy Matthews** is an award-winning multi-published novelist, a scholar in the field of Creative Writing, and Deputy Director of Assemblage Centre for Creative Arts. She writes under the names Amy T. Matthews, Amy Barry, and Tess LeSue, in multiple genres. Amy's scholarly interests include genre fictions, popular romance studies, historical fiction, and fictions of climate change/crisis.

**Ian Moffat** is an archaeological scientist who is fascinated by the potential of geological techniques to answer questions in archaeology. His main research focus, funded by an Australian Research Council Future Fellowship, is understanding the human, climate and landscape history of the ‘Dead Heart’ of Australia.

**Renato Musolino** is one of South Australia’s most respected, experienced, and acclaimed actors and actor trainers. He trained as an actor at the Centre for the Performing Arts (SA). He has worked nationally and internationally with leading companies including State Theatre Company South Australia, Sydney Theatre Company, Belvoir Theatre, Bell Shakespeare Company, Griffin Theatre Company, Windmill Theatre Company, ABC Radio National, and the South Australian Film Corporation. He is currently Lecturer in Drama at Flinders University Drama Centre, where he has made significant contributions to the development of the Bachelor of Creative Arts Drama curriculum, along with the Drama Well-being and Welfare protocols.

**Sarah Peters** (she/her) is Senior Lecturer in Drama at Flinders University, playwright, and book reviews editor for Australasian Drama Studies. Her research investigates collaborative theatre making processes, dramaturgies of theatre based on lived experiences, and the impact of storytelling on participants and audiences. Her co-authored monograph, *Verbatim Theatre Methodologies for Community-Engaged Practice* was published with Routledge in 2023.

**Rosina Possingham** is a multi-disciplinary artist, designer, and photographer who values collaborative environments where ideas and conceptual thinking are shared, evolving her practice to incorporate consistent youth/community workshops and art projects. Rosina is motivated to challenge, observe, and rediscover the way people connect with and through landscape, community, and place. She continually explores our human relationship with the natural world. In 2021 she was Artist in Residence at Assemblage Centre for Creative Arts at Flinders University

**Kendrea Rhodes** is an artist currently undertaking doctoral research at Flinders University into the history and narratives of the Ballarat Asylum. Using an interdisciplinary approach through fields of Mad Studies, history, life-writing, and visual art, she explores how creative practice methodologies might generate social change regarding various temporal and cultural perceptions of ‘madness’.

**Melanie Ross** is a PhD candidate in Creative Writing at Flinders University. Her works of fiction and creative non-fiction are driven by an endless curiosity about human connection to nature and place, including the influence of technology.

**Liam Somerville** is a video artist and cinematographer living and working on unceded Kaurna Country in South Australia. Liam's works often circulate around inputting the beautiful imperfections of the human experience into the digital space to create cyborg interactions through the use of interactive sensors and motion capture. This can be witnessed in *ESCHATECH VR*, a post-human VR experience created in Unreal Engine with the assistance of Flinders University's 2021 Assemblage Artist in Residence Program.

**Kathleen Stanley** is a PhD candidate at Flinders University, as well as a writer, and casual academic. Her research interests include popular romance, with a focus on Small Town Christmas Romance.

**Zoë Wallin** is a research assistant at Flinders University. She has published research on the industrial operations of the film Hollywood industry and is the author of *Classical Hollywood Film Cycles*.

**Sean Williams** is a Senior Lecturer at Flinders University in South Australia, where he is Discipline Lead of Creative Writing. He is a #1 *New York Times*-bestselling, multi-award-winning author of over 60 books for readers of all ages.

**Lauren Woolbright** is a Lecturer in Visual Effects and Entertainment Design and founder of the Games Research Lab at Flinders University. She is a scholar of game design and environmental humanities with particular expertise in inclusive game design practices. She is interested in how game environments tell stories and evoke emotions in players without relying on language and in representation, both in the games industry and in games as media.

**Tom Young** is a Senior Lecturer and filmmaker. At Flinders University he teaches short filmmaking, documentary, and client video production. Tom heads up Frankie Films, a video production company specialising in commercial, education and government projects. Tom's independent filmmaking work focuses on writing, directing, and producing micro budget drama.



# 12

## THE ROLE OF EDUCATIONAL ENVIRONMENTS IN INFLUENCING THE EXPERIENCE OF WOMEN AND GENDER DIVERSE PEOPLE IN THE VIRTUAL PRODUCTION SECTOR

*Julia Erhart, Kath Dooley, and Tully Barnett*

### Introduction

As a new means of filmmaking that harnesses game engine technology to create ‘previsualised’ location and screen content, virtual production (VP) is arguably the most significant technological change the screen sector has witnessed since the coming of sound. VP utilises traditional physical and virtual filmmaking techniques to generate photorealistic environments that are displayed on large LED walls (aka ‘volume’ studios), behind physical components such as actors and props. VP reconfigures filmmaking workflows, as visual effects are no longer delegated to post-production but are visualised and iterated throughout pre-production and production. Several industry leaders have championed these developments, suggesting that the zero cost of accessing game engine technologies such as Unreal Engine might ‘democratize visual effects technologies and, thus, allow a greater diversity of individuals to tell unique stories’ (Jobin, 2022, 105). Moreover, it has been posited that VP’s renegotiated workflow may present opportunities for practitioners for whom on-set production work was previously unfeasible, due to physical or other constraints (Jobin, 2022, 102). However, we do not yet know to what extent these new technologies, workflows, and means of creative production will change the experience of the labour force within the sector.

While VP is the focus of considerable attention in industry publications, attracting investments in hardware, the growth of the sector has been hampered by a skills shortage that has created a workforce problem for the screen industries more broadly. There is some evidence that the COVID-19 pandemic provided justification for investments in VP (hardware and new working methods), as companies saw the benefits of producing in contained

environments with fewer travel requirements. Theoretically, the industry offers new modes of remote work/working from home that would be of benefit to those with care responsibilities; however, in drawing as it does from pipeline industries such as film and games that have grappled in recent years with #MeToo, gender pay gaps, gamergate, and worsening statistics about women in leadership positions, VP may import workplace cultures that continue to make it difficult for women and gender diverse people to succeed in the workforce. Initial reports suggest a domination of white male workers in VP recruitment (Bennett, Heath, KilKelly, & Richardson, 2021, 15) and the sector as a whole (Koljonen, 2021), which raises questions about the attractiveness of VP for female and non-binary practitioners. To date, no published academic or industry research has taken women's participation in VP in Australia as a point of focus, and international studies have only lightly touched upon the subject (Bennett et al., 2021; Jobin, 2022).

This chapter considers questions about gender, careers, and workforce opportunities for women and gender diverse people in the VP sector in relation to the educational environment in which workforces are grown, developed, and framed. In response to the global growth of the industry, Australian education providers have responded quickly and developed courses that can be offered to undergraduate students and/or experienced practitioners looking to reskill. Our investigation of this area acknowledges that educational environments in which VP skills are taught and through which internships and work placements are administered, and the role that educators play in recommending students and graduates for work, have an impact on worker expectations which they will carry forward as they enter the sector. We offer an analysis of preliminary data drawn from interviews with tertiary instructors involved in VP education around Australia. Part of this rapid VP growth means that definitions are broad, and how VP is expressed in different industry and educational environments is not always consistent. Our interviewees refer to studio shooting with LED volumes, use of remote technologies such as Zoom to enable broader participation in screen production, and projects using game engines, such as the Unreal Engine Short Film Challenge, as activities in which they have engaged with students in VP; however, some common themes and educator concerns emerge from our analysis, as outlined below. This research is part of a larger research project to audit and creatively communicate differing experiences of women and gender diverse people in the nascent VP industry in Australia.

### **Pipeline Industries and Inherited Problems**

The VP industry has emerged from and shares labour patterns with various other screen-based industries, such as film, games, animation, and visual effects. These industries have long grappled with the challenges faced by

women working in the sector. Extensive research spanning four decades has consistently presented a discouraging picture of gender equality within these fields (Cobb & Williams, 2020; French, 2014). Studies have unequivocally demonstrated that women's representation in the Australian film and television production sector remains chronically lower than that of men (Cox & Laura, 1992; Marsh & Pip, 1987; Ryan & Appleton, 1983; Screen Australia, 2015; Verhoeven, Coate, & Zemaityte, 2019). Harassment, inflexibility, and the inherent incompatibility of screen industries with family life have forced many skilled female practitioners to abandon their roles (French, 2020; Screen Australia, 2015; Verhoeven et al., 2019). Although an equal number of male and female students graduate from screen production, visual effects (VFX), and animation courses – an initially positive statistic – it is disheartening to note that an equivalent number of women do not progress to top positions within the screen industry (Bizzaca, 2019b).

Considerable attention has been given to examining the experiences and employment statistics of key creative film professionals, including directors, writers, and producers. In the Australian context, it has been revealed that only 17 per cent of feature dramas shot between 2011 and 2018 were directed by women, and research suggests that rates of women's participation have hardly increased in decades (French, 2020) or rates are declining (Nash, 2019). Because VP is built on the industrial framework of the broader screen industries, and inherits workforce cohorts, workflows, and even policy approaches, it is at risk of inheriting these problems.

On a related note, recent research and industry surveys have aimed to understand female participation in the Australian post-production and VFX sector (Dooley & Erhart, 2021; Erhart & Dooley, 2022), as well as in the broader VFX domains and games industries (Bailey, Miyata & Yoshida, 2021; Game Developers Association of Australia, 2018; Harvey & Fisher, 2015; Keogh, 2021; UK Screen Alliance, 2019; USC Annenberg Inclusion Initiative, 2021). In the Australian game sector specifically, women's involvement remains low: 48 per cent of companies have exclusively male workforces (Game Developers Association of Australia, 2018). Barriers to women's employment in these fields are multifaceted, deeply ingrained, and often exacerbated by pervasive sexism and gender-based biases regarding women's worth and capabilities (Keogh, 2021).

Despite the wealth of existing research and increasing scholarly awareness regarding the importance of assessing industry opportunities and roles beyond those of directors, writers, and producers, we currently possess very limited knowledge regarding the challenges and opportunities that VP presents for women in the Australian screen sector. We lack an understanding of how the lower participation of Australian women in the pipeline industries of games, film, animation, and VFX (French, 2014; French, 2020; Screen Australia, 2015), the prevalence of gender-based discrimination, and/or

the underrepresentation of women in leadership positions have influenced the VP industry (Game Developers Association of Australia, 2018; Screen Australia, 2015). Furthermore, the experiences of transwomen and individuals identifying as non-binary who contribute to this sector remain completely unexplored (Verhoeven et al., 2019).

### **Gender and Screen Education**

Further to these studies of gender within industry sectors, limited research has explored gender and diversity issues within educational institutions teaching screen production, despite substantial studies on tertiary screen production education more broadly in recent years (Aquila & Kerrigan, 2018; Chambers, 2019; Hjort, 2013; Petrie, 2010). Moreover, we are unaware of any prior scholarship exploring gender issues in the specific context of teaching of VP methodologies. The literature that does exist highlights the challenges that female and gender diverse students experience in the screen production classroom and suggests strategies to address these challenges (Banks, 2019; Dooley, McHugh, & Berry, 2020; Dooley, McHugh, Berry, Batty & Verdon, 2022; Mehta, 2015; Orwin & Carageorge, 2001). Ritesh Mehta's study (2015) of US film school students, for example, reveals their diverse characteristics and the process of 'resocialization' as they integrate into temporary film crews. Observing a similar phenomenon, Anne Orwin and Adrienne Carageorge (2001) highlight the need to address the different needs and biases favouring men in film schools. Likewise, Miranda Banks (2019) suggests interventions for equitable media production in universities. Educator interventions are also explored by Dooley et al. (2020) in their study of diversity in Australian film schools. A recent Screen Australia report confirms gender discrepancies in below-the-line crew roles among Australian film school graduates (Bizzaca, 2019a), also noted by Dooley et al. (2020). Similarly, Professor Trish FitzSimons observes a balanced ratio of male-to-female students but a higher male presence in camera and directing areas (as cited in Nash, 2019). These findings underscore the importance of addressing gender biases and fostering inclusivity in screen production education.

### **Method and Interviewee Profiles**

For this pilot study, we interviewed a small sample group of people working in the field of tertiary-based VP education in Australia. We interviewed four educators who were currently teaching VP or developing courses for imminent delivery to tertiary students. The sample size is small because few universities in Australia have developed VP programs. In conducting these interviews, we hoped to further our understanding of gender dynamics in the classroom, which, as stated above, we believe is a factor that informs expectations around

working practices, by gaining insights into gender dynamics in training programs. The educators we interviewed worked for both public institutions and private educational providers. The public institutions were at varying stages in their rollout of courses (with one having received a sizable government grant to support low-cost VP training). Some of the educators were teaching VP techniques in practice in a volume studio while others were preparing to teach VP with this approach. Others were teaching VP using related tools.

Our educators had a mix of industry background: some of them had VP experience in industry settings while others had come to the work through a games or filmmaking background. They were located in three states within Australia: South Australia (2), Victoria (1), and New South Wales (1). In terms of gender identity, our interviewees were female-identifying (2) and male-identifying (2). In regards to intersectional factors beyond gender identity, no one identified as Indigenous, or from a culturally or linguistically diverse background. This small sample serves as the base-line for our ongoing research project.

### **Preliminary Findings**

A number of common themes that emerged from interviews shed light on some complexities around women and gender diverse people's capacity to advance in the VP sector and its aligned industries. Some of the findings come as no surprise and appear to echo much of what is already known from several decades of studies of gender equity and media. Other themes were somewhat more surprising to us as researchers, indicating perhaps small but still significant breaks with established patterns of discrimination, exclusion, and disadvantage.

Before delving into these findings, we must note that all of the educators we interviewed had long-term experience in the education sector and all were aware of longstanding inequities in access. All of them expressed a strong desire to have gender parity in the classroom and had spent time devising varying approaches to support their female and non-binary students to experiment and trial new tools and approaches.

### **Student Cohorts and Teaching Staff**

Data on the ratio of male to female students enrolled in VP classes were mixed. Two interviewees observed female students enrolling in equal numbers to male students, and reported some female students' strong desire to be involved in VP. One said,

As soon as information about an industry collaboration became public, a [female] student banged on my door and said, "If there's any opportunity at all for me to see the virtual production spaces ... please can I? Remember me."

This same educator continued:

we actually had far more female identifying students than male identifying students pitch films, for example [for The Unreal Engine Short Film Challenge], and the project we ended up going with ... [had] mainly one director, which was a woman.

By contrast, another interviewee noted problems attracting female and non-binary students that went above and beyond ratios of the ‘traditional’ (non-VP) filmmaking classroom. This educator expressed that the gender balance which had been “nearly 50/50” in the filmmaking program had changed when VP, as a focus of filmmaking activity, was launched. As this person put it:

we were so proud of the fact that it was 50/50 ... And we worked really hard to get to that level. And now, it just kills us ... [in my upper level cohort] I have a non-binary student, a female student, and 10 male students. In my first years, I have a total of 28 students, three of those are female and one is transmale.

When we drilled in, it was suggested that this could have been attributed to adverse marketing decisions, with this educator explaining that the course marketing material “is making it look like it’s very technical focused rather than storytelling focused.” Existing research into the gendering of crew roles in the broader Australian screen industries (Bizzaca, 2019a) and in the context of screen education specifically (Dooley et al., 2020) suggests the dominant take-up of ‘technical’ roles such as cinematography and sound recording by male students may be fostered by cultural ideas related to capacity. This interviewee’s observation suggests a marketing approach that positions VP as a technical (rather than creative) pursuit is likely to attract male students, which has flow-on effects for every part of the VP education and industry.

Further to the subject of gender balances among students, educators spoke of gender issues related to staff and mentors. Concerns were raised about all-male teaching teams and the near non-existence of female or non-binary industry mentors. Moreover, educators noted an overall lack of female role models in industry. As one interviewee put it:

My students were assigned an industry mentor organisation that specialised in work generated with Unreal Engine. This organisation had a staff of about 12 artists. Only one of these was a woman. Several staff mentored the students, but the female staff member was not involved [in the mentoring].

Some interviewees noted this was especially true in the ‘below the line’ areas of production, where female workers and mentors were believed to be scarce. There was consensus among the interviewees about the need for better representation in these mentoring roles, and the likely link between mentoring and the ability of female students of VP to see themselves as industry professionals.

Further factors that were noted included a dominance of male instructors and consultants. One educator commented that all of the technical staff associated with teaching VP were male: “when we were having the studio built and making all the decisions ... there were probably ten of us in the room ... from electricians to campus managers and ... it was men [in] the decision-making process.” Another educator commented on curriculum design: “The team is all male at this point. This is not by design. It’s just the way it has panned out.” Yet another interviewee stated: “We had three main instructors working with students – two of these were women. A broader group of one-off tutors and mentors were brought in to help students with various aspects of the project. These were all male.” All of this suggested to us that the situation was not only the same as in filmmaking courses currently but was actually worse – perhaps similar to how it had been 20 years ago. Hearing these comments, it seemed old patterns of gender imbalance that we hoped had attenuated, were back with a vengeance.

Something we’re now watching is whether there are differences in student experiences, according to type of education providers. We noted that the instructor whose course demonstrated the lowest rates for women and non-binary students happened to be working for a private provider. This contrasted with the experiences of a different educator (employed at a public institution and in receipt of a generous government grant), who expressed confidence in being able to use grant monies to especially support female and non-binary students. In Australia, all filmmaker training (VP and pre VP) is now delivered by a mix of private and public providers. Thus more research needs to be done before we can assert what the driver/s for this apparent discrepancy might be. Although our sample size for interviews was small, this will be an important line of inquiry for a larger study.

We now turn to statements made by educators in VP that give insight not only into their classrooms and the dynamics they witness there but also into the industry as they see it from their vantage point of education, often well connected to industry and the cohorts that move into it. Some of the patterns we noticed seemed to be replicated from ‘legacy’ areas of the film industry. One significant pattern we noticed included the notion that when women are ‘in charge’ more women have courage to go for roles they perhaps wouldn’t go for with a male in charge, that is, the beneficial effects of having women in key roles and visible at the top. Lisa French cites numerous Australian feature films where women’s presence in such roles has

resulted in more women in the crew (2015, 141). In VP, as one interviewee states:

if it's a female director, they're much more likely to get a female camera operator. I've noticed that so many times ... because they're learning, they haven't got anything to back themselves up ... it's a very exposing kind of a thing to do to be the camera operator and everyone sees your mistakes. So yeah, they know it's just not a safe zone. We self-sensor ourselves I think as women, to jump in.

This interviewee's perspective shows the ongoing snowball effect that women's participation in education and industry can have.

Similar to what has been shown in the film industry more broadly, VP projects work like a holistic ecosystem, meaning that on projects where males appear to dominate, women and non-binary students appear to hold themselves back. Balances that one interviewee described as "out of whack" would appear to have compounding effects on a particular production's opportunities and gender balances. As one interviewee stated:

But when the balance is out of whack, the women tend to gravitate more to the production roles [i.e. to the producer roles, which in other media spheres have been one aspect in which women have gained a foothold]. They will occasionally direct, but they tend to hit [sic] the production .... But when the gender balance is going [well] then it's really good.

As with traditional or legacy filmmaking, an issue that may affect students' willingness to put themselves forward was the perception that in doing so would make them visible to their peers, doing camera, for example, rather than, say, sound. Students, an interviewee observed, may try other roles (such as audio) "where they're not too looked at", echoing poor gender equity rates in areas such as cinematography.

### **VP's Potential to Be a Leveller**

More than one interviewee spoke hopefully of the potential for VP to "level the playing field" and provide opportunities for students regardless of prior experience. As one interviewee put it:

I think what's good is that there's no prior knowledge that they're bringing. A lot of my students are quite successful YouTubers or they've got a lot of great photography. And so they're coming in with already a very strong body of work. But when you chuck them in, all of them in the volume, they're all on the same, "Oh, we don't really know."



However, this same educator noted a potential gendering of risk taking and willingness to make mistakes, and female-identifying students' differences in their willingness to give-it-a-go with brand new technologies and approaches. Scholars such as Miranda Banks (2019), and Anne Orwin and Adrienne Carageorge (2001) support these claims. The educator commented:

I think the boys just get on and they just have that bravado and ... there's a ... [an approach that's] like "well done for fucking it up Cody, that's awesome". You know, it's almost like the boys congratulate them for doing something stupid ... but if one of the female students does something stupid ... it's not congratulated in the same way. [The girls say] "Oh sorry, sorry, sorry."

In this and other ways, instructors were aware that the promises of the new technologies weren't always (or yet) borne out. One interviewee states:

I had great hopes that VP would be more of a leveller because it takes some of the physicality out of the filmmaking and that it will be more equitable if you had a family because it's more of a nine-to-five type of environment, maybe not so much travel, and you can stay with your family and that.

## Conclusion

There are limitations to our study. We asked our interviewees to partake in an interview about gender and VP in educational settings and this may have primed our interviewees to talk differently about how gender matters work in their own environments. Our sample size is very small and as a result we do not seek to make any generalisations about the gender dynamics in VP classrooms. At the same time, our study reveals some emerging themes concerning gender and VP as illuminated through talking to educators in the emerging field. We reiterate that this is very much a preliminary study and we intend to interview a wider pool of practitioners and educators in the coming weeks and months. If there are a few unifying themes, it's that the resource-intensive aspect of VP (coupled with skill shortages and time pressures), may lead people to revert to traditional means of vetting workers – with decision-making roles often being filled by men. The newness of VP means there are smaller pools of expertise to draw on, and we lack a diverse pool of established practitioners. VP holds promise as we have outlined, but hasn't been entirely borne out. VP may level the playing field but change is yet to come.

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